TÜBİTAK

TÜRKİYE BİLİMSEL VE TEKNOLOJİK ARAŞTIRMA KURUMU

THE SCIENTIFIC AND TECHNOLOGICAL RESEARCH COUNCIL OF TURKEY

Sosyal ve Beşeri Bilimler Araştırma Grubu

Social and Human Sciences Research Grant Group

SANAYİ ODAKLARINA DENEYİMİNE DAYALI OLARAK BÖLGESEL GELİŞME KURAM VE POLİTİKALARININ YENİDEN TANIMLANMASI

PROJE NO: SSB-COST-4001

Ağustos 2005
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PROJE NO: SSB-COST-4001

Prof. Dr. Ayda ERAYDIN
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Ağustos 2005
ANKARA

ÖNSÖZ

"Sanayi Odakları Deneyimine Dayalı Olarak Bölgesel Gelişme Kuram ve Politikalarının Yeniden Tanımlanması" başlıklı projenin amacı "Son yıllarda sanayi odakları olarak tanımlanan yörelerdeki sanayi yapısının, üretim örgütlenmesinin, toplumsal yapının ve ilişkilerin, kurumsallaşma ve üretim birimleri arasındaki ilişkilerin incelenerek, "başarı faktörlerinin" tanımlanması, bu faktörlerin dünyadaki değişik odaklardan elde edilen bilgilerle karşılaştırılması ve bu konuda dünyada geliştirilmeye çalışılan yeni bölgesel gelişme kuramına ve uygulamalarına katkı sağlanması" olarak belirtilmişti.

Sözkonusu proje Avrupa Topluluğu COST projeleri kapsamında yer alan COST (A17) "Küçük ve Orta Ölçekli İşletmeler, Ekonomik Gelişme ve Avrupadaki Bölgesel Farklılıkların Yakınsaması" (Small and Medium Enterprises, Economic Development, and Regional Convergence in Europe) eylemi kapsamında ve bu eyleme Türkiye'nin katkısı sağlayacak şekilde düzenlendi.

Bu amaçla Türkiye'deki farklı yörelerde ve farklı ölçeklerde araştırmalar tasarlandı ve bu araştırmalardan elde edilen bulgular COST eylemi çerçevesinde düzenlenen çeşitli toplantılarda sunuldu ve önemli bir bölümü yayına dönüştürüldü.

Bu nedenle bu raporun giriş bölümünde önce COST A17 eyleminin gelişim süreci ve bu eyleme katılım ve katkılarımızdan söz edilecek, sonrasında ise bu katkıya kaynaklık eden çalışmalar özetlenecektir. Raporun ana bölümünde ise yapılan çalışmalardan elde edilen bulgular özetlenerek sunulacaktır. Tüm yapılan çalışmalar ise, raporun ek bölümünde verilmektedir. Bu çalışmalar ve yayınlar Avrupa Birliği COST programı çerçevesinde yürütüldüğü için İngilizce olarak hazırlanmış ve çalışmalar uluslararası dergilerde veya saygın yayınevlerinin bastığı kitaplarda yer almıştır. Böylelikle projenin bulgularının paylaşımı ülkemizdeki akademik çevrelerle kısıtlı kalmamış, uluslararası yazına katkı sağlamıştır.

İÇİNDEKİLER

• Chapter 1 Introduction, *Bernard Fingleton, Ayda Eraydın and Raffaele Paci,* published in *Regional Economic Growth, SMEs and Wider Europe* (2003) edited by Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp. 1-12

• Dynamics and Agents of Regional Growth: The Performance of SME Clusters in Europe (published in *Regional Economic Growth, SMEs and Wider Europe* (2003) edited by Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128 Chapter 5)

• Eraydın, A., 2003, "Dynamics and Agents of Regional Growth: The Performance of SME Clusters in Europe" *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

• Armatlı-Köroğlu, B. ve Beyhan,B."The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli" " *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

• Eraydın, A., 2005, "The role of SME clusters on Regional Economic Growth and

- Eraydın, A. Armatlı-Köroğlu, B., 2005, Innovation, Networking and the New Industrial Clusters: the Characteristics of Networks and Local Innovation Capabilities in the Turkish Industrial Clusters, ***Entrepreneurship and Regional Development,*** 17, Temmuz, s. 237-266

- Eraydın, A. Armatlı-Köroğlu, B., 2005, Globalisation and diversification of producer services: Increasing role of services in competitive power and innovativeness of firms and industrial clusters, ***European Planning Studies*** (değerlendiriliyor)

TABLO LİSTESİ

ÖZ

Bölgelerarası gelişmişlik farklılıkları Türkiye'de olduğu gibi pek çok ülkede de en önemli sorunlardan biri olmayı sürdürmektedir. 1980 sonrasında pek çok bölgede ekonomik gelişme sorunları yaşanırken, gelişmişlik düzeyi düşük olan bazı bölgelerin küçük ve orta ölçekli sanayilerin oluşturduğu üretim ağları ile başarıyı yakaladığı belirlenmiştir. Bu bölgeler uluslararası yazında "sanayi odakları" olarak adlandırılmaktadır.

Projenin amacı sanayi odakları olarak tanımlanan merkezlerdeki sanayi yapısının, üretim örgütlenmesinin, toplumsal yapının ve ilişkilerin, kurumsallaşma ve üretim birimleri arasındaki ilişkilerin incelenerek, "başarı faktörlerinin" tanımlanması, bu faktörlerin dünyadaki değişik odaklardan elde edilen bilgilerle karşılaştırılması ve bu konuda dünyada geliştirilmeye çalışılan yeni bölgesel gelişme kuramına ve uygulamalarına katkı sağlanması olarak belirlenmişti.

Bu amaçla Türkiye'deki üç sanayi odağına (Denizli, Çorum, Ankara) yönelik olarak yerinde ayrıntılı araştırmalar gerçekleştirilmiş, ayrıca Avrupa Birliği bölgeleri ve Türkiye'deki diğer sanayi odaklarına yönelik istatistiksel bilgiye dayalı kantitatif analiz çalışmaları gerçekleştirilmiştir. Yapılan çalışmalar sanayi odaklarının diğer bölgelere göre daha başarılı olduğunu, bu başarıda KOBİ'lerinin birlikteliklerinin ve ilişkilerinin sağladıkları dışsallıkların önemli olduğunu göstermektedir. Üretim örgütlenmesinin yenilikçilik açısından çok önemli olduğu ve üretim birimleri arasındaki yerel ağlar bu firmaların içinde olduğu küresel ağların da sanayi odaklarının başarında etkili olduğu görülmüştür. Sonuç olarak sanayi odaklarının bölgesel gelişme için bir model olark kullanılabileceği, ancak bu modelin sanayi yığılmalarının olduğu yörelerde kümeden-sanayi odağına geçiş için stratejik plan ve bölgesel yenilikçilik stratejileri ile desteklenmesi gerektiği belirlenmiştir

Anahtar Sözcükler
Bölgesel gelişme, sanayi odakları, küçük ve orta ölçekli sanayiler, üretim ağları, yenilikçilik

ABSTRACT

Regional development differences are still one of the major problems in Turkey similar to many countries. However, after 1980s several new clusters appeared which experienced very rapid growth, which were not the important industrial nodes in the former periods. These areas which reached the successful rates of growth via development of small and medium industrial firms are usually called "industrial districts" in the literature.

The aim of this project is defined as to determine the success factors of the "local development" with the help of the analysis of industrial organisation, social aspects, and institutional and network relations between the different production units in different industrial districts. The comparison of the research findings with the findings of the other studies is believed to contribute the new emerging regional development literature.

In order to meet the above aims, detailed research activities are conducted in the three industrial districts of Turkey, namely Denizli, Çorum and Ankara, as well as studies related to the European Union regions and other industrial districts of Turkey, which were mainly depended on statistical methods using the collected statistical data from different institutions. The results of the studies showed that industrial districts are more successful in different respects and in this success especially the externalities generated by collaborative and cooperative actions are very important. The production organisation is especially important for innovative action besides the local and global networks, which increase the efficiency of firms and industrial districts as well. As a result, this research claims that industrial districts can be used as model to convert the industrial clusters into innovative industrial districts, if they are supported by strategic plans and regional innovation strategies that are initiated by local interest groups as well as the public and non-profit organisations.

Keywords

Regional development, industrial districts, small and medium industry, production networks, innovativeness

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PROJE ANA METNİ

I. GİRİŞ

1.1. COST A17 "KÜÇÜK VE ORTA ÖLÇEKLİ İŞLETMELER, EKONOMİK GELİŞME VE AVRUPADAKİ BÖLGESEL FARKLILIKLARIN YAKINSAMASI" (SMALL AND MEDIUM ENTERPRISES, ECONOMIC DEVELOPMENT, AND REGIONAL CONVERGENCE IN EUROPE) EYLEMİ VE BU EYLEM KAPSAMINDA YAPILAN ÇALIŞMALAR

COST A17 Eyleminin gelişim süreci ve bu süreçte gerçekleştirilen toplantı ve çalışmalar şöyle özetlenebilir.

COST A17 "Küçük ve Orta Ölçekli İşletmeler, Ekonomik Gelişme ve Avrupadaki Bölgesel Farklılıkların Azalması Projesi'ne ilişkin ilk toplantı 17 Kasım 2000 tarihinde Brüksel'de yapıldı.Bu Eyleme katılan üye temsilcilerinin katıldığı ilk toplantıda iki çalışma grubunun oluşturulmasına karar verildi. 1. Çalışma Grubu: Küçük ve Orta Ölçekli Firmaların Geliştirilmesi: Mikro yaklaşım 2. Çalışma Grubu: Bölgesel Gelişme ve Küçük ve Orta Ölçekli Firmaların Katkısı: Makro Yaklaşım olarak tanımlandı. Prof. Dr. Ayda Eraydın (bu projenin yürütücüsü) 2. Çalışma Grubunun Başkanı olarak seçildi. 1. Grubun başkanı olarak Hollanda'dan Prof.Dr. Henk Folmer oldu.

Çalışma Grubu Başkanları toplantı sonrasında tüm üye ülkelerinin deneyimleri, ülke temsilcilerinin birikimleri ve ilgi alanları ile derlemeler yaparak ve bunu üyeler arasında dağıtarak çalışma gruplarının gelecekte üzerinde araştırma yapmak istedikleri konulara ilişkin bilgi alış verişini sağladılar.

Eylem Grubunun ikinci toplantısı 22-23-24 Mart tarihlerinde Barselona'da yapıldı. Bu toplantıların amacı, konuların tanıtılması, kapsamı ve gelecekte yapılacak çalışmalar konusunda görüş birliği oluşturmak olarak belirlendi. Çalışma Grupları olarak ise 23 Mart günü toplantı yapıldı. Bu toplantılarda Yönetim kurulu toplantısına ve 2. Çalışma Grubuna Prof.Dr. Ayda Eraydın ve 1. Çalışma Grubuna Yrd. Doç. Dr. Melih Pınarcıoğlu katıldı. İkinci çalışma grubunda Ayda Eraydın "Bölgesel gelişme ve küçük ve orta ölçekli işletmeler arasındaki ilişkilerin farklı kuramsal çerçeveler açısından değerlendirilmesi" başlıklı bir sunuş yaptı.

Bu toplantılarda yapılan tartışmalar sonrasında, Eylemin ilk aşamasında ülkelerin "Bölgesel Gelişme ve Küçük ve Orta Ölçekli İşletmeler" konusunda yapacakları makro nitelikli çalışmaların bütünleştirilmesi ve bunların bir kitap haline getirilmesi görüşü benimsendi. Bu amaçla 16-17 Haziran tarihlerinde İsveçte bir toplantı yapılmasına ve elde edilen ilk bulguların tartışılmasına karar verildi.

Önceki toplantılarda kararlaştırılan "Bölgesel Gelişme ve Küçük ve Orta Ölçekli İşletmeler" konusunda her ülke temsilcisinin yapacağı makro nitelikli çalışmaların bütünleştirilmesi ve

bunların bir kitap haline getirilmesi amacına uygun olarak gerçekleştirilen çalışmaların sunuşu ise 16-17 Haziran 2001 tarihlerinde Vanesborg (İsveç)' te düzenlenen toplantıda yapıldı.

Bu çalışmaların bir editörler grubu tarafından derlenmesi benimsendi. Editörler olarak Prof. Bernard Fingleton Prof. Ayda Eraydın ve Prof. Rafaelle Paci seçildi. Bu grup çalışmaların özetleri ve taslak metinleri üzerinden ilk değerlendirmeleri yaptı ve 23-24 Haziranda Ankara'da düzenlenecek olan toplantıya son şekilde sunulmasına karar verildi.

23-24 Haziran tarihlerinde Ankara'da düzenlenen COST A17'nin dördüncü toplantısına 32 bilim adamı katıldı ve bu toplantıda 15 bildiri sunularak tartışıldı.

Daha önce söz edildiği gibi çalışma grubu üyeleri tarafından sürdürülen çalışmalar bu proje yürütücünün de aralarında olduğu editörler grubu tarafından uluslararası yayınevlerinden Ashagate'de basılmak üzere hazırlandı. Derleme ve basım için CRC kopyanın hazırlanması 24 Kasım 2002 tarihinde yayınevine teslim edilmiş ve kitap 2003 yılında basılmıştır. Bu kitabın ilk bölümü proje yürütücüsü Ayda Eraydın ve diğer editörler Bernard Fingleton (Cambridge-UK) ve Rafaelle Paci (University of Cagliari-Italya) tarafından yazıldı. Ayrıca kitap içinde Ayda Eraydın'ın bir makalesi ve proje ekibinden Burak Beyhan ve Bilge Armatlı'nın birlikte hazırladığı "The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli" başlıklı bir makale bulunmaktadır. Bu makaleler ekte sunulmaktadır.

COST A17'nin 4-6 Ekim tarihlerinde Oslo'da yapılan toplantısında ikinci aşama çalışmalar başlatılmıştır. İkinci aşamanın ana teması *"Bölgesel Gelişmenin Kuramsallaştırılmasında Yerel ve Ağ Üzerinde Sağlanan Dışsallıkların Önemi"* olarak belirlenmiştir.

Bu konudaki kuramsal tartışmalar sürdürülürken, yerel düzlemdeki çalışmalara da başlanmıştır. Kuramsal tartışmalara katkıda bulunmak üzere *"Global Networks as Open Gates for Regional Innovation Systems"* başlıklı makale hazırlanmış olup bu makale Temmuz 30-Ağustos 2, 2002 tarihlerinde Johannesburg'da düzenlenen "IGU Commission on the "Dynamics of Economic Space" 2002 Konferansında sunulmuştur. Bu makale 2005 yılında basılan *"Linking Industries Across the World: Processes of Global Networking"* (C.Alvstram and E. W. Schamp editörler, Ashgate: Aldershot, s.53-88) adlı kitapta yer almıştır.

Proje yürütücüsü Ayda Eraydın 24-25 Ekim tarihleri arasında COST (A17) "Küçük ve Orta Ölçekli İşletmeler, Ekonomik Gelişme ve Avrupadaki Bölgesel Farklılıkların Azalması" (Small and Medium Enterprises, Economic Development, and Regional Convergence in Europe) projesi Çalışma Grubu II başkanı olarak COST Sosyal Bilimler Yürütücü grubunun davetlisi olarak Brüksel'de düzenlenen bilgilendirme toplantısına katılmış ve bu toplantıda 6. Çerçeve programlar konusunda ve COST programının önündeki çeşitli projeler konusunda bilgi verilmiştir. Nitekim Türk proje ekibi 6. Çerçeve Programı kapsamında yürütülen COST programının çeşitli üyelerinin yer aldığı Networks of Excellence ve Integrated Projects önerilerinde yer almış ve proje öneri hazırlama çalışmalarına katılmıştır. COST programının çeşitli üyelerinin yer aldığı Networks of Excellence ve Integrated Projects önerileri hazırlanmış ve KISSED acronym'i ile başvuru yapılmıştır. Ancak proje önerisi desteklenecek projeler arasında yer alamamıştır.

Türkiye'deki üç sanayi odağı; Denizli,Çorum ve Ankara'da yapılan alan araştırması kapsamında sürdürülen yerel ve küresel ağlarla ilgili çalışmaların bulgularından yararlanarak hazırlanan bildiri 25-29 Eylül 2003 tarihlerinde Prag'da yapılan toplantıya "Bölgesel Gelişmenin Kuramsallaştırılmasında Yerel ve Ağ Üzerinde Sağlanan Dışsallıkların Önemi" başlığı altında yapılan alan araştırmasının bulguları "Network Externalities and the Performace of Firms in Innovative Industrial Clusters" başlıklı Ayda Eraydın ve Bernard Fingleton'un birlikte hazırladığı makalede sunulmuştur.

16-18 Nisan 2004 tarihleri arasında Larnaca'da yapılan toplantıda ise mekansal dışsallıklarla ilgili hazırlanan çalışmalar sunulmuştur. Bu toplantıda proje kapsamında geliştirilen aşağıdaki çalışmalar tartışmaya açılmıştır. Bu makalelerin yer alacağı "Bölgesel Gelişmede Dışsallıklar" başlıklı kitap hazırlanmakta olup, editörlüğünü Çalışma Grubu üyelerinden Prof. Dr.Wim Heyman yapmaktadır. Bu kitabın basımını Springler-Verlag kabul etmiştir.

Eylem Grubu bir sonraki toplantısını 16-18 Nisan tarihleri arasında Kaunas (Litvanya'da) düzenlemiştir. 2. Çalışma Grubu üyeleri tarafından bu toplantıda 8 bildiri sunulmuş ve tartışmaya açılmıştır. Bu toplantıda sanayi odakları üzerine yapılan çalışmalara dayalı olarak hazırlanan "Innovation, Networking and the New Industrial Clusters: the Characteristics of Networks and Local Innovation Capabilities in the Turkish Industrial Clusters" başlıklı bildiri sunulmuştur. Bu makale *Entrepreneurship and Regional Development* dergisinin 2005 Temmuz sayısında (s.237-266) yayınlanmıştır.

Yine sanayi odaklarına ilişkin araştırmalardan Ayda Eraydın and Bilge Armatlı Köroğlu: "Increasing role of services in the innovativeness of firms and industrial clusters and their development performance" başlığı ile 9-13 Ağustos 2004 tarihinde Birmingham'da IGU Comittee on Dynamics of Economic Spaces tarafından düzenlenen "Service Worlds" başlıklı toplantıda sunulmuştur. Bildirinin daha gelişmiş bir şekli ise "Globalisation and diversification of services: Increasing role of services in competitive power and innovativeness of firms" başlıklı makale ise *European Planning Studies* dergisine değerlendirilmek üzere sunulmuştur.

9-11 Haziran 2005 tarihlerinde Barcelona'da COST A17 Eyleminin sonuçlarının tartışılacağı "Innovation and Regional Economic Development" konulu uluslararası bir toplantı düzenlenmiştir. Toplantı çağrıları sonunda çok sayıda başvuru olmuş, Ayda Eraydın'nın da içinde olduğu hakem komitesi özetleri inceleyerek, gerekli elemeleri yapmıştır. Özetleri Kabul edilen bildiriler 15 Mart'a kadar tüm bildiriyi hazırlayıp, ikinci bir değerlendirme için yollamışlar ve tüm metin üzerinden ikinci bir seçim yapılmıştır.

Seçilen bildiriler 9-11 Haziran 2005'de düzenlenen Konferans'ta sunulmuş olup, akademik niteliği çok yüksek bir toplantı gerçekleştirilmiştir. Bu Açık Konferansla birlikte Eylemin misyonu tamamlanmış olmaktadır.

1.2. PROJE GRUBUNUN COST A17 "KÜÇÜK VE ORTA ÖLÇEKLİ İŞLETMELER, EKONOMİK GELİŞME VE AVRUPADAKI BÖLGESEL FARKLILIKLARIN YAKINSAMASI" EYLEMİ KAPSAMINDA GERÇEKLEŞTİRDİĞİ ARAŞTIRMALAR

1. Projenin ilk aşamasında COST A17 Eylemine katılan diğer üyelerle bir ortak çerçeve oluşturmak üzere çeşitli tartışmalar yapıldı. COST Eylemleri kapsamında Avrupa Birliğinden doğrudan araştırmaya yönelik finansal destek sağlanmaması nedeniyle her katılımcının araştırmasını ayrı olarak kendi ulusal kurumlarının desteği ile sürdürmesi ve sonrasında bu çalışmalarının bütünleştirilmesi gerekiyordu. Ortak çalışmanın nasıl sürdürüleceğine yönelik görüşmeler sürdürüldü ve Türkiye grubu olarak TUBİTAK tarafından onaylanan proje teklifi çerçevesinde yapılacak çalışmalar için bir çerçeve tanımlanmdı. Bu ilk görüşmeler sonrasında yurt içinde çalışmalara başlandı. Bu çalışmaların öncelikle ülke düzeyinde ve istatistiksel veri tabanı kullanılarak yapılması, genel tablonun çizilmesi ve niceliksel çözümlemelerin ardından yörede yapılacak çalışmalara başlanmasına karar verildi.

Bu proje kapsamında yapılan çalışmaların ana başlıkları şöyledir.

1. *Avrupa Topluluğu ülkelerinde bölgesel gelişme, sanayi odakları ve KOS'larla ilgili deneyim ve istatistiki bilginin derlenmesi ve sanayi odaklarının gelişmesinde önem kazanan faktörlerin betimlenmesi*

2. *Bölgesel Gelişmede etken olan faktörlerin istatistiksel yöntemlerle tanımlanması amacı ile il bazında bilgi sisteminin oluşturulması için tüm Türkiye genelinde;*
   - *Küçük ve Orta Ölçekli Sanayilere (KOS)'lara ilişkin bilginin bölge ve iller bazında derlenmesi*
   - *Bölgesel Buluşçulukla ilgili saptamalar yapmak için bilgi bazının oluşturulması*

3. *Yeni sanayi odaklarına ilişkin yerel görgül çalışmaların gerçekleştirilmesi: Denizli, Ankara ve Çorum'da yapılan firma ölçeğindeki ayrıntılı alan araştırmaları*

1.2.1. Avrupa Topluluğundaki Sanayi Odaklarının Gelişmesinde Önem Kazanan Faktörlerin Betimlenmesi

AB NUTS II bölgeleri kapsamında KOBİ sayısı ve istihdam dağılımına ilişkin veri araştırmasında;

Avrupa Komisyonu Türkiye Temsilciliğinden 1988-1998 yılları arasında, üye ülkeler bazında KOBI'lerin dağılımı, istihdam kapasitesi ve yatırım sermayelerine ilişkin veriler sağlanmıştır. Ayrıca, AB tarafından belirlenen NACE-2 Sektörlerine göre, üye ülkeler bazında, 1996 yılındaki istihdamın aktif nüfusa (15-64) oranını gösteren veriler ile NUTS II bölgeleri kapsamında,1992 yılına ait istihdam oranı verileri alınmıştır. Bu verilerin yanısıra, AB bölgeleri (NUTS bölgeleri) bazında toplam istihdam (1995), AR-GE harcamaları ve AR-GE personel sayısını (1994) gösteren sayısal veriler elde edilmistir. AB kapsamında KOBI'lerin

sektörel dağılımlarını gösteren çok sayıda istatistiksel veri de bulunmaktadır. Ancak, bu kurumda AB NUTS II bölgeleri düzeyinde KOBI sayısı ve istihdam kapasitesine ilişkin veri bulunamamıştır.

KOSGEB Başkanlığı AB Bilgi Merkezinden ise NUTS II bölgeleri kapsamında üye ülkelerin sadece 9'una ait KOBI sayısı, yoğunlugu ve KOBI'lerde istihdam edilen kişi sayısına dair 1988 yılı verileri sağlanmıştır.

Bu kurumların dışında, AB' nin Internet sayfası üzerinden KOBI'lerle ilgili yapılan araştırmalar sonucunda, üye ülkeler ve bölgeler bazında KOBI'lere ilişkin temel değişkenler ve sınıflandırmalarla ilgili bilgiler başlıklar halinde sağlanmış, ancak ilk aşamada sayısal verilere ulaşmak mümkün olamamıştır. Sonraki aşamada ise 2002 ve2003 yıllarına ait bölgeler bazında ayrıntılı bir bilgi bazı elde edilebilmiştir.

Internet sayfasının yanısıra, OECD ve Crenos sitelerinden de üye ülkeler bazinda KOBI'lere ilişkin veriler sağlanmıştır. Ayrıca, Crenos adresinden NUTS II bölgeleri içinden 109 bölgeye iliskin, NACE metoduna göre sınıflandırılmış 25 sektördeki toplam patent başvuru sayısının 1980,1985 ve 1990 yıllarına ait verileri sağlanmıştır.

Yapılan çalışmalara dayalı olarak hazırlanan makale 2001 Haziran ayında Uddevalla (İsveç)'te yapılan "Regional Economies in Transition" başlıklı Sempozyuma "Regional labor markets, growth and SMEs" sunuldu ve aşağıda belirtilen yayın olarak basıldı.

Eraydın, A., 2001, ""Regional labor markets, growth and SMEs" *Regional Economies in Transition* Uddevalla Symposium 2001, Research Reports: University of Trolhattan: Uddevalla, s. 201-216

Daha sonra içeriği ve içindeki tartışmaların bölgesel düzeydeki diğer boyutları kavrayacak şekilde geliştirildi ve aşağıda belirtilen kitap içinde yer aldı.

Eraydın, A., 2003, "Dynamics and Agents of Regional Growth: The Performance of SME Clusters in Europe" *Regional Economic Growth, SMEs and Wider Europe*", editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

1.2.2. Bölgesel Gelişmede Etken Olan Faktörlerin İstatistiksel Yöntemlerle Tanımlanması Amacı ile İl Bazında Bilgi Sisteminin Oluşturulması

A. KURAMSAL ÇALIŞMALAR

Bölgesel gelişme yazınında gündeme gelen yeni faktörlerin tartışması yapılmış ve yapılan kuramsal çalışmalar *"Global Networks as Open Gates for Regional Innovation Systems"* başlıklı makalede toplanmıştır. Bu makale Eike Schamp ve Claves Alvstram'ın editörlüğünü yaptığı *""Linking Industries Across the World: Processes of Global Networking"* başlıklı kitap Ashgate International Publications tarafından 2005 yılında basılmıştır.

B. İLLERE GÖRE BİLGİ SİSTEMİNİN OLUŞTURULMASI

İllere Bölgesel gelişmede etkili olan faktörlerin tanımlanması amacı ile her ilin farklı konulardaki özelliklerini ve koşullarını belirleyen 210 kolondan oluşan bir bilgi seti oluşturulmuştur.

C. KÜÇÜK SANAYİYE YÖNELİK ELDE EDİLEN BİLGİLER VE GERÇEKLEŞTİRİLEN ANALİZLER

Devlet İstatistik Enstitüsünden 1992 ve 1997 yılları için,
1-9 kişi çalışan
10-49 kişi çalışan
50-199 kişi çalışan,
200-249 kişi çalışan
250 üstü kişi çalışan işyerlerine ilişkin il bazında "işyeri sayısı", "çalışan sayısı" ve "katma değer" verileri ve 1990-1997 "il nüfusu" ve "il geliri" verileri elde edildi.

Bu veriler kullanılarak aşağıdaki ilişkilerin tanımlanmasına yönelik istatistiksel analizler yapıldı.

- Bölgesel gelişmişlik-KOBİ
- Bölgesel gelir artışı-KOBİ'lerin toplam işletmeler içindeki payı
- Bölgesel verimlilik artışı- KOBİ'lerin payı
- Bölgesel buluşçuluk- KOBİ'lerin oranı
- Bölgesel dışsatım ve KOBİ'ler

D. BÖLGESEL YENİLİKÇİLİK ÜZERİNE BİLGİ DERLEME ÇALIŞMALARI

Türk Patent Enstitüsü, Bilgi İşlem Dairesi Başkanlığı'ndan IPC'ye (International Patent Classification), illere, başvuru sahibinin (Kişi yada firma) ve hangi ülkeden oluşuna göre patent ve faydalı model başvuruları ve verilen patent ve faydalı model belgelerinin 1980-2001 yılları arası istatistiki bilgisi istenmiş ve bu bilgilerden 1994-2000 yılları arası Patent ve 1995-2000 yılları arası Faydalı Modellerin illere göre dağılım bilgisi alınmıştır. Türkiye genelinde olmak üzere IPC ayrımlı 1994-2000 yıllları arası sektörlere göre 1998-1999 tarihli ve yurtdışı patent ve faydalı model bilgileri de bulunmaktadir. Ancak 1980-2001 döneminde istenilen ayrıntılı bilginin hazırlanması oldukca zor olduğundan kesit halinde 1980, 1985, 1990, 1995 ve 2000 yılları bazında bilgi alınabilmiştir.

DİE'den 1997 yılı için imalat sanayine ait ayrıntılı (1-9 kodlu) AR-GE harcamalari istatistiki bilgisi temin edilmiştir. Bu bilgi anket çalışmasına dayanmakta olup, tüm illeri kapsamamaktadır.

TÜBİTAK'tan TİDEB'ce verilen AR-GE teşviklerinin illere göre dağılımı bilgisi alınmıştır (2000 yılı). Türkiye genelinde olmak üzere bu teşviklerin sektörlere ve KOBİ'lere göre dağılımı da bulunmaktadır. TİDEB'den istenilen ayrıntılı bilgiler kapsamında, KOBİ'lere ve illere göre verilen teşviklerin dağılımı da bulunmaktadır. TÜBİTAK'tan ayrıca istatistiki bilgi olarak illere göre AR-GE birimli firma sayıları da alınmıştır. AR-GE teşvikleri ile ilgili olarak TTGV, Dış Ticaret ve Hazine Müsteşarlıklarından da istatistiki bilgi temin edilmiştir.

NUTS II düzeyinde olmak üzere Avrupa Birliğine üye ülkeler için bazi bölgeler kapsamında 1980, 1985 ve 1990 yılları için Patent sayısına ait bilgiler internet üzerinden alınmıştır. 1990 ve 1995 kesitli EPO İstatistik Yıllığından Patent istatistiki bilgileri temin edilmiştir. EPO İstatistik Yıllığından ayrıca 1994 yılı AR-GE harcamaları ve çalışan kişi sayisi bilgileri derlenmiştir.

Tematik haritaların hazırlanmasinda kullanılmak üzere MapInfo formatlı Avrupa Birliğine ait üye ve aday ülkeleri kapsayan NUTS I ve NUTS II düzeyinde sayısal haritalar temin edilmiş Türkiye ile ilgili il ve ilçe sınırlari yine MapInfo formatinda bu haritalara eklemlenemiştir.

Bu çalışmalarda elde edilen sonuçlar aşağıdaki makalede kullanılmıştır.

Eraydın, A., 2005, "The role of SME clusters on Regional Economic Growth and Innovation" Paper presented "*Knowledge and Regional Economic Development*" Open Conference 2005, June 9-11 Barcelona Spain (yayına hazırlanma aşamasında)

1.2.3. Farklı Sanayi Odaklarında Sürdürülen Ankete Dayalı Çalışmalar

İller/bölgeler arası sayısal çözümlemeler ve modelleme çalışmaları yanısıra Türkiye'deki sanayi odaklarında Denizli'den başlayarak, Çorum, Ankara ve Bursa'da ayrıntılı çalışmalar yapılmıştır. Anket çalışmalarına ve örneklem seçimine yönelik bilgiler ekte sunulan makalelerde ayrıntılı olarak anlatılmaktadır.

A. DENİZLİ SANAYİ ÜZERİNE YAPILAN ÇALIŞMALAR

Türkiye'deki sanayi odaklarının en önemlilerinden biri olan Denizli çeşitli çalışmalara konu olmuştur. Denizli üzerine proje grubunun da daha önce yaptığı çalışmalar mevcuttur.

Son dönemde yaşanan değişimlerin yerel sanayi odakları üzerindeki etkilerini, bu değişime uyum sağlamak için yerel üretim birimlerinin geliştirdikleri politikaları ve kurumsal mekanizmaları, yaşadıkları uyum süreçlerini ve sorunlarını incelemek amacıyla, proje çalışmaları sırasında, Türkiye'nin önemli sanayi odaklarından biri olan Denizli'de bir anket çalışması gerçekleştirilmiştir.

Tablo 1: Denizli anket çalışmasının kapsamı

	DENIZLI	
	sayı	%
Tamamlanan anket sayısı	27	12,7
Ulaşılamayan firma sayısı	39	18,5
Yanıt vermeyen firma sayısı	140	66,0
Eksik bilgi nedeni ile değerlendirilmeyen anketler	4	1,9
Tutarsız bilgi nedeni ile değerlendirilmeyen anketler	2	0,9
Toplam	212	100
Derinlemesine görüşme yapılan firma sayısı	17	

Ağırlıklı olarak Denizli'deki dokuma ve hazır giyim firmalarında yaşanan değişimleri değerlendirmek amacıyla yapılan bu anket çalışması 9-13 Temmuz 2001 tarihleri arasında gerçekleştirilmiştir. Denizli dokuma ve hazır giyim sanayiinde, diğer firmalara göre dışsatım payı daha yüksek olan ve lider özelliği taşıyan firmalar arasından 17 firma raslantısal olarak seçilmiş ve bu firmalarla derinlemesine görüşmeler yapılmıştır. Bu firmaların listesi Tablo 2'de verilmektedir.

Tüm firmalar yerinde ziyaret edilerek, anketler ağırlıklı olarak firma sahipleri ya da yöneticileri ile yapılan derinlemesine görüşmeler sonucunda tamamlanmıştır.

Anket çalışmasına ek olarak Denizli Sanayi Odası, Denizli Organize Sanayi Bölge Müdürlüğü ve ilgili diğer kamu kurum ve kuruluşları, DETGİS, DEGİAD, BASİAD gibi dernek ve sendikalar ile görüşmeler yapılmıştır. Bu görüşmelerin ana temasını Denizli sanayiinin genel sorunları, dışsatım kredi ödemelerinde yaşanan sıkıntılar, altyapı eksiklikleri, teşvik yetersizliği gibi sorunlar ile organize sanayi bölgesi, üniversiteler ve dernekler arası kurumsal ilişkiler oluşturmuştur.

Tablo 2: Derinlemesine görüşme yolu ile bilgi derlenen firmalar-Denizli

- Mumo Tekstil Sanayi ve Ticaret A.Ş.,
- Nobel Tekstil Sanayi ve Ticaret Ltd. Şti.,
- Doksan Denizli Dokuma Sanayi ve Ticaret A.Ş.,
- Uspar Tekstil Sanayi ve Ticaret A.Ş.,
- Erikoğlu Tekstil Sanayi A.Ş.,
- Gökhan Tekstil Sanayi ve Ticaret Ltd. Şti.,
- Gamateks Tekstil Sanayi ve Ticaret A.Ş.,
- Debas Tekstil Sanayi ve Ticaret A. Ş.,
- Aslı Tekstil Sanayi ve Ticaret Ltd. Şti.,
- Tümteks Tekstil Sanayi ve Ticaret A.Ş.,
- Akürün Tekstil Sanayi ve Ticaret A.Ş.,
- Nesa Tekstil Sanayi ve Ticaret A.Ş.,
- Fatih Perforje A.Ş.,
- Dorateks Tekstil Sanayi ve Ticaret A.Ş.,
- Bahar Tekstil Sanayi ve Ticaret A.Ş.,
- Motif Tekstil Sanayi ve Ticaret A. Ş.,
-Gürcan Nakış Sanayi ve Ticaret Ltd. Şti

Elde edilen bilgiler son beş yıl içinde bu sanayi bölgesinin yaşadığı değişimleri değerlendirmek amacıyla kullanılmış, değişen ekonomik koşullara uyum sağlama veya uyumda gecikme ve yetersizlik süreçleri tanımlanmaya çalışılmış ve bu çerçevede yerel ve yöre dışı kurum ve politikaların katkısı da belirlenerek elde edilen bulgular yazılı bir metin haline getirilmiştir.

Yapılan çalışmalar aşağıda belirtilen makale olarak yayınlandı.

Armatlı-Köroğlu, B. ve Beyhan, B.(2003) "The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli" " *Regional Economic Growth, SMEs and Wider Europe* editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

B. ANKARA'DA YAPILAN ÇALIŞMALAR

Projenin ikinci aşamasında kuramsal çalışmaların ardından görgül araştırmalarda ele alınan ikinci sanayi odağı Ankara'dır. Araştırma alanı dış bağlantıları olan (dışsatım ilişkileri olan) Ankara'daki üretim birimleri olup 332 firmayı kapsamaktadır. Bu firmaların adresleri Ankara Sanayi Odasından temin edilmiştir.

İlk aşamada internet adresi olan firmalara internet aracılığı ile bir anket formu yollanmıştır. Ancak, yanıtlanarak geriye dönen anket sayısı çok düşük olmuş, bu nedenle ikinci aşamada posta ile anket yollanmıştır. Anket yollanan firmaların sektörlere göre dökümü şöyledir.

Tablo 3: Ankara'da üretim sektörlerine göre anket yollanan firma sayıları

Üretim sektörleri	Sayı
Muhtelif gıda sanayi	9
Döküm sanayi	11
Ağaç sanayi	22
Madeni Eşya sanayi	13
Kauçuk ve Lastik sanayi	3
Ziraat aletleri ve yedek parça sanayi	10
Demir işleri sanayi	21
Taşıt araçları sanayi	20
Taş ve toprak sanayi	9
Tekstil ve giyim sanayi	33
Un, unlu maddeler ve yem sanayi	5
Petrol ve makina sanayi	10
İnşaat ve tesisat müteahhitleri	9
Makina ve alat sanayi	45
Isıtma ve klima cihazları sanayi	9
Diğer imalat sanayi	6
İzabe ve hadde sanayi	2
Elektrik sanayi	18
Elektronik sanayi	17
Plastik sanayi	16
Alüminyum sanayi	2
Asansör ve akümülatör sanayi	4
Elektrikli ev aletleri ve dayanıklı	6
Diğer	32
Toplam firma sayısı	**332**

Kuramsal çalışmalara koşut olarak görgül araştırmalar sürdürülmüş ve yerel ve küresel bağlantıların yerelde kümelenmiş firmaların verimliliklerine etkilerini belirlemek üzere bir önceki dönemde başlatılan anket çalışmaları tamamlanmıştır.

Tablo 4: Ankara anket çalışmasının kapsamı

	ANKARA	
	sayı	%
Tamamlanan anket sayısı	72	22,3
Ulaşılamayan firma sayısı	103	31,0
Yanıt vermeyen firma sayısı	142	42,8
Eksik bilgi nedeni ile değerlendirlmeyen anketler	8	2,4
Tutarsız bilgi nedeni ile değerlendirlmeyen anketler	5	1,5
Toplam	*332*	*100*

C. ÇORUM'DA YAPILAN ÇALIŞMALAR

Bu proje öncesinde 1997 yılının Ağustos ayında Dünya Bankasının mali desteği ile Çorum'da bir alan araştırma çalışması yapılmıştır. Seçilen 69 firmayı kapsayan bu araştırma, Çorum'daki sanayi yapısının genel özellikleri hakkında bilgi sağlamıştır. Araştırma kapsamında seçilen firmalar arasında metal ürünleri, makine ve teçhizat sanayi (30 firma), tuğla ve kiremit üretimi (14 firma), tekstil ve giyim üretimi (7 firma) bulunmaktadır. Bu kapsamda yapılan çalışmalar çeşitli betimleyici veya sanayi odaklarının genel özelliklerinin tartışıldığı 2002 yılında basılan "Yeni Sanayi Odakları: Yerel Kalkınmanın Yeniden Kavramsallaştırılması" (METU: Ankara) kitabında yer almıştır

2001 yılının Haziran ayında yine aynı firmalara anket yollanmış ve arasından bir seçim yapılarak beş yıllık dönemdeki değişimler derinlemesine çalışmalarla tanımlanmaya ve özellikle 1997 bunalımı sonrasında yörenin gelişim çizgisi belirlenmeye çalışılmıştır.

Tablo 5: Çorum'da üretim sektörlerine göre anket yollanan firma sayıları

	Toplam firma sayısı	Seçilmiş sektörlerdeki firma sayısı	Anket gönderilen firma sayısı	Derinleme görüşme yapılan firma sayısı
Çorum	217	181	69	12

D. YEREL ARAŞTIRMALARDAN ELDE EDİLEN SONUÇLARIN DEĞERLENDİRİLMESİ

Yukarıda sunulan bilgilerin gösterdiği gibi, araştırmanın ilk basamağında Ankara, Denizli ve Çorum'da yer alan 400'e yakın firmaya anket önce posta yolu ile daha sonra internet ile

gönderilmiş ve geriye dönüşlerinin sağlanması için telefonla anketler takip edilmiştir. Ancak, yine de geriye dönüşlerin az olması nedeni ile yüzyüze görüşlerle örnek sayısı artırılmaya çalışılmıştır. Tüm çalışmaların sonunda ulaşılan anket sayısı 160'tır. Ancak bunlardan bir bölümünün eksik bilgi içermesi nedeni ancak 134 tanesinin kullanımı mümkün olmuştur.

- Projenin bu aşamasında yerel ve küresel bağlantıların yerelde kümelenmiş firmaların verimliliklerine etkilerini belirlemek üzere gerçekleştirlen anet çalışmalarının istatistiksel değerlendirmeleri yapılmış ve ekonometrik çalışmalar gerçekleştirilmiştir. Ekonometrik çalışmalar COST programında öngörülen ortak çalışmalara koşut olarak Cambridge üniversitesinden Prof. Dr. Bernard Fingleton ile birlikte gerçekleştirlmiştir. Raporun gelişme bölümünde özetlenen bu çalışmalar aşağıdaismi verilen ve ekte sunulan yayında ayrıntılı olarak tanımlanmaktadır.

Eraydın, A. ve Fingleton, B., 2005, "Networks relations and local economic development: some causes of differentiated network structures and intensities among Turkish industrial firms" ***Environment and Planning A*** yayınlanıyor

Derlenen bilgi yine raporun gelişme bölümünde özetlenen sanayi odaklarında yenilikçilik ve ağsal ilişkileri ve bunların birbiri üzerinde yarattığı ilişkileri istatistiksel yöntemlerle araştırılması gerçekleştirilmiştir. Yapılan çalışmaların ve bulgular ise ekte sunulan aşağıdaki makalede yayınlanmıştır.

Eraydın, A. Armatlı-Köroğlu, B., 2005, Innovation, Networking and the New Industrial Clusters: the Characteristics of Networks and Local Innovation Capabilities in the Turkish Industrial Clusters, ***Entrepreneurship and Regional Development,*** 17, Temmuz, 237-266

Üçüncü olarak anket çalışmalarından elde edilen sanayi odaklarındaki firmaların farklı nitelikte ve ölçeklerdeki hizmet birimleri ile ilişkilerine yönelik bilgiler ise aşağıda ismi verilen ve ekte sunulan makalede değerlendirilmiştir. Bu raporun gelişme bölümünde bu çalışmanın geniş bir özeti verilmektedir.

Eraydın, A. Armatlı-Köroğlu, B., 2005, Globalisation and diversification of producer services: Increasing role of services in competitive power and innovativeness of firms and industrial clusters, ***European Planning Studies,*** (değerlendiriliyor).

II. YAPILAN ÇALIŞMALAR ve ORTAYA ÇIKAN BULGULAR

Son otuz yılın gelişmeleri yepyeni bir içerik ve anlayış ile geçmişte ulus devletin alt birimi olarak tanımlanan, bugün ise küresel sistemin bir parçası olarak da işlev kazanan bölge ve yereli gündeme getirmektedir. Bu yeni gündemde bölge ve yöreler büyüme ve kalkınma süreçlerinin yeni birimleri olarak ulus devletin de önüne geçmekte ve kalkınma amaçlı bir sürecin başlatılması ve sürdürülmesi için ne yapılabilir soruları bu ölçeklerde yanıtlanmaya çalışılmaktadır. Bu durum ulus devletin kalkınma süreci içindeki işlev ve görevlerinin tümüyle ortadan kalkması anlamına gelmese de, bölge ve yöreler eski edilgen kimliklerinden sıyrılarak kendi kapasiteleri, birikimleri ve kimlikleri ile dünya içinde var olmaya çalışmaktadırlar. Son dönemdeki kuramsal tartışmalar bazı yörelerde gerçekleşen gelişmelerin ve sağlanan hızlı kalkınma süreçlerinin irdelenmesi ile ortaya çıkmış ve yeni örnekler tartışmaların zenginleşmesini sağlamıştır. Doğal olarak gelişme öyküleri ve bunların ardındaki dinamikler farklıdır. Geçmişten gelen birikim ve yöreye özgü nitelikler önemli farklılıklar yaratmaktadır. Ancak, günümüzdeki gelişme sürecinin bu farklılıkların ortadan kaldırılması yerine bu farklılıkların yardımıyla yeni oluşan ekonomik sistem içinde yer alma üzerine kurgulanması geçmiş dönemden en önemli farkı yaratmaktadır. Genel geçer ve tepeden çözümler yerine ana kavramların yöresel niteliklere göre irdelendiği bir çerçeve ortaya çıkmaktadır.

Yukarıda kısaca özetlenen mekansal gelişmeye yönelik kavramsal tartışmalar dünyadaki bazı alanlardaki gelişmelerin gözlenmesine dayalıdır. Son yıllarda genel kalkınma kavramına ilginin sönük olduğu, buna karşılık kent ve bölge ölçeğindeki çok canlı tartışmaların kalkınma yazınının yeni gündemini oluşturduğu görülmektedir. Özellikle *"yeni gelişme odakları"* veya *"yeni sanayi oakları"* olarak adlandırılan mekansal birimlerin gelişme deneyimleri üzerinde en fazla durulan konuların başında gelmektedir.

"Yeni sanayi odakları" nedir? Öncelikle bu bölgeler geçmiş dönemin göreli olarak az gelişmiş alanları olup, bu azgelişmiş alanlar 1980 sonrasında hızlı bir gelişme süreci ile dış piyasalara ulaşmışlardır (Piore ve Sabel,1984; Amin,1989; Pyke, Beccatini ve Senberger,1990; Storper, 1993). Hızla artan refah düzeyi ve artan rekabet gücü bu bölgelerin ilgi çekmesinin ana nedenidir.

1970 öncesi egemen olan bölgesel kalkınma paradigmalarına göre gelişmeleri ancak kamu desteği ve kaynak transferi ile mümkün olabilecek az gelişmiş bölgelerin kısa bir süre içinde ve ulusal sınırlar ötesinde başarılı olması tüm geçmiş söylemleri değiştirecek ölçüde önemli olup, yerel ekonomik gelişme konusunun artan şekilde gündeme gelmesini nedenlemiştir. Aynı zamanda bu gelişme dünyada ulusal sınırların aşındığı ve ulusal kalkınma tartışmalarının bittiği bir dönemde yeni bir kalkınma modeli olma özelliği göstermektedir.

Projenin amacı Türkiye'de son dönemde sanayi odakları olarak tanımlanan merkezlerdeki sanayi yapısının, üretim örgütlenmesinin, toplumsal yapının ve ilişkilerin, kurumsallaşma ve üretim brimleri arasındaki ilişkilerin incelenerek, "başarı faktörlerinin" tanımlanması, bu faktörlerin dünyadaki değişik odaklardan elde edilen bilgilerle karşılaştırılması ve bu konuda dünyada geliştirilmeye çalışılan yeni bölgesel gelişme kuramına ve uygulamalarına katkı sağlanması olarak saptanmış ve çalışmalar bu amacı gerçekleştirmeye yönelik olarak tasarlanmıştır.

"*Sanayi Odakları Deneyimine Dayalı Olarak Bölgesel Gelişme Kuram ve Politikalarının Yeniden Tanımlanması*"nı amaçlayan bu projenin önceki bölümde özetlenen araştırmalar sonucu derlenen verilere dayalı olarak gerçekleştirdiği çalışmalar, elde edilen bulgular ve bunların kuramsal açıdan değerlendirilmesi bu bölümde sunulmaktadır. Tüm bu araştırmalar ekte verilen yayınlarda ayrıntılı olarak tartışıldığı için burada özellikle sonuçların değerlendirilmesi yapılacaktır. Bu proje çalışmasında ortaya çıkan bulguların sanayi odakları ve bölgesel gelişme yazınına sağladığı katkılar ise rapor sonunda özetlenecektir.

2.1. AVRUPA'DAKİ SANAYİ ODAKLARININ BÖLGESEL GELİŞME YAZININDA ÖNE ÇIKAN ÇERÇEVE İÇİNDE DEĞERLENDİRİLMESİ

Daha önce değinildiği gibi araştırmanın ilk aşamasını Avrupadaki sanayi odaklarına ilişkin yapılan çalışmalar oluşturmuştur.

Araştırmanın Dayandığı Kuramsal Çerçeve ve Gerekçesi

Geleneksel bölgesel gelişme politikalarının 1970'lerdeki bunalımının ardından bölgesel gelişmenin yeni bileşenlerini ve boyutlarını tanımlamaya yönelik çabalar sürmektedir. İçsel Kalkınma Modelleri yanısıra yığılma/kümelenme kavramı üzerinde odaklanan mekansal gelişme kuramları oluşturulmaya çalışılmaktadır. Bu tartışmalar çerçevesinde özellikle "sanayi odakları" öne çıkmaktadır.

Sanayi odakları tartışması, 1970'de yaşanan bunalım koşullarının üstesinden gelebilmek için gündeme gelen, esneklik ve esnek üretim örgütlenmesi kavramlarına dayalı olarak gelişen ve ekonomik ve toplumsal yapıdaki dönüşümleri üretim süreçleri ve üretim ilişkileri ile tanımlamaya çalışan esnek uzmanlaşma paradigmasının bir uzantısıdır. Bu yeni kavramsal çerçeveye göre yeni üretim örgütlenmesinin geçmiş dönemde öne çıkan yöre ve merkezler dışında yeni mekan arayışları söz konusu olup, bu yeni üretim mekanlarından biri *sanayi odaklarıdır*.

Sanayi odaklarının iki önemli özelliği bu gelişme merkezlerini diğerlerinden ayırdetmektedir. Bunlardan ilki yerel düzlemde gerçekleşen üretimin uluslararası piyasalara yönelimi ve rekabet gücüne erişmesi, ikincisi ise yenilikçilik-yaratıcılık kapasitesidir (Eraydın, 1988). Bu ögeler belirli yörelerde görülen küçük sanayi kümelenmeleri ile sanayi odakları arasındaki en önemli farkı oluşturmaktadır. Bu bölgelerin en önemli nitelikleri üretim örgütlenmelerine ilişkindir. Sanayi odakları belirli konularda uzmanlaşmış, birbirleri ile üretim ilişkileri yoğun ve özel ürün türlerine yönelik sanayilerin sağladığı ivme ile gelişen mekansal birimler olarak tanımlanmaktadır (Park ve Markusen,1995; Mouleart, Swyngedouw ve Wilson, 1988).

Bu yörelerdeki üretimin ana nitelikleri küçük ve orta ölçekli sanayi birimlerinin egemen olması (Piore ve Sabel, 1984), belirli bir sektörde uzmanlaşma (Beccatini, 1989 ve 1990; Pyke ve Senberger, 1991), firmalar arası dayanışma ağları (Harrison,1992), kaliteye dayalı bir rekabet ortamı (Pyke ve Senberger, 1991; Brusco,1990) ve bu yolla ulaşılan ortak verimlilik artışı (Schmitz 1990) ile fason ilişkilerin yoğunluğudur. Öte yandan, üretim örgütlenmesi, ortak öğrenme ve dayanışma yolu ile yenilikçiliği desteklemekte ve bu durum firmalara olduğu kadar, o yörenin bir bütün olarak gelişmesine olanak sağlamaktadır. Doğal olarak bu üretim örgütlenmesinin ve yenilikçilik faaliyetlerinin gelişmesi ancak insan sermayesinin gelişmiş olduğu yörelerde mümkün olabilmektedir.

Araştırmanın Amacı:

Bu aşamadaki çalışmaların amacı bölgelerin rekabet gücünün tanımlanmasında kullanılan yığılma/kümelenme, buluşçuluk ve insan sermayesi gibi faktörlerin öne çıktığı sanayi

odaklarının incelenerek hem bölgesel gelişme kuramları hem de içsel kalkınma modelleri açısından tartışılmasıdır.

Yapılan Çalışmalar

Yapılan görgül çalışmaların ilk bölümünde amaç "KOBİ'ler ağırlıklı olduğu sanayi odaklarının bulunduğu bölgelerin gelişme performanslarının büyük firma ağırlıklı olduğu bölgelerden daha fazla olup olmadığının araştırılması" olarak belirlenmiştir. İkinci bölümde ise hangi tür bölgelerin yaratıcılıklarının daha fazla olduğu belirlenmiş, en son bölümünde ise Avrupa bölgelerinin gelişme performanslarını etkileyen faktörler tanımlanmıştır. Avrupa Birliğindeki her bölge için KOBİ'lerle ilgili yeterli ve ayrıntılı bilginin bulunamaması nedeniyle bu çalışmada 5 Avrupa ülkesindeki (Belgium, Italy, Spain, Portugal and France) 74 bölgeye ilişkin veri kullanılmıştır.

1. Betimsel çalışmalar

Betimsel çalışmaların ilki KOBİ'ler ve bölgesel gelişme arasındaki ilişkinin tanımlanmasına yöneliktir. İkincisi ise, KOBİ'lerin sanayi içindeki ağırlığı/payı ile yenilikçilik arasındaki ilişkinin araştırılmasıdır.

2. Ekonometrik çalışmalar

Ekonometrik çalışmalar betimsel çalışmalarda elde edilen bulguların derinleştirilerek "hangi özelliklere sahip bölgeler diğerlerinden daha hızlı bir gelişme gösteriyorlar?" sorusuna yanıt aranmıştır.

Bu amaçla sanayi odaklarına ilişkin kuramsal tartışmalardan yararlanılarak bölgelerin özelliklerini belirten bağımsız değişkenler tanımlanmış ve bu bu bağımsız değişkenler ile bölgesel gelir artış oranının bağımlı değişken olduğu 4 farklı çoklu doğrusal regresyon modeli belirlenmiştir. Bağımsız değişkenler yakınsama, yığılma, yenilikçilik ve öğrenme, insan sermayesi, yerel işgücü ve ulusal gelişme dinamiklerini tanımlayan değişkenlerdir. Yapılan çalışmaların ayrıntısı, kullanılan ekonometrik modeller ve değişkenler aşağıda ismi verilen ve ekte sunulan kitap bölümünde ayrıntılı olarak sunulmaktadır.

- Eraydın, A., 2003, "Dynamics and Agents of Regional Growth: The Performance of SME Clusters in Europe" *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

Bulgular: Görgül bulgular ve kuramsal açıklamalar

Yukarıda kısaca özetlenen görgül çalışmalardan kaynaklanan önemli bulgular vardır. Bu bulgular bölgesel gelişme konusunda sürmekte olan tartışmalara katkıda bulunmaktadır.

- İlk olarak Avrupa'daki bölgelerde KOBİ'lerin payı ile bu bölgelerdeki gelir artış oranları arasında istatistiksel açıdan anlamlı ve olumlu bir ilişki saptanmıştır. Bu bulgu KOBİ'lerin ağırlıklı olduğu sanayi odaklarının diğer bölgelere göre daha başarılı olduğunu göstermektedir. Bu başarı KOBİ'lerinin birlikteliklerinin ve ilişkilerinin sağladıkları dışsallıkların önemli olduğunu göstermektedir. Bu tür betimleme çalışmaları, doğal olarak

bu bölgelerin başarılarının nedenleri konusunda yeterli bilgi sağlamamakta, ancak bu konudaki araştırma gereksinimini ortaya koymaktadır.

- İkinci olarak KOBİ'lerin öne çıktığı sanayi odaklarının yenilikçilik açısından irdelenmesi yapılmıştır. Bölgelere göre patent sayıları kullanılarak yapılan çalışmalar KOBİ'lerin ağırlıklı olduğu bölgelerin yenilikçilik açısından performanslarının iyi olmadığını göstermiştir. Küçük ve orta ölçekli firmaların patent için harcama yapmakta zorlanmaları nedeniyle patent sayılarının yenilikçiliği tam olarak yansıtmadığını söylenebilir. Bu nedenle bu aşamada elde edilen bulgular ihtiyatlı bir şekilde değerlendirilmiştir. Nitekim, araştırmanın sonraki aşamalarında yenilikçilik daha farklı şekilde ve geniş kapsamlı olarak tanımlanmıştır.

- Üçüncü olarak bu çalışmada bölgelerin performanlarını belirleyen faktörler tanımlanmaya çalışılmıştır. Mevcut kuramsal tartışmaların doğrultusunda yapılan çalışmaların bulguları;

  a. Bölgelerin arasında yakınsama sürecinin yaşandığını
  b. Bu yakınsama sürecinde insan sermayesi ve bunu destekleyen AR-GE harcamalarının önemli olduğunu,
  c. Büyüme sürecinde yığılmanın ve yüksek etkinlik düzeyinin önem kazandığını,
  d. Buna karşılık yüksek işssizlik oranının bölgesel gelişme performansını olumsuz etkilediğini göstermektedir.

Bu çalışmanın sonuçları kuramsal tartışmaların irdelenmesinde ülkeler ve bölgeler arası karşılaştırmanın önemli olduğunu göstermektedir. Mevcut yazında kantitatif çalışmaların artmasına karşılık, betimsel çalışmaların ağırlık kazandığı görülmektedir. (Cheshire and Magrini, 2000; Martin, 1998; Rodriquez-Pose, 1998). Gelişmenin dinamiklerini kavramakta yararlı olan bu çalışmaların, bölgelere özel koşulları ön plana çıkarmaları nedeniyle diğer bölgeler için geçerli olmayan bazı faktörlere vurgu yaptıkları da görülmektedir. Bu nedenle, bu araştırma da olduğu gibi kavramsal çalışmalarda öne çıkan varsayımların kantitatif yöntemlerin yardımıyla irdelenmesi gerekmektedir. Yukarıda verilen sonuçlardan izlenebileceği gibi bazı bulgular kuramsal tartışmaları desteklerken, diğerleri bu tartışmalara yeterli görgül desteği sunamamaktadır. Bu saptamalar projenin sonraki aşamalarında izlenen ana yaklaşımı ve yöntemlerini etkilemiş ve betimsel çalışmalarla kantitatif çalışmaları bir araya getiren ve daha fazla genellemelere olanak sağlayan bir yaklaşım benimsenmiştir.

2.2. TÜRKİYE'DEKİ SANAYİ ODAKLARININ KURAMSAL TARTIŞMALARDA ÖNE SÜRÜLEN NİTELİKLER AÇISINDAN DEĞERLENDIRILMESİ VE SANAYİ ODAKLARININ GELİŞİMİNİ BELİRLEYEN FAKTÖRLERİN ARAŞTIRILMASI

Araştırma projesinin ikinci aşamasını Türkiye'deki sanayi odaklarına ilişkin yapılan betimleme ve kantitatif analiz içerikli çalışmalar oluşturmuştur.

Araştırmanın Dayandığı Kuramsal Çerçeve

Neden son dönemdeki yazın sanayi odaklarını büyüme ve yenilikçilik alanları olarak tanımlıyor? Mevcut yazındaki temel hipotez "sanayi odakları sadece firmalar için değil, tüm o sanayi odağındaki aktörler için dışsallıkların sağladığı mekansal birimler olup, farklı mekanlarda oluşan dışsallıklar, bu mekansal birimlerin hızlı büyüme ve yenilikçilik kapasitesinin yüksek olmasını sağlar" şeklindedir. Bu bağlamda şekillenen tartışmalar ise sanayi odaklarının dört ana niteliğini vurgulamaktadır. Dışsallıklar, bilginin yayılımı, yenilikçilik ve küresel piyasalara eklemlenme.

Ancak görgül bir araştırmanın gerçekleştirilebilmesi için özellikleri belirtilen sanayi odaklarının nasıl ve hangi yöntemle tanımlanacağının belirlenmesi gerekmektedir. Bu amaçla yapılan yazın taraması hem tanımların, hem de yöntemlerin farklılık gösterdiğini ortaya çıkarmıştır. Bu tartışmalar ayrıntılı olarak aşağıda ismi verilen makalede sunulmuştur. Bu yazı ekte sunulmaktadır.

- Eraydın, A., 2005, "The role of SME clusters on Regional Economic Growth and Innovation" Paper presented "Knowledge and Regional Economic Development" Open Conference 2005, June 9-11 Barcelona Spain (yayına hazırlanma aşamasında)

Amaç

Bu çalışmanın iki amacı vardır. İlk amaç sanayi odaklarının gerçekten yazında konu edildiği gibi hızla büyüyen, refah düzeyi artan ve yenilikçilik kapasitesi yüksek alanlar olup olmadığının belirlenmesi, diğer bir deyişle sanayi odakları ile belirli sanayi kollarında yığılmalarının olmadığı bölgeler arasında büyüme hızı ve yenilikçilik açısından büyük bir fark olup olmadığının tanımlanması olarak belirlenmiştir.

Çalışmanın ikinci amacı ise, sanayi odaklarının büyüme hızı ve yenilikçilik kapasitesinin belirleyen faktörlerin araştırılması ve bu faktörlerin sanayi odakları ve sanayi odağı olmayan bölgelerde farklı olup olmadığının belirlenmesidir.

Bu amaçları gerçekleştirmek için;

- Öncelikle mevcut yazında sanayi odaklarının büyüme performansı ile yenilikçilik kapasitesini hangi faktörlerin belirlediği konusunda bir değerlendirme yapılmış ve sonrasında kuramsal tartışmaları irdelemede hangi değişkenlerin öne çıktığı saptanmıştır.

- Böyle bir tartışmada doğal olarak sanayi odaklarının nasıl bir yöntemle tanımlandığı önem kazanmaktadır. Bu nedenle ikinci aşamada sanayi odaklarının tanımlamasına yönelik yöntemler üzerinde durulmuştur.

- Üçüncü aşama görgül araştırma ile ilgilidir. Türkiye'deki tüm sanayi odaklarının belirlenmiş ve sanayi odaklarınının büyüme dinamikleri ve yenilikçilik düzeylerini belirleyen faktörler saptanarak bunlar sanayi odaklarının yer almadığı illerle karşılaştırılarak tartışılmıştır.

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- Üçüncü aşama görgül araştırma ile ilgilidir. Türkiye'deki tüm sanayi odaklarının belirlenmiş ve sanayi odaklarınının büyüme dinamikleri ve yenilikçilik düzeylerini belirleyen faktörler saptanarak bunlar sanayi odaklarının yer almadığı illerle karşılaştırılarak tartışılmıştır.

Araştırmanın Dayandığı Kuramsal Çerçeve

Neden son dönemdeki yazın sanayi odaklarını büyüme ve yenilikçilik alanları olarak tanımlıyor? Mevcut yazındaki temel hipotez "sanayi odakları sadece firmalar için değil, tüm o sanayi odağındaki aktörler için dışsallıkların sağladığı mekansal birimler olup, farklı mekanlarda oluşan dışsallıklar, bu mekansal birimlerin hızlı büyüme ve yenilikçilik kapasitesinin yüksek olmasını sağlar" şeklindedir. Bu bağlamda şekillenen tartışmalar ise sanayi odaklarının dört ana niteliğini vurgulamaktadır. Dışsallıklar, bilginin yayılımı, yenilikçilik ve küresel piyasalara eklemlenme.

Ancak görgül bir araştırmanın gerçekleştirilebilmesi için özellikleri belirtilen sanayi odaklarının nasıl ve hangi yöntemle tanımlanacağının belirlenmesi gerekmektedir. Bu amaçla yapılan yazın taraması hem tanımların, hem de yöntemlerin farklılık gösterdiğini ortaya çıkarmıştır. Bu tartışmalar ayrıntılı olarak aşağıda ismi verilen makalede sunulmuştur. Bu yazı ekte sunulmaktadır.

- Eraydın, A., 2005, "The role of SME clusters on Regional Economic Growth and Innovation" Paper presented "Knowledge and Regional Economic Development" Open Conference 2005, June 9-11 Barcelona Spain (yayına hazırlanma aşamasında)

Amaç

Bu çalışmanın iki amacı vardır. İlk amaç sanayi odaklarının gerçekten yazında konu edildiği gibi hızla büyüyen, refah düzeyi artan ve yenilikçilik kapasitesi yüksek alanlar olup olmadığının belirlenmesi, diğer bir deyişle sanayi odakları ile belirli sanayi kollarında yığılmalarının olmadığı bölgeler arasında büyüme hızı ve yenilikçilik açısından büyük bir fark olup olmadığının tanımlanması olarak belirlenmiştir.

Çalışmanın ikinci amacı ise, sanayi odaklarının büyüme hızı ve yenilikçilik kapasitesinin belirleyen faktörlerin araştırılması ve bu faktörlerin sanayi odakları ve sanayi odağı olmayan bölgelerde farklı olup olmadığının belirlenmesidir.

Bu amaçları gerçekleştirmek için;

- Öncelikle mevcut yazında sanayi odaklarının büyüme performansı ile yenilikçilik kapasitesini hangi faktörlerin belirlediği konusunda bir değerlendirme yapılmış ve sonrasında kuramsal tartışmaları irdelemede hangi değişkenlerin öne çıktığı saptanmıştır.

- Böyle bir tartışmada doğal olarak sanayi odaklarının nasıl bir yöntemle tanımlandığı önem kazanmaktadır. Bu nedenle ikinci aşamada sanayi odaklarının tanımlamasına yönelik yöntemler üzerinde durulmuştur.

- Üçüncü aşama görgül araştırma ile ilgilidir. Türkiye'deki tüm sanayi odaklarının belirlenmiş ve sanayi odaklarınının büyüme dinamikleri ve yenilikçilik düzeylerini belirleyen faktörler saptanarak bunlar sanayi odaklarının yer almadığı illerle karşılaştırılarak tartışılmıştır.

Görgül araştırmalar

- İlk aşamada Öz (2004)'ün sanayi yığılması ve rekabet gücüne dayalı olarak yaptığı saptamalar esas olarak alınarak Türkiye'deki sanayi odakları tanımlanmıştır. Saptanan bu sanayi odaklarının gelir düzeyleri ve büyüme hızları açısından Türkiye'deki diğer iller arasındaki konumu belirlenmiştir. Elde edilen bulgular ilginçtir. Bu bulgulara göre;

    1. Sanayi odakları olarak adlandırılan bazı illerdeki kişi başına gelir düzeyinin diğer illerden daha yüksek olmadığı ortaya çıkmıştır.

    2. Sanayi odakları arasında kişi başına gelir artış hızının farklı olduğu ortaya çıkmış, daha da ötesi bunların bir bölümünün Türkiye ortalamasının altında büyüme hızına sahip oldukları belirlenmiştir.

- İkinci aşamada tanımlanan 10 sanayi odağı ile geriye kalan 70 ilin (toplam 80 ile esas alınmıştır) hangi temel özellikleri bakımından önemli farklılıklar gösterdiği belirlenmiştir.

    1. Bu amaçla dört başlık altında 53 değişken kullanılarak Levene'nin ortalamadan sapmaların ve ortalamaların eşitliğini sınamak için geliştirdiği t-testi (Levene's Test for Equality of Variances and t-test for Equality of Means) kullanılarak sanayi odakları ile sanayi odağı bulunmayan illerin hangi değişkenler açısından istatistiksel olarak anlamlı farkları olduğu saptanmıştır. Bu dört başlık YIĞILMA ETKİLERİ, İNSAN SERMAYESİ VE YENİLİKÇİLİK, KURUMSAL VE ÖRGÜTLENME KAPASİTESİ, MALİ, SOSYAL VE TEKNİK HİZMETLER olarak belirlenmiştir.

    2. Analizler sonucu elde edilen bulgulara göre sanayi odakları ile diğer grubun arasındaki en önemli farklar üretim yapısının özelliklerine ilişkin olan fason iş yapma, çeşitlenme düzeyi ve pazarlama olanakları konularındadır. İnsan sermayesi ile ilgili değişkenler istatistik açıdan önemli olmazken göç, nüfus artışı ve orta öğrenimdeki öğrenci sayısı açısından iki grubun farklılık gösterdiği ortaya çıkmaktadır. Yaşam kalitesi göstergeleri arasında sadece araba sahipliliğinde önemli fark saptanmıştır.

- Üçüncü aşamada sanayi odakları ile odak olmayan alanlar arasında büyümeyi belirleyen faktörlerin farklı olup olmadığı araştırılmıştır. Elde edilen bulgular şöyledir.

    1. Sanayi odaklarında büyümeyi hızını belirleyen iki faktör vardır: GÖÇ ve YENİ KURULAN FİRMA SAYISI

    2. Buna karşılık sanayi odaklarının yer almadığı illerde büyümeyi açıklayan değişkenler KOBİ'lerin oranı, ildeki Sivil Toplum Kuruluşları, Kamu Yatırımları ve Aktif Nüfusun payı olup, bunlardan KOBİ'lerin payı olumsuz, diğerleri ise büyüme ile doğru yönde ilişkilidir.

- Dördüncü aşamada sanayi odakları ile odak olmayan alanlar arasında yenilikçiliği belirleyen faktörlerin farklı olup olmadığı araştırılmıştır.

    1. Yapılan çalışmalar sanayi odaklarının da yenlikçilik kapasitesinin farklı olduğunu göstermektedir.

    2. Hangi faktörlerin sanayi odaklarının yenilikçilik düzeyini açıkladığı araştırıldığında şu değişkenlerin sanayi odaklarının yenilikçilik düzeyini açıkladığı ortaya çıkmıştır: KOBİ'lerin oranı, Fason İş Yapılan Firma Sayısı, Dışsatım Oranı, Yeni Firmaların Toplam İçindeki Oranı, Teknik ve Yüksek Eğitimdeki Öğrenci Sayısı ve AR-GE desteği kullanan firmaların sayısı. Bulguların ilginç bir özelliği KOBİ'lerin oranı ile Dışsatım oranı'nın eksi işaretli olmasıdır. Bu durum Türkiye'de KOBİ'lerin hem yenilikçilik açısından yetersiz olması, dışsatıma konu olan malların ise teknolojik değil, emek yoğun mal gruplarında yoğunlaşmasından kaynaklanmaktadır.

    3. Sanayi odağı olmayan illerdeki yenilikçilik kapasitesini/patent sayısını açıklayan değişkenler ise oldukça farklıdır. Açıklayıcılığı en fazla olan model iki değişkenden oluşmaktadır Akademik personel sayısı ve orta öğrenimdeki öğrenci sayısı. İlk değişkenin artı işaretli olması üniversite-yenilikçilik konusunda olumlu bir ipucu vermektedir.

Sonuç olarak;

- Mevcut yazında sanayi odaklarına yönelik çalışmaların pek çoğu betimsel çalışmalar olup, benzer şekilde Türkiye'deki sanayi odaklarının gelişme dinamiklerini karşılaştıran araştırma bulunmamaktadır. Bunun bir nedeni de bilgi eksikliği ve elde edilebilen bilginin niteliğidir.

- Bu eksikliği gidermek üzere bu projede çalışmasında kantitatif yöntemler kullanılarak sanayi odaklarının özelliklerinin, büyüme ve yenilikçilik kapasitelerinin diğer mekansal birimlerden farklı olup olmadığı araştırılmıştır. Elde edilen bulgular büyüme hızı ve yenilikçilik göstergeleri açısından sanayi odaklarının kendi içlerinde farklılık gösterdiği ve sanayi odağı olmayan illerle sanayi odakları arasında anlamlı bir farklılık olmadığını göstermektedir. Büyüme oranlarını açıklayan göstergeler hala nüfus dinamiklerinin büyüme üzerinde önemli olduğunu göstermektedir. Hızlı nüfus artışı ve göç kişi başına gelirin artışını olumsuz etkilemektedir. Öte yandan, yenilikçiliği açıklayan değişkenler kuramsal tartışmalarla tutarlıdır. İnsan sermayesi ve yığılmadan kaynaklanan dışsallıkların yenilikçiliği açıkladığı görülmektedir.

2.3. SANAYİ ODAKLARI ÜZERİNE BETİMLEYİCİ ÇALIŞMALARIN ÜZERİNDE DURDUĞU KONULAR

Sanayi odakları üzerine betimleyici çalışmaların üzerinde durduğu konular arasında ekonomik büyümede KOBİ'lerin oynadığı rol önemli bir yere sahiptir. Betimleyici çalışmalarda yeni sanayi odaklarının önemli ortak noktaları; başarılarının büyük oranda geleneksel sektörlerde uzmanlaşmış KOBİ'lere, yüksek ihracat oranlarına, yerel dayanışma ve güven ortamına dayanması olarak tanımlanmaktadır.

Araştırmanın kuramsal çerçevesi

Son dönemdeki tartışmalarda KOBİ'ler ekonomik büyümenin lider aktörleri olarak tanımlanmaktadır. Çalışmanın kuramsal çerçevesini sanayi odakları modeli oluşturmaktadır. Bu modelde, KOBİ'ler işgücü yaratma kapasiteleri ve esnek üretim ilişkileri ile ekonomik büyümenin temel aktörleri olarak görülmektedir. Bu çalışmada ise, KOBİ'lerin önemli bir rol üstlendiği değişen piyasa koşullarına uyum süreci sanayi bölgeleri kuramı çerçevesinde ele alınmış ve tartışılmıştır.

Araştırmanın amacı

Yeni sanayi odakları arasında dokuma ve hazır giyim sektöründe uzmanlaşmış olan Denizli işgücündeki artış, dışsatım oranları göz önünde bulundurulduğunda lider konumdadır. Bu kapsamda bu proje çalışmasında, son 20 yılda dokuma ve hazır giyime dayalı önemli bir gelişme yaşayan, Denizli'de bölgesel büyüme sürecinde KOBİ'lerin oynadığı rol ve zaman içinde KOBİ'lerin değişen konumunun araştırılması amaçlanmıştır. Yörede bölgesel gelişme sürecinde üretim kapasitesi yüksek büyük firmaların ortaya çıkmasının yerel dayanışma ve ortaklığı ne şekilde etkilediği, küçük ve büyük firmalar arasında gücün nasıl bölüşüldüğü önemli araştırma soruları olarak saptanmıştır.

Alan araştırması ve temel yaklaşım:

Denizli'nin bölgesel gelişme sürecini ve bu süreçte KOBİ''erin değişen rolünü araştıran alan araştırması Temmuz 2002'de gerçekleştirilmiştir. Alan araştırmasında ekonomik gelişme sürecindeki kilit kişi ve kurumlarla derinlemesine görüşmeler yapılmıştır.

Çalışma kapsamında Denizli'nin Cumhuriyetin ilk yıllarından günümüze kadar geçen süreçte bölgesel ekonomik gelişimi ve bu serüven içinde KOBİ'lerin değişen rolü ve önemi tartışılmıştır. Denizli'nin ekonomik gelişimi dört dönemde ele alınmıştır.

- İlk dönem Cumhuriyetin ilk yıllarından 1970'lerin başına kadar olan dönemdir ve Denizli'de geleneksel kolektif ortamın kurulmaya başlandığı dönem olarak nitelenmektedir.

- İkinci dönem 1970'lerin başından 1980'lere kadar geçen dönemdir ve Denizli'nin büyüme odağı olarak öne çıkmaya başladığı yıllardır.

- Üçüncü dönem 1980'ler ve 1990'ların başıdır ve bu dönem Denizli'nin küresel üretim ağlarına eklemlenmeye başladığı dönem olarak tanımlanabilir.

- Son dönem 1990'lar ve 2000'lerin ilk yıllarını kapsamaktadır ve kapitalist ilişkiler ve dışsatım patlamasının sonucu olarak Denizli'de dayanışma ilişkilerinin çözüldüğü döneme işaret etmektedir.

Araştırmadan elde edilen önemli bulgular

Çalışmada Denizli'de ekonomik gelişme süreci değerlendirilirken KOBİ'lerin rolünün ne şekilde değiştiği tanımlanan dönemlerde ele alınmıştır. Avrupa'nın teknolojik olarak gelişmiş bölgelerinde, bölgesel gelişmede KOBİ'lerin rolü işgücü yaratmaktan çok bilgi üretimine dayanmaktadır. Ancak geleneksel üretim yapan bölgeler için esneklik önem taşımaktadır ve KOBİ'ler bilgi üretiminde küresel rekabet gücüne sahip değildir. Geleneksel dokuma ve hazır giyim üretiminde uzmanlaşmış Denizli'de başarı öyküsü büyük oranda KOBİ'lere dayanmaktadır ve KOBİ'lerin tarihsel süreçte değişen rolü çalışmada şu şekilde tanımlanmaktadır.

- 1930'lar ve 1950'ler arasında KOBİ'lerin önemi ve üstünlüğü sermaye birikiminde fırsatların sınırlı olmasına dayandırılabilir. Özellikle 1930'lar olmak üzere bu dönemde dayanışma ilişkileri ve KOBİ'lerin kurmuş olduğu kooperatifler önemli bir yere sahiptir. İlk teknolojik yenilenme ve 1950'li yıllarda Sümerbank dokuma fabrikasının kurulmasıyla girişimciler sermaye birikimi yapmaya başlamıştır. Bu durum yerelde büyük firmaların oluşmasına ve üretimde söz sahibi olmalarına neden olmuştur. Bu dönemde KOBİ'ler ve büyük firmalar arasında dayanışma ilişkileri dokuma ve hazır giyim üretiminde temel yapıyı oluşturmaktadır. Bu durum KOBİ'lerin yerel büyüme sürecinde önemini koruduğunu göstermektedir.

- 1970'lerden 1980'lere kadar KOBİ'ler arasında sermaye birikimi hızlanmış ve büyük firmaların sayısı artmaya başlamıştır. Denizli'de hızlı büyüme ve sermaye birikiminin ardında KOBİ'ler arasında kurulan yerel dayanışma ve güven ortamı dikkat çekmektedir.

- 1980'lerde küresel pazarlara eklemlenme sürecinde dokuma ve hazır giyim üretiminde KOBİ'ler ve büyük firmalar ekonomik büyümeyi sürdürmede birbirini tamamlayan konumlara sahiptirler. Bu durumda KOBİ'ler ve yerel dayanışma ilişkileri önemini sürdürmektedir.

- 1990'larda Denizli dokuma ve hazır giyim üretimi ve dışsatımındaki patlama bu üretim dalının yapısında ve üretim ilişkilerindeki kurumsal yapıyı dönüşmeye zorlamıştır. Son yıllarda ise küresel eklemlenme firmaları daha kaliteli ve daha çok miktarda üretime zorlamaktadır. Bu durum KOBİ'lerle çalışmayan entegre üretim yapan büyük firmaların sayısının artmasına ve KOBİ'lerin önemini göreli olarak kaybetmesine neden olmaktadır. Ancak KOBİ'lerin esnek yapısı yerel ekonomik gelişmede yeni açılımlar yapabileceklerini ip ucunu vermektedir.

Çalışmanın bir diğer önemli sonucu Denizli'nin ekonomik gelişmesini uzun vadede dokuma

- Üçüncü dönem 1980'ler ve 1990'ların başıdır ve bu dönem Denizli'nin küresel üretim ağlarına eklemlenmeye başladığı dönem olarak tanımlanabilir.

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- 1930'lar ve 1950'ler arasında KOBİ'lerin önemi ve üstünlüğü sermaye birikiminde fırsatların sınırlı olmasına dayandırılabilir. Özellikle 1930'lar olmak üzere bu dönemde dayanışma ilişkileri ve KOBİ'lerin kurmuş olduğu kooperatifler önemli bir yere sahiptir. İlk teknolojik yenilenme ve 1950'li yıllarda Sümerbank dokuma fabrikasının kurulmasıyla girişimciler sermaye birikimi yapmaya başlamıştır. Bu durum yerelde büyük firmaların oluşmasına ve üretimde söz sahibi olmalarına neden olmuştur. Bu dönemde KOBİ'ler ve büyük firmalar arasında dayanışma ilişkileri dokuma ve hazır giyim üretiminde temel yapıyı oluşturmaktadır. Bu durum KOBİ'lerin yerel büyüme sürecinde önemini koruduğunu göstermektedir.

- 1970'lerden 1980'lere kadar KOBİ'ler arasında sermaye birikimi hızlanmış ve büyük firmaların sayısı artmaya başlamıştır. Denizli'de hızlı büyüme ve sermaye birikiminin ardında KOBİ'ler arasında kurulan yerel dayanışma ve güven ortamı dikkat çekmektedir.

- 1980'lerde küresel pazarlara eklemlenme sürecinde dokuma ve hazır giyim üretiminde KOBİ'ler ve büyük firmalar ekonomik büyümeyi sürdürmede birbirini tamamlayan konumlara sahiptirler. Bu durumda KOBİ'ler ve yerel dayanışma ilişkileri önemini sürdürmektedir.

- 1990'larda Denizli dokuma ve hazır giyim üretimi ve dışsatımındaki patlama bu üretim dalının yapısında ve üretim ilişkilerindeki kurumsal yapıyı dönüşmeye zorlamıştır. Son yıllarda ise küresel eklemlenme firmaları daha kaliteli ve daha çok miktarda üretime zorlamaktadır. Bu durum KOBİ'lerle çalışmayan entegre üretim yapan büyük firmaların sayısının artmasına ve KOBİ'lerin önemini göreli olarak kaybetmesine neden olmaktadır. Ancak KOBİ'lerin esnek yapısı yerel ekonomik gelişmede yeni açılımlar yapabileceklerini ip ucunu vermektedir.

Çalışmanın bir diğer önemli sonucu Denizli'nin ekonomik gelişmesini uzun vadede dokuma

ve hazır giyim üzerinden ne kadar sürdürebileceğinin belirsizliğidir. Denizli'nin dokuma ve hazır giyim üretimindeki birikimini kullanarak hazır giyim ve tasarım konularına eğilmesi KOBİ'lerin öneminin yeniden artmasını ve sürdürülebilir ekonomik gelişmeyi sağlaması da kuşkuludur.

Bu çalışmanın araştırma yöntemi ve bulguları EK 3'te sunulan aşağıdaki başlıklı makalede ayrıntılı olarak yer almaktadır.

- Armatlı-Köroğlu, B. and Beyhan, B., 2003, "The Changing role of SMEs in the Regional Growth Process: The Case of Denizli" *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.

2.4. SANAYİ ODAKLARININ TEMEL ÖZELLİKLERİNİN İSTATİSTİKSEL YÖNTEMLERİN YARDIMIYLA İRDELENMESİ

Bu bölümde iki farklı araştırmanın sonuçlarından söz edilecektir. Bu çalışmalar sanayi odaklarının temel özelliklerini betimlemekle yetinmemekte, aynı zamanda proje sırasında derlenen bilgileri kullanarak çeşitli modeller yardımıyla sanayi odaklarının özelleri konusundaki hipotezleri sınamaktadır.

2.4.1. Ağlarla ortaya çıkan dışsallıklar ve yerel kalkınma: Türkiye'deki sanayi odaklarındaki firmların ilişki ağlarının niteliği ve yoğunluğunu belirleyen nedenler

Araştırmanın Dayandığı Kuramsal Çerçeve

Bölgesel ekonomik kalkınma yazınında ağsal dışsallıklar önemli yer tutmaktadır (Scitovsky, 1954, Katz ve Shapiro, 1985,1986, Gordon and McCann, 2000). Bunun nedeni aşağıda sıralanan görüşlerdir:

- Ağların firmalara kazandırdığı bu dışsallıklar beraberinde bazı avantajları da getirirken; bu ağlar içinde olmak katılımcılarına marjinal katılım maaliyetlerinin üzerinde bir fayda sağlamaktadır. (Scitovsky, 1954).
- Pek çok kuramsal tartışma ağların faktör maliyetlerini azalttıkları için önemli olduğunu (Camagni ve Capello, 2000) ve ortak bir organizasyona imkan vermeleri nedeniyle belirsizlikleri ve uyum maliyetlerini azalttıklarını öne sürmektedir (DeBresson ve Amesse, 1991; de la Mothe and Paquet, 1998).

- Firmalar ve ekonomik gelişmeyi destekleyen kurumlar arasındaki ağsal ilişkiler buluşçuluğu destekleyen faaliyetler için de ön koşul olarak kabul edilmekte (Camagni, 1991; Tödling and Kaufmann, 1999; De Propris, 2002) ve bu faaliyetlerin de bölgesel gelişmenin temeli olduğuna inanılmaktadır. (Lecher and Dowling, 2000, Keeble, 2000; Maskell ve dieğrleri,1998; Storper, 1997a; 1997b; Scott, 1998).

- Bilginin paylaşımı (Asheim, 1996; Florida, 1995), ölçek ekonomilerine erişme (Fariselli, et al., 1999), etkileşimde olan birimlerin davranışlarını belirleyen kuralları belirleyen (Kogut, 2000) 'ortak öğrenme ağlarının (Amin ve Cohendet, 1999) oldukça etkili olduğu düşünülmektedir.

- Bütün bunların da üzerinde bölgeler için yüksek gelişme hızına erişmenin bölgesel kalkınma ve verimliliği sağlamada önemli etkenler olduğu sonucuna varıldığından beri birçok ulusal ve bölgesel kuruluş için bu ağ şeklindeki ilişkiler artan öneme sahip olmuştur.

Ağsal oluşumların ne denli etkili olduğunun vurgulandığı bu kuramsal bakış açısı aynı zamanda firmalar arasındaki ağsal yoğunluk derecelerinin belirlenmesinin zor ve karmaşık bir süreç olduğunu göstermektedir. Bu çalışmada firmalar arasındaki ağların yoğunluğundaki farklılıların nedenlerini iki alternatif hipotez ile araştırılmıştır. Hipotezlerden ilki, firmaya özel ekonomik ve sosyal nitelikleri hesaba katmadan yalnızca mekansal yapısı üzerinde durmaktadır. Burada öngörülen mekanizmaya göre daha büyük kentteki yüksek ağsal yoğunluklar daha fazla dışsallık etkisi yaratmakta, böylelikle daha çok ilişkileri daha yoğun firmaları teşvik ederek üretimi daha verimli hale gelmekte, bu durum da birbirini izleyen süreçler sonucunda kentin ağ yoğunluğunu arttırmaktadır. Bu yoğun ilişki yapısı firmalar için farklılaşmış ve sayıca çok ağsal oluşumlarda yer alma imkanı yaratırken; ağlara katılım ve büyüme sürecinde firmaları daha mekan bağımlı hale getirmektedir. Başka bir deyişle, sanayi odağının/mekanın nitelikleri o odaktaki firmalar arasındaki ağsal oluşumların yoğunluğu ve ağsal ilişkilerin türünü belirlemede oldukça etkilidir. Karşı hipoteze göre ise, firmanın doğası, bulunduğu sektör, büyüklüğü ve ilişkili özellikleri ile bütün bu içsel nitelikleri mekansal farklılıklarından daha önemlidir. Burada asıl konu çeşitli ağsal oluşumları bünyesinde bulunduran kent değil, firmanın doğasına bağlı olarak ağlaşma sonucunda ortaya çıkan ihtiyaç ve maliyetleridir.

Bu iki hipotez ağsal dışsallıkların oluşum nedenleri ve etkileri bakımından kesin olarak birbirinden ayrılmamakta, birbirini besleyen iki süreci tanımlamaktadır. Bu araştırmada bu iki ayrı hipotezin irdelenmesinde nitel ve nicel veriler için uygun olan 'genelleştirilmiş çoklu doğrusal model' kullanılmıştır. Bu çalışma şimdiye kadar çoğunlukla birbirinden ayrışmış olan ekonomik ve mekansal analizleri bir arada gerçekleştirmek amacıyla alan çalışmalarının ekonometrik metodlarla nasıl biraraya getirileceğini göstermektir. Bu amaçla firma düzeyine odaklanarak Türkiye'nin üç ayrı bölgesindeki bireysel girişimcilerle araştırma çalışmaları yürütülmüştür. Çokludeğişim yöntemleri kullanarak mekansal ve firmaya özel niteliklerin göreli etkileri, farklı firmalardaki ağ yoğunluğu düzeyinde incelenmiştir. Bu yöntemin kullanılması sayesinde firmanın sektörü, büyüklüğü ve istihdam özelliklerinden bağımsız olarak mekansal nitelikleri önemli ölçüde öne çıkmıştır.

Kümelenme/Odaklaşma Dışsallıkları

Sanayi Odakları yazınında temel vurgu firmanın kendisi değil, üretim örgütlenmesidir ve firma farklılaşmış yerel gelişme performanslarını anlamak açısından önemlidir. Bu konu günümüzde Fujita, Krugman ve Venables (1999) tarafından vurgulanmasına rağmen ilk Alfred Marshall'ın çalışmalarında (1920) yer almıştır. Marshall dışsal ekonomilerin üç temel kaynağı üzerinde durmuştur. Bunlar, uzmanlaşmış işgücünü kullanabilecek piyasaların varlığı, bilgi ve teknolojinin yayılımı ve tamamlayıcı ticaretin oluşumudur. Bu üç kaynağın

her biri sanayinin yığılması/kümelenmesini desteklemekte ve firmalar mekansal olarak birarada, yüksek oranda farklılaşmış ve uzmanlaşmış işgücü ile çeşitli girdiler sağlayan tedarikçilerin bulunmasından yararlanmaktadır. Bu çalışmanın en önemli odak noktası, Marshall'ın da değindiği bilgi ile ilintili olan teknolojik dışsallıklardır. Ortak üretim zinciri içinde çalışanlar yanında, firmalar ve kurumlar arası ağsal ilişkiler bilginin yayılımını sağlayan faktörler olarak öne çıkmaktadır. Modern teknolojinin sürekli olarak gelişmesine rağmen, bilgi akışının mekansal olarak kısıtlanmış olduğuna dair birçok ipucu bulunmaktadır. Birçok bilgi halen formal olarak kodlanarak paylaşılmamakta böylelikle firmalar yerel düzeyde, sözlü ilişkilere dayalı örtük bilgi paylaşımını üretimdeki verimliliğini arttırma için temel yöntem olarak görmektedirler. Bu durum dışsal bilginin önemsiz olduğu anlamına gelmemekte, tersine Breschi ve Lissoni (2001) odaklar içerisinde yerel örtük bilgiyi kodlanmış bilgiye çevirecek ve dışsal bilgi ile yeniden bir araya getirecek 'ajan'lara ihtiyaç olduğunu belirtmektedir. Teknolojik dışsallıkların önemi günümüzde sanayi odakları üzerine modeller geliştiren Krugman (1991a, 1991b), Fujita ve Thisse (1996), ve Fujita et al (1999) tarafından vurgulanmaktadır.

Sanayi odakları konusunda daha geniş bir çerçeve sunan farklı bakış açıları da vardır. Alternatif görüşlerden ilki firmanın rekabet gücünü üretim faktörleri, talep koşulları, ilgili ve destekleyici üretim firmaları, firmanın stratejisi, yapısı ve rakipleri arasındaki ilişkinin bir sonucu olarak değerlendiren Porter (1990)'a aittir. Odaklar firmanın performansını destekleyici bir niteliğe sahipken, bu durumda bilgi akışı, kurumlar, altyapı ve yetki oluşumunda etkilidir. Bu nedenle Porter (1998, p.197) odakları birbirleri ile bağlantılı şirketler, özelleşmiş tedarikçiler, ilgili sanayilerdeki firmalar ve ortak kuruluşların 'coğrafi yoğunlaşmaları' (örneğin üniversiteler, ajanslar ve ticaret ortaklıkları) olarak tanımlamıştır.

Bir diğer bakış açısı ise ağsal oluşumların temelinde yenilikçi ortam (Camagni, 1991; Lawson, 1997) kavramı üzerinde şekillenmektedir. Yenilikçi ortam ağsal ilişkiler sayesinde oluşan öğrenme süreçlerinin bir sonucudur ve bu ağlar birçok firmanın birbiri ile ve yönetim kuruluşları, üniversiteler, ticaret ortaklıkları ve araştırma merkezleri gibi farklı kurumlar arasındaki bağlantının kurulmasında etkendir. Bu ağsal oluşumların ortam hazırladığı ortak öğrenme süreci firmaların buluşculuk kapasitesi kazanmasında ve hızla gelişen teknoloji sonucu oluşan belirsizlikleri en aza indirgemede etken faktörlerden biri olabilmektedir (Keeble, 2000; Longhi, 1999).

Çalışma konusu olan üç sanayi odağına ilişkin araştırmalar

Çalışmanın ilk basamağında belirlenen üç sanayi odağından elde edinilen veriler iki farklı şekilde çözümlenmiştir. İlk olarak farklı ağsal ilişkiler özetlenmekte ve ağsal ilişkilerin karmaşa ve çeşitliliğini tanımlanırken ağların nasıl yapılandığını anlamaya yardımcı veriler ve tablolar oluşturulmuştur. Burada amaç ağsal yoğunlaşmada mekana veya firmaya özgü niteliklerden hangisinin (veya ikisinin aynı anda) etkili olduğunu anlamaya yönelik incelemeler yürütmektir. İkinci bölümde yapılan görgül çalışma ile de ağlara katılımın yoğunluğunu etkileyen çeşitli faktörler ve bunların göreli önemi ve değişen etkilerinin belirlenmesine yönelik çalışmalar yapılmıştır.

İlku bölümde seçilen 109 adet örnek firmanın ağsal ilişkileri ve büyüklük, üretim, yer aldığı mekan gibi görgül çalışmanın iki bölümüne de girdi sağlayacak özellikleri tanımlanmıştır.

Çalışılan üç 'sanayi kümesi' Eraydin, (1997,1998, 2002); Erendil, (1998); Pınarcioglu, (1998); Özcan, (1995), Varol, (2002)'un çalışmalarında bazı niteliklerine dayanılarak 'sanayi odakları' olarak tanımlanmıştır. Bunlar, küçük ve orta ölçekli sanayilerin yoğunluğu, belli alanlarda uzmanlaşma, düşeyde ayrışmış üretim biçimi, önemli sosyal ağlar, bilginin yayılımını destekleyen güven temelinde kurulmuş ilişkiler ve firmalar arası ortak faaliyetlerdir.

Seçilen firmalara yönelik araştırma dört aşamadan oluşmaktadır. İlk aşamada, her bölgenin sanayi gelişme modeli ve yapısı tanımlanmış, ikinci aşamada sanayi odaları ve girişimci birliklerinin üyeleri ile görüşmeler yapılmış, ardından alt sektörler ve ağsal ilişkileri tanımlanıp, kısa anketler yapılmış ve son aşamada rastgele seçilmiş firmalarla derinlemesine anket/görüşmeler yapılmıştır.

Ankara için firmalarla ilk görüşme sonrasında 332 adet firma seçilmiş bunlardan ağsal bağlantıları olan (networking firms) 82 tanesi derinlemesine görüşmeler için örnek firma olarak belirlenmiştir. Çorum bölgesinde 70 firma ilk görüşme için belirlenmiş, bunlardan da 12 tanesi derinlemesine anket çalışması için belirlenmiştir. Son olarak Denizli'de 270 firma içinde 15 tanesi derinlemesine anket çalışması kapsamına alınmıştır.

Çalışma kapsamında belirlenen bölgelerden ilki olan Denizli, dokuma ve hazır giyim üretiminde önemli bir merkez olup, geçmişten gelen uzmanlaşmanın yarattığı yerel kapasitelerini kullanarak dünya pazarlarına eklemlenmeye çalışan bir örnektir. Dokuma ve hazır giyim üretimi hızlı teknolojik gelişme gösteren bir sektör olmamasına rağmen, üretim organizasyonu fason üretim ve işbirlikçi ağlar oldukça önemlidir. Ulusal düzeyde bağlantılar hammadde sağlama ve hizmetlerde özellikle de merkezi hukuk kuruluşlarına özelleşmiş hizmetlerin sunumunda önemlidir. Küresel ilişkiler ise daha çok pazarlamaya yöneliktir. Bir diğer merkez olan Çorum madeni olmayan ürünler ve makina sanayi olmak üzere iki temel sektörde çeşitlenmiş üretim birimlerine sahiptir. Bu sektörlerden makine sanayi ulusal ve uluslararası pazarlarda rekabet edebilmeye çalışmaktadır. Üçüncü çalışma alanı olan Ankara ise uzun süredir ülke çapında gelişen hizmetler bakımından önemli bir merkezdir. Son yıllarda teknoloji ve bilgi yoğun üretim birimleri geliştirme konusunda önemli adımlar atılırken, en önemli sektörler arasında makina, elektronik, savunma sanayi ve yazılım olarak ortaya çıkmaktadır. Ankara'daki firmalarla ilgili veriler özellikle de müşterilerle olan pazarlama ağlarının oldukça önemli olduğunu gösterirken, sınırlı fason üretimin olduğu ve firmalar ile destek kuruluşları arasında az sayıda bağlantı bulunduğu sonucunu vermektedir. Diğer iki merkezle paralel olarak bilgi aktarımının daha çok yerel düzeyde kaldığı belirlenmiştir. Diğer yandan küresel bağlantılar daha az öneme sahipken bunlar genelde teknoloji yoğun üretim sektörleri ve doğrudan satış ilişkileri şeklinde gerçekleşmektedir.

Ekonometrik Çalışmalar

Bu üç örnekte incelenen firmalardaki bağlantı yoğunluklarını (linkage intensity) ve nedenlerini araştırmak için 'çoklu regresyon analizi' tekniği uygulanmıştır. Bu bölümde mekanın etkileri ile firmanın niteliklerinin yerel ve uluslararası ağlardaki yoğunlaşmasındaki farklılıklara neden olan etkileri çözümlenmeye çalışılmıştır. Bu analizde bağımlı değişken olarak bağlantıların sayısı; bağımsız değişken olarak da mekan, üç alandaki sanayinin yapısal farklılıklarını belirlemede kullandığımız göstergeler ve büyüklük ve üretim sektörü gibi firmaya özel değişkenler kullanılmıştır. Bağlantı sıklıkları hakkında nicel bilgi sahibi

olabilmek için doğrusal modelleme yaklaşımı kulanılmıştır. Böylelikle, değişkenler önem sırasına göre sıralanmış, en önemli etkiye sahip olanlar ile önem arz etmeyenler belirlenmiştir. Analizde kullanılan iki bağımlı değişken yerel ve küresel ilişkilerin/bağlantıların sayısı olurken her biri için ayrı modeller geliştirilmiştir. Ayrıca 'kukla mekan değişkenleri' kullanılmıştır. Çalışan başına katma değerin bir göstergesi olan firma verimliliği, işgücünün akademik, ticari ve teknik nitelikleri ile ölçülen insan sermayesi girdileri diğer ölçütler arasında yer almaktadır. Bunlara ek olarak araştırma ve geliştirmeye ayrılan toplam harcama ile firmanın diğer yerel firmalar ile olan bağlantısının ilgili sektördeki tüm firmalara olan oranı ile temsil edilen merkezilik endeksi (centrality index) kullanılmıştır.

Bağımlı değişken bir sayı olduğundan, normal dağılımı temel alan standart regresyon analizinin kullanılması uygun değildir, bunun yerine genelleştirilmiş doğrusal model türü olan Poisson Regresyon modeli kullanılmıştır.

Ağların yoğunluğulunu belirleyen faktörler

Yerel ağların sayısını etkileyen faktörler üzerine yapılan bu analizde Cook tarafından geliştirilen modelden yararlanılarak hesaplanan parametreler sonucunda değişkenlerin yerel ve küresel bağlantılardaki etki dereceleri tesbit edilmiştir. Yerel bağlantıların sağlanmasında iki değişken öne çıkmaktadır. Bunlar firmanın Ankara'da yer almış olup olmaması ile merkezilik endeksidir. Firma birçok firmaların oluşturduğu üretim ağlarının merkezinde yer alıyorsa bu durum bağlantıların sayısı bakımından olumlu bir etki yaratmaktadır. Diğer önemli etki ise firmanın verimlilik derecesidir ve yüksek değerler daha daha çok yerel bağlantıyı beraberinde taşıdığını göstermektedir. Yerel bağlantılar firma büyüklüğü arttıkça düşme eğilimi göstermekte ve uzman işgücü oranı ile doğru orantılı olarak artmaktadır. Firmanın Denizli'de yer alması olarak tanımlanan değişken de yerel bağlantıların artmasında etkilidir, ancak üstte bahsedilen değişkenlerden daha az önem arz etmektedir.

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Sonuç

Sonuç olarak, bu araştırma firmalar arası ağsal yoğunlukların nedenlerini temel alan iki farklı hipotez üzerine odaklanmıştır. Bunlardan ilkine göre firmanın içsel niteliklerinden bağımsız olarak gömülü oldukları mekanın farklı sanayi yapıları firmanın ağsal yoğunluklarını tanımlamaktadır. Diğer hipotez ise büyüklük, üretim sektörü gibi firmaya özgü niteliklerin ağsal ilişkilerdeki önemini vurgulamaktadır.

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Küresel ağlar için yapılan aynı analiz sonucuna göre, üretim sistemi içerisinde merkezi bir pozisyonda bulunmak küresel bağlantıların sayısında yerel bağlantılarda olduğu gibi olumlu bir artış sağlamamakta, tersine negatif bir etkiye neden olmaktadır. Buna karşılık, firmaya özel değişkenlerden olan sektör en önemli etkiye sahip olan değişkendir. Mekandan bağımsız olarak, eğer firma yüksek teknoloji sektörlerinden birinde yer alıyorsa küresel bağlantıları artmaktadır. Denizli'de yer almak küresel bağlantıları artırıcı bir etkiye neden olsa da bu etki yerel bağlantılarda olduğu kadar güçlü değildir. Diğer yandan toplam harcamalar içinde araştırma ve geliştirmenin payının artması bağlantıların sayısında düşüşe neden olmaktadır. Buradan AR-GE faaliyetlerinde bulunan firmaların küresel bağlantılardan daha az fayda gördükleri anlaşılmaktadır. Çalışan başına katma değerin etkisi ise hemen hemen yoktur.

Sonuç

Sonuç olarak, bu araştırma firmalar arası ağsal yoğunlukların nedenlerini temel alan iki farklı hipotez üzerine odaklanmıştır. Bunlardan ilkine göre firmanın içsel niteliklerinden bağımsız olarak gömülü oldukları mekanın farklı sanayi yapıları firmanın ağsal yoğunluklarını tanımlamaktadır. Diğer hipotez ise büyüklük, üretim sektörü gibi firmaya özgü niteliklerin ağsal ilişkilerdeki önemini vurgulamaktadır.

Bu çalışmada kullanılan çokludeğişim yöntemi sonucunda elde edilen bulgulara göre küresel bağlantılar için firmanın nitelikleri daha çok önem taşımasına rağmen, yerel ve ulusal ağların yoğunluğunda mekan önemli etkendir. Büyük firmalarda için küresel ilişkiler artma eğiliminde iken, firma büyüdükçe yerel bağlantılarda düşüş kaydedilmektedir. Ağsal yoğunluklara odaklanmanın bir nedeni de firmalara verimli yapılarını güçlendirmede önemli dışsallıklar sağlamalarıdır. Bu çalışmadaki iki-yönlü modelleme sürecinde (two-way causation process) varılan nokta küresel ağların yoğunluğunun verimlilik faktörünün hem nedeni hem de sonucu olduğu şeklindedir.

Araştırma yöntemi ve bulguları EK 3'de sunulan makalede şu ayrıntılı olarak sunulmaktadır:

- Eraydın, A. ve Fingleton, B., 2005, Networks relations and local economic development: some causes of differentiated network structures and intensities among Turkish industrial firms ***Environment and Planning A*** *(yayınlanıyor)*

2.4.2. Sanayi Odaklarının İtici Gücü Olarak Üretim Ağları ve Yenilikçilik

Araştırmanın Kuramsal Çerçevesi ve Amacı

Çalışmanın kuramsal çerçevesini sanayi kümeleri tartışmaları kapsamında son yıllarda önem kazanan ağsallık ve yenilikçilik sanayi kümelerinde büyüme ve başarıyı getiren ayırt edici unsur olarak öne çıkmaktadır. İlgili kuramsal tartışmalar ışığında bu aşamada yapılan araştırma farklı tip sanayi kümelerinde firmaların ağsallık ve yenilikçilik faaliyetlerinin ne şekilde farklılaştığını, yine farklı tip sanayi kümelerinde hangi tip ve coğrafi düzeydeki ağların daha önemli olduğunu, yerel ve küresel ilişkilerin firmaların yenilikçilik kapasitesinin belirlenmesinde ne kadar önemli olduğunu ve bu durumun farklı sektörlerde uzmanlaşmış sanayi kümelerine göre değişip değişmediğini araştırmaktadır. Kısaca çalışmanın amacı küreselleşme sürecinde yeni sanayi kümelerinde rekabet gücünü arttıran iki faktör olan yenilikçilik ve ağsallığın öneminin tartışılmasıdır.

Araştırmanın yapılacağı sanayi odaklarının seçimi:

Araştırma Türkiye'nin üç önemli sanayi odağından derlenen verilere dayanmaktadır. Bu üç odak Ankara, Bursa ve Denizlidir. Denizli dokuma ve hazır giyim ürünlerinde uzmanlaşmış, yerel dinamikleri ve kapasitesi ile dünyaya eklemlenmiş, 1990'lı yıllarda işgücündeki büyümede ve dışsatımda Türkiye'de ön sıralarda yer alan yeni sanayi odaklarından biridir. Bursa dokuma ve hazır giyim ve otomotive sektörlerinde uzmanlaşmış, bu sektörlerde katma değeri yüksek ürünlere geçme çabasında olan ve büyüme kapasitesi yüksek bir sanayi odağıdır. Ankara, Denizli ve Bursa'dan farklı olarak makine, elektronik ve savunma sanayi gibi yüksek teknolojili sektörlerde uzmanlaşmış bir bölgedir. Ankara 1990'lardan sonra bu sektörlerde yaptığı atılım ile Türkiye'nin yüksek teknolojili sanayi odağı olma yolunda ilerlemektedir. İşgücündeki artış oranları çok yüksek olmamakla birlikte, alınan patent sayılarına bakıldığında Türkiye'de ilk sırada olduğu görülmektedir. Örnek bölgelerin farklı özellikleri değerlendirildiğinde Denizli sanayi odağı, Bursa yenilikçi imalat sanayi kümesi ve Ankara yüksek teknolojili sanayi kümesi olarak tanımlanabilmektedir. Taşıdıkları farklı özelliklerle Denizli, Bursa ve Ankara sanayi kümeleri bölgesel farklılığın yaratacağı sonuçların test edilebilmesine olanak tanımaktadır.

Alan araştırmasının tasarımı

Üç sanayi kümesinde yapılan alan araştırmasında üç temel konu çalışmanın özünü oluşturmaktadır:

1. Sanayi kümelerinde AR&GE çalışmaları ve yapılan farklı içerikli yeniliklerin önemi,

2. Farklı coğrafi düzeylerde kurulan, farklı tipteki ilişkilerin önemi,

3. KOBİ'lerin yenilikçilik kapasiteleri ile farklı coğrafi düzeylerde ağlar arasındaki ilişkinin araştırılması.

Alan araştırmasının çerçevesini oluşturan bu soruların yanıtlarını araştırmak üzere, belirlenen üç sanayi kümesinde gelişmenin ana aktörü kabul edilen KOBİ'lerle görüşme ve anket çalışmaları yapılmıştır. KOBİ Avrupa birliği ülkelerinde yapılan çalışmalarla karşılaştırma yapabilmek amacı ile 10-249 kişi çalıştıran firmalar olmak üzere geniş bir yelpazede tanımlanmıştır. Görüşme yapılacak örnek firmaları tanımlamak için şu adımlar izlenmiştir.

- Yerel Sanayi ve Ticaret odalarından Mart 2003 tarihinde odaya kayıtlı KOBİ'lerin listesi Ankara, Bursa ve Denizli için alınmıştır.

- Her bir kümenin uzmanlaştığı alan saptanmıştır; Ankara'da makine ve elektronik, Bursa'da dokuma ve hazır giyim ve otomotiv, ve Denizli'de dokuma ve hazır giyim olmak üzere. İlgili sektörleri içeren yeni listede Ankara'da 332 firma, Bursa'da 280 firma, Denizli'de 212 firma yer almaktadır.

- Elde edilen listedeki e-posta adresi ve faks numarası olan tüm firmalara e-posta, faks ve telefon aracılığı ile 23 Mart 2003, 15 Haziran 2003 tarihleri arasında ulaşılmıştır. Toplam 824 firmadan 190'ına ulaşmak mümkün olmuştur ve sonuçta ulaşılan geçerli soru kağıdı sayısı 131'dir.

- Tamamlanan soru kağıdı sayısı Ankara'da 72 (%22.3 temsil oranı ile), Bursa'da 32 (%11.4 temsil oranı ile) ve Denizli'de 17 (%12.7 temsil oranı ile) olmak üzere toplam 131'dir.

KOBİ'lere uygulanan soru kağıdı yapısı üç temel bölümden oluşmaktadır: firmanın genel yapısına ilişkin sorular, firmanın yenilik göstergeleri ve yenilik faaliyetlerine ilişkin sorular ve yenilik süreçlerini destekleyen farklı düzey ve amaçta firma ağlarına ilişkin sorular olmak üzere. Elde edilen verilerin derlenmesi ve analizi sonucunda çalışmanın başında ortaya konulan araştırma soruları ki-kare yöntemiyle test edilmiştir.

Çalışmanın temel bulguları

Yenilikçilik kapasitesine ilişkin bulgular

Örnek sanayi kümelerinde öncelikle yenilikçilik kapasitesi değerlendirildiğinde üç sanayi odağında da firmaların yaklaşık % 70-80'i yeni bir ürün üretmeye başladıkları veya mevcut bir ürünü geliştirdikleri görülmektedir. Bu firmaların % 60-65'i ise yeni bir süreci uygulamaya başladıklarını, veya mevcut süreci geliştirdiklerini belirtmektedir. Üç yöre yenilik faaliyetlerinde birbirlerine yakın değerlere sahip olmalarına karşın, yenilikçilik kapasitesi göstergeleri konusunda Ankara en yüksek değerlere sahip görülmektedir. Ankara'da çok sayıda üniversitenin bulunması, TÜBİTAK, KOSGEB gibi firmalarda AR&GE çalışmasını destekleyen kurumların varlığı, yüksek teknolojili sektörlerde uzmanlaşmış olması, çok sayıda yeni mezun mühendisin bulunması nedeniyle yenilikçilik kapasitesinin Ankara'da yüksek olması beklenen bir sonuçtur.

Ağsallığa ilişkin bulgular

Örnek sanayi kümelerinde firma ilişkilerine bakıldığında Ankara üç örnek bölge arasında ulusal ilişkilerin en yüksek oranda olduğu bölgedir. Küresel ilişkilerin ve yerel ilişkilerin en fazla olduğu Denizli'dir. Denizli'de ulusal düzeydeki ilişkiler düşük bir orana sahiptir. Her üç çalışma alanındaki firmaların yerel ilişkileri toplam ilişkilerin yüzde 40'ından fazlasını oluşturmaktadır. Diğer bir deyişle yerel ilişkiler önem ve ağırlığını üç bölgede de sürdürmektedir. Küresel ilişkilerin toplam içindeki oranı örnek bölgelerde yüzde 10'dan azdır. Çalışmanın sonuçları çalışmanın gerçekleştirildiği bölgelerde firmaların bir işi yapabilmek için aynı ilde olmanın önemine inandıklarını ortaya koymaktadır. Bursa ve Denizli'de yerele duyulan güven önem kazanırken, Ankara'daki firmalar için Ankaralı olmak aynı şeyi ifade etmemektedir. Buna karşılık, ulusal ve küresel ilişkiler yeni dışsal bilgiye ulaşmak açısından üç bölgede de büyük önem taşımaktadır.

Yenilikçilik kapasitesi ve ağsallık

Yerel ağların önemi ve yenilikçilik üzerindeki etkisini ölçmek üzere, önce firmalar yerel ilişkilerinin yoğunluğuna göre yerel ilişkileri zayıf KOBİ'ler ve yerel ilişkileri güçlü KOBİ'ler olarak gruplaşmıştır. İkinci aşamada ise son üç yılda yapılan yeniliklerin sayısından yola çıkılarak yenilikçilik kapasitesi düşük, orta ve yüksek olmak üzere üç grupta ele alınmıştır. Verilerin değerlendirilmesi sonucunda, yerel ilişkisi daha fazla olan firmaların, bulundukları yöre ile ilişkisi bulunmayan firmalara göre daha çok sayıda yenilik faaliyetinde bulunduğu görülmektedir. Yerel ilişkileri zayıf olan firmalar ya hiç yenilik yapmamış, yada çok düşük oranda yenilik faaliyetinde bulunmuştur. Bölgesel ilişkilerin yoğunluğu ile yenilikçilik arasında anlamlı ve doğru yönde bir ilişki vardır.

Yerel ağların yenilikçilik kapasitesine katkısını tartışan çeşitli araştırmalar olmasına karşın, farklı coğrafi düzeylerdeki ağların yenilikçilik kapasitesiyle ilişkisini araştıran çalışma son derece sınırlıdır. İlgili yazındaki bu eksiklikten yola çıkılarak bu çalışmada örnek bölgelerde yerel, ulusal ve küresel ilişkilerin yenilikçilik kapasitesi ile ilişkisi incelenmiştir. Bu analiz için firmalar yerel ilişkileri toplam ilişkileri içinde çoğunlukta olan firmalar, ulusal ilişkileri çoğunlukta olan firmalar ve küresel ilişkileri çoğunlukta olan firmalar olmak üzere üç grupta toplanmıştır. Yenilikçilik kapasitesi ise düşük (ortalamanın altında) ve yüksek (ortalamanın

üstünde) olmak üzere sınıflandırılmıştır. Veriler değerlendirildiğinde yerel ilişkileri yoğun olan KOBİ'lerin yenilikçilik kapasitesinin düşük, ulusal ve küresel ilişkileri toplam ilişkileri içinde ağırlık kazanan KOBİ'lerin ise yenilikçilik kapasitesinin yüksek olduğu görülmektedir. Yerele gömülü firmaların %68.7'si sınırlı sayıda yenilik faaliyeti gerçekleştirirken, küresel ağlara eklemlenen firmaların %68.7 sinin yüksek yenilikçilik performansı sergilediği gözlenmektedir. Bu sonuç yerel ilişkilerin yanı sıra ulusal ve küresel ilişkilerle yenilikçilik kapasitesi arasında olumlu bir ilişki olduğunu göstermektedir.

Araştırmanın kuramsal çerçevesi, metodolojisi ve bulguları üzerine daha detaylı bilgi ekte sunulan makalede yer almaktadır.

• Eraydın, A. ve Armatlı-Köroğlu, B., 2005, Innovation, networking and the new industrial clusters: the characteristics of networks and local innovation kapabilities in the Turkish industrial clusters ***Entrepreneurship and Regional Development.*** 17, Temmuz, s. 237-266

2.5. ÜRETİCİ HİZMETLERİNİN KÜRESELLEŞMESİ: SANAYİ ODAKLARINDAKİ FİRMALARIN REKABET GÜCÜ VE YENİLİKÇİLİĞİNDE ÜRETİCİ HİZMETLERİNİN ROLÜ

Araştırmanın Dayandığı Kuramsal Çerçeve

Günümüzde hizmetlerin dünya ekonomisindeki artan payı ekonomik yapı üzerinde önemli değişmelere neden olurken, bu yapının da "hizmet ekonomisi" (Illeris, 1996) olarak adlandırılmasını beraberinde getirmiştir. Büyük oranda iş imkanı ve katma değer yaratabilme potansiyeline sahip olan hizmetler için en önemli faktör çeşitlilik ve dünya ekonomisi içinde pazarlanabilme potansiyelidir. Ekonomideki bu dönüşüm hizmet devrimi, sanayi sonrası ekonomi veya yeni ekonomi olarak da adlandırılmaktadır. Yeni ekonominin tanımında etken olan bu hizmetler içinde üretim hizmetleri en önemli konuma sahip olup, son yıllarda önemli bir gelişme göstermektedir. Bu gelişmenin nedenlerinden ilki, üretim faaliyetlerinde görülen karmaşa/karmaşıklık ile uzmanlaşmış hizmet firmalarının dışsallaşması sonucu firmaların üretim hizmetlerine olan ihtiyacında artış görülmesi, aynı zamanda üretim süreçlerindeki yapısal dönüşümlerin hizmet sektöründeki istihdamda artışa neden olmasıdır. İkinci olarak, hizmet olanakları yerel/ulusal ekonomilerin etkinlik ve verimliliği açısından önemli girdiler sağlamaları yanında dünya pazarlarında rekabetçi bir pozisyon kazanmada önemli bir etkendir. Üçüncü olarak, gelişmekte olan ülkelerde giderek artan sayıdaki kamu ve özel kuruluşlar yetkinliklerini arttırabilmek amacıyla hizmet girdilerine dayanmaktadırlar. Son olarak, üretim hizmetlerindeki gelişme üretim ve dışsatımın gelişmesine de katkıda bulunmaktadır.

Üretici hizmetleri günümüzde hizmetler içerisinde en az paya sahip olmasına rağmen, istihdam payı ve kentsel alandaki ekonomik aktiviteler bakımından en hızlı artışa sahip sektör olmuştur. Aynı zamanda, üretici firmaların performansı üzerinde olumlu etkilere yol açmaları nedeniyle dünya ekonomisi içinde önemlerinin artması ve sanayi odaklarının rekabet gücü üzerinde olumlu etki sahibi olmaları konusunda ortak bir görüş hakimdir.

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Değişik mekansal ölçeklerde sunulan farklı hizmetlerin önemi

Üretici firmalar için hangi hizmetlerin daha çok önem kazandığı sorusuna yanıt aramak için gerçekleştirilen birçok kuramsal ve görgül çalışma sonucunda firmalar tarafından talep edilen hizmetlerin tür ve coğrafi düzey olarak çeşitlilik gösterdiği görülmüştür. Çeşitli coğrafi pazarlara sahip olan üretim hizmetleri içinde banka ve finansın en çok uluslararasılaşan hizmetler olduğu bilinmektedir. Son yıllarda finans hizmetlerinin küreselleşme sürecinde önem kazanması sonucunda, sermayenin tümünün fiziki sınırlardan bağımsız hale gelmesi ve sermaye dolaşımında artış uluslararası finans sistemindeki en önemli iki özellik olarak yerini almıştır. Benzer şekilde, yapılan birçok çalışma teknik servisler ve danışmanlık hizmetlerinin giderek önem kazandığını göstermiştir. Üreticiler için danışmanlık ağlarının yerelde yapılanmasının beklenmesine ve işbirliği yapan firmalar arasında mekansal uzaklığın önemli bir faktör olmasına rağmen, teknik hizmet ilişkilerinde mekansal yakınlık ön koşul olmaktadır (Koschatzky, 1999). Diğer yandan "teknoloji transfer ajansları" tarafından sağlanan hizmetlerin henüz etkin bir biçimde kullanılmadığı görülmüştür.

Girişimci ve çalışanlar için eğitim hizmetleri giderek önem kazanmaktadır. Bu türden hizmetler yüz-yüze ilişki gerektirdiğinden, yerel ve ulusal düzeyde yoğunlaşması kaçınılmaz olmuştur. Ayrıca araştırma kuruluşları ve üniversiteler tarafından oluşturulan hizmet ağlarının artan önemi yapılan çalışmalarda saptanmıştır. Ancak, bu ağların orta ve küçük ölçekli girişimler için daha az önem taşıdığı, bunun da çoğunlukla iletişimdeki güçlüklerden kaynaklandığı görülmektedir. Yine yapılan birçok çalışma firma-üniversite ilişkilerinin çoğunlukla yerel veya ulusal düzeyde olduğu sonucunu çıkarmıştır.

Hizmetlerin dışsallaşmasında firmaların niteliğinin önemi

Hizmetlerin dışsallaşmasında küçük ve orta ölçekli firmaların yoğun işbirliği ağları ve bünyesinde bulundurduğu ilişkiler, diğer firmalara hizmet girdisi sağlamalarına olanak sağlamaktadır. Böylelikle küçük ölçekli firmalar ürün ve hizmet sağlamak için oluşturdukları işbirliği ağları ile bireysel zorlukları aşabilme imkanı bulabilmektedirler (Bryson ve Rusten, 2004). Diğer yandan, küçük firmaların dışsal hizmetlerden özellikle de yenilikçi faaliyetleri geliştirmeye yönelik hizmetlerden yararlanabilmek için yeterli finansal desteğe sahip olmadıkları bilinmektedir. Bu nedenle yapılan çalışmalar da göstermektedir ki, üretici firmalar içinde küçük ölçekli olan firmalar orta ve büyük ölçekli girişimlere göre daha düşük düzeyde hizmet kullanmaktadırlar. Küresel hizmetler açısından bir değerlendirme ise firma büyüklüğünün küresel hizmet kullanımı ve dış pazarlarda yer alabilme açısından en önemli belirleyicilerden biri olduğunu göstermektedir.

Hizmet bağlantılarının yoğunluğu ile firmanın yaşı arasındaki ilişki konusunda karşıt görüşlerin olduğu bilinmektedir. İlk görüşe göre, firma gelişme süreci içinde bazı hizmetleri içselleştirebildiği/bünyesine katabildiği için zamanla hizmet kullanım seviyesinde düşüş gözlenecektir. Diğer görüş ise giderek özelleşen ve uzmanlaşan üretim süreçlerinde yer almayı hedefleyen firmaların bazı özelleşmiş hizmet ihtiyaçlarını firma dışından karşılaması tezini kabul etmektedir. Ancak, bu iki görüşle ilgili yeterli görgül çalışma bulunmadığından konu tam da net olarak açıklanamamaktadır. Diğer yandan, üretimin uzmanlaşma düzeyi firma yaşından daha önemli bir ölçüttür. İlleris'e göre (1990), birçok çalışma göstermiştir ki daha çok uzmanlaşmış firmalar daha çok hizmet kullanmaktadır. Diğer yandan uzmanlaşma

ve üretimde daha bilgi yoğun süreçlere geçiş tam olarak tanımlanamadığından birçok çalışma bunu firmanın teknoloji düzeyi olarak tanımlamıştır.

Yenilikçi firmalar açısından bilgi-yoğun hizmetin gerekliliği

Firmanın büyüklüğü ve yaşından çok buluşçu kapasitesinin üretici hizmetleri kullanma yoğunluğunda belirleyici olduğu görüşü hakimdir. Bu kapsamda birçok hizmet sunulmakta ve bunlar "bilgi yoğun hizmetler" olarak tanımlanmaktadır. Bu hizmetlerin firmanın yenilikçiliğini arttırmadaki etkileri üzerine New York State'de imalat firmaları üzerinde yapılan çalışma dışsal hizmet bağlantıları ile yenilikçi faaliyetler arasında olumlu bir ilişki olduğu sonucunu çıkarmıştır (Mc Pherson, 1997). Buluşçu faaliyetleri desteklemede yerel düzeyde de olsa geleneksel hizmetlerin önemi büyüktür. Cambridge gibi bazı bölgelerin ekonomik başarısında işletmeler için danışmanlık hizmetleri ile kurulan yerel bağlantılar buluşçu süreçlerde ulusal ve küresel düzeylerdeki hizmetlerden daha gereklidir (Keeble and Lawson, 1999; Tödling and Kaufmann, 1999). Yeni bir firmanın kurulması ve buluşçu faaliyetlerin başlatılması için iş hizmetlerinin varlığı ve bu hizmetlere yakınlık en önemli faktörlerdendir (Simmie 2002).

Üniversiteler arası bağlantılar ve bunların buluşçu faaliyetlerdeki önemi son dönemdeki yazında önemli yer tutmaktadır. Kuramsal olarak üniversiteler gibi bilgi üreten kuruluşlar buluşçuluk için önemli girdiler sağlamakla birlikte, bazı görgül çalışmalar işletme-üniversite arasındaki bağlantıların oldukça zayıf kaldığını göstermiştir. Buna karşılık, araştırma kurumları ile bağlantıların küçük girişimcilerin buluşçu kapasiteleri açısından büyük önem taşıdığı geniş çevreler tarafından kabul edilmektedir. Morgan (1996) and Leigh (1995)'e göre, başarılı bölgelerde yerel araştırma kuruluşları gelişmenin başlangıç aşamalarını hızlandırırken, ileriki aşamalarda buluş ve araştırma faaliyetleri daha çok ağsal oluşumlar içerisindeki formal olmayan, gönüllü kurumlaşmalar tarafından sürdürülmektedir. Aynı zamanda, bu bağlantıların kalitesi küçük ve orta ölçekli işletmelerin yenilikçilik performanslarını etkilemektedir.

Değişik üretim dallarında uzmanlaşan sanayi odaklarında üeretici hizmetlerinin kullanımı

Üretim odaklarında hizmet ilişkilerinin yoğunluğunda görülen farklılıkların değerlendirilmesi konusundaki görgül ve kuramsal çalışmalar hizmetlerin kullanımında yakınlığın önemini yitirmediğini, bu nedenle hizmetlerin birçoğunun yerel olarak temin edildiğini göstermektedir. Sanayi odağının niteliklerine bağlı olarak hizmet kullanım yoğunluğunda da farklılaşma olmaktadır. Bu durumun nedenlerinden ilki sektörel farklılaşma olurken, geleneksel üretimde uzmanlaşmış odaklar ile ileri teknolojili odaklar arasında hizmet kullanımı bakımından önemli farklılıklar izlenmektedir.

Çalışmalar yerel üretim, bilgi ve yerel hizmet ağları geleneksel üretimde uzmanlaşmış odaklar için önemli olduğunu, küresel ağların ise odağın teknolojik yapısı veya buluşçu kapasitesinden çok var olan dışsatım kapasitesi ile yakından ilişkili olduğunu göstermiştir. Diğer yandan, çeperdeki bölgeler için hizmetler hala ulusal firmalar ve kurumlar tarafından sağlanmakta ve en önemli bağlantılar finansal konularda olmaktadır.

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Hizmet ilişkilerinde ulusal farklılıklar da önemlidir (Braun 2002: 90) ve bu durum en çok hizmetlerin sağlanması ve pazarlanmasında öne çıkmaktadır. Küreselleşen dünyada ulusal farklılıkların azaldığı düşünülse de, yapılan görgül çalışmalara göre ulusal düzeydeki kurumsal farklılıklar ve üretim kültürü ağlaşma düzeninin belirlenmesinde oldukça etkilidir (Braun, et a., 2002; Koschanzky, 2000; Sydow ve Staber, 2002). Ayrıca, merkez ve çeperdeki bölgelerde yer alan firmaların ağlaşma düzenlerinde farklılaşmalar görülmesi mümkündür.

Alan araştırması

Makalenin görgül çalışma bölümünde kuramsal tartışmalar ve daha önce yapılmış araştırmalardan da yararlanılarak dört araştırma alanında hipotezler tanımlanmıştır. Bunlardan birinci araştırma alanı üretici firmaların hizmet ağlarının düzeyi ve önemini doğrulamak amacıyla belirlenmiştir. İkinci araştırma alanı, farklı tür üretim hizmetlerinin göreli önemlerini sorgularken; üçüncü alan ise farklı tür hizmet bağlantılarının ağırlığını incelemektedir. Bu konu ile ilgili beklenti firma yaşı, büyüklüğü ve hizmet bağlantıları arasında olumlu bir ilişki bulunmasıdır. Son olarak, farklı sektörlerde uzmanlaşan odaklar arasında değişen hizmet ilişkileri üzerinde araştırmalar yapılmıştır.

Bu hipotezlerin irdelenmesi amacıyla bu proje kapsamındaki diğer aaştırmalarda olduğu gibi Türkiye'deki üç yeni sanayi odağına ilişkin veriler kullanılmıştır

Çalışma yöntemi olarak örnek firmalarla derinlemesine görüşme/anket benimsenirken, örneklerin belirlenmesi sürecinde her odak için saptanmış uzmanlaşma alanlarından seçilen firmalara anket gönderilmiştir. Anket yolu ile firmanın yapısal özellikleri, yenilikçilik göstergeleri ve firmadaki yenilikçi faaliyetler ile farklı türden yerel, ulusal ve küresel bağlantılarına yönelik sorular sorulmuştur.

Ana bulgular

1. Farklı coğrafi düzeylerde sağlanan hizmet ağlarının öneminin incelendiği bu araştırmada, hizmet ağlarının ağırlığının üretim ve pazarlama ilişkilerine göre oldukça düşük olduğu ortaya çıkmıştır ve bulgular bağlantıların pazarlama faaliyetlerinde yoğunlaştığını göstermektedir. Ayrıca, hizmet ağlarının yerel nitelikte olduğu ve üretim, pazarlama ve bilgi aktarımındaki küresel bağlantıların hizmet bağlantılarından daha yüksek paya sahip olduğu görülmüştür.

2. Çeşitli nitelikteki hizmetlerin ağırlıklarının incelenmesi sonucunda ise finans hizmetlerinin ilk sırada olduğu ve danışmanlık hizmetlerinin de onu izlediği görülmüştür. Danışmanlık hizmetlerinin bu konumu, günümüz dünyasında bilginin artan önemini yansıtmasına karşın hala yerel niteliğini korumakta olduğunu göstermektedir. Bu odaklarda hızlı yükseliş gösteren diğer hizmetler ise teknoloji transfer firmaları ve teknik hizmetlerde uzmanlaşmış firmalar tarafından sağlanan hizmetlerdir ve daha çok ulusal ve küresel bağlantılardan yararlanmaktadırlar. Ayrıca bu çalışmada eğitim hizmetlerinin kamu kurumları ve özel firmalar tarafından sağlandığı, ancak üniversite bağlantılarının oldukça düşük olduğu saptanmıştır.

3. Daha önceki çalışmalarda da olduğu gibi küçük ve orta ölçekli firmaların hizmet bağlantılarının sayısında oldukça önemli farklılıklar olduğu görülmektedir. Yapılan ki-kare analizi sonucunda Ankara ve Denizli'de önemli farklılıklar olduğunu gözlenirken, Bursa'da fark bu iki alandaki kadar açık değildir. Bu araştırma sonucunda hizmetlerin kullanımında firma yaşının kayda değer bir değişmeye neden olmadığı görülmüştür.

4. Görgül çalışmanın bu aşamasında hizmet ilişkilerinin yoğunluğu kapsamında yüksek ve düşük teknolojili üretim sektörleri arasında kayda değer bir fark bulunup bulunmadığının irdelenmesi amacıyla firmalar bu anlamda yeniden gruplanmış ve sonuç olarak teknoloji düzeyi ve hizmet bağlantıları arasında olumlu bir ilişki olduğu sonucuna varılmıştır. Ki-kare analizi kullanılarak yapılan bu değerlendirme, yüksek ve düşük teknolojili firmalar arasındaki farkın Ankara'da daha açık olduğunu göstermiştir.

   Diğer yandan, örnek firmalar hizmet bağlantıları ve yenilikçilik faaliyetlerine göre yeniden gruplanmış, böylelikle hizmet bağlantılarının yenilikçilik üzerinde etkisi sorgulanmıştır. Sonuçta hizmet bağlantıları ve yenilikçilik arasında olumlu bir ilişki gözlenirken, yüksek sayıdaki hizmet ilişkisinin firmalara yüksek yenilikçilik kapasitesi kazandırdığı belirlenmiştir.

5. Araştırmanın son bölümünde uluslararası pazarlara ulaşım düzeyleri ve farklı seviyelerde uzmanlaşmış üretim süreçleri olan üç sanayi odağı için hizmet kullanımlarındaki olası değişiklikler araştırılmıştır.

   Elde edilen bulgular farklı hizmet bağlantılarının ağırlık olarak üç odakta da aynı yönde olduğu göstermektedir. Diğer yandan, yerel, ulusal ve küresel olmak üzere bu bağlantıların dağılımı tartışmanın temel görüşü ile paralellik göstermeyerek yerel olmayan bağlantıların yoğunluğu ile üretimin uzmanlaşma düzeyi arasında olumlu bir ilişki olmadığı görülmüştür. Örneğin, Denizli en az üretimin en geleneksel olduğu odak olarak en yüksek yerel üstü bağlantıya sahiptir.

6. Son yıllarda Türkiye ve Avrupa'nın birçok bölgesinde kamu kuruluşlarının sayısında görülen artış yanında üretici firmalara sundukları hizmetlerde de çeşitlenmeler gözlenmektedir. Ancak bu durum üretilen hizmetlerin firmaya uygun olmaması ve bürokratik engeller gibi birçok sorunu da beraberinde getirirken, firmalar başka çıkış yolları bulma yoluna gitmişlerdir. Hizmetlere herhangi bir maliyet ödemeden ulaşmanın bir yolu diğer firmalarla ortak ilişkiler kurmak olarak belirlenmiştir.

7. Bu çalışma sonucunda ayrıca rekabet gücünü arttırmak amacıyla birçok sivil toplum örgütünün kurulmakta olduğunu ve bunlardan bir kısmının hizmet sunumu sorumluluğunu üstlendiği izlenmiştir.

Sonuç

Bu çalışma rekabet gücü ve firmanın yenilikçiliğinde hizmetlerin rolü bağlamında üç temel konu üzerinde yoğunlaşmaktadır. Birincisi, farklı türden hizmetlerin ağırlıkları ve farklı tür hizmet ağı oluşumlarının düzeylerindeki çeşitlilik üzerine olurken, kuramsal olarak hizmetlerin üretici firmalar için gün geçtikçe öneminin arttığı bilinmektedir. Ancak bu çalışmada edinilen bulgulara göre firma ilişkilerinde hala pazarlama ve üretim faaliyetlerinin önde geldiği görülmektedir. Alan çalışmasının gerçekleştirildiği üç odakta ise firmalar bazı hizmetlerini dışsallaştırmada sorunlar yaşamaktadır.

İkinci olarak, hizmetleri yoğun olarak kullanan firmaların özelliklerinin araştırılması amacıyla firma yaşı ve büyüklüğü ölçütleri üzerinde durulmuştur. Firma büyüklüğü hizmet ilişkileri kapsamında önemli bir ölçüt olarak görülürken, firmanın yaşının hizmetlerin kullanım yoğunluğunda herhangi bir etkisi olduğunu gösteren bir bulguya rastlanmamıştır.

Üçüncü konu ise, firmanın küresel hizmetlere erişiminin buluşçuluk yönünde etkisinin olup olmadığıdır. Daha önce yapılan birçok çalışma hizmet sağlayıcıları ile firmanın buluşçuluğu arasındaki ilişkinin önemini vurgularken (Wood, 2002, Sundbo, at al. 2001, Koschatzky, 1999, MacPherson, 1997;. Muller ve Zenker, 2001), bu çalışma sonucunda da aynı hipotezi destekler sonuçlar elde edilmiş ve hizmet bağlantıları ile buluşçuluk arasında olumlu bir ilişki ortaya çıkmıştır.

III. SONUÇ: PROJENİN KURAMSAL AÇIDAN ÖNEMLİ SONUÇLARI VE GELİŞME POLİTİKA ÖNERİLERİ

Bu sonuç bölümünde proje kapsamında yapılan çalışmaların mevcut kuramsal tartışmalara yaptığı katkılar ve bu saptamaların sonucunda ortaya çıkan öneriler özet olarak verilmeye çalışılacaktır.

- Belirli konuda uzmanlaşmış çok sayıda küçük ve orta büyüklükteki işletmelerin yer aldığı ve aynı mekanı paylaşmanın sağladığı üstünlüklerden yararlanan sanayi odaklarının diğer bölgelere göre daha başarılı olduğunu yapılan araştırma bulguları göstermektedir. Bu başarıda KOBİ'lerinin birlikteliklerinin ve ilişkilerinin sağladıkları dışsallıkların önemli olduğu araştırmanın farklı aşamalarında elde edilen bulgularla desteklenmektedir.

  - *Öneri:* Mevcut sanayi yığılmalarının sanayi odağına dönüşebilmesi için firmalar arasındaki ilişkilerin artması ve bütünleyici faaliyetlerin oluşması ve daha önemlisi ortak çıkarı sağlayabilecek stratejilerin benimsenmesi gerekmektedir. Bu yapı mevcut sanayi odaklarında kendiliğinden gelişen bir süreç olarak gündeme gelmiştir. Ancak birlikte hareket etme, rekabet yanısıra ortak çıkarları gözönüne alma eğilimi yönetişim esaslı bir uygulama ile de desteklenebilir.

- Sanayi odakları ile diğer yöreler arasındaki en önemli farklar üretim yapısının özelliklerine ilişkin olan fason iş yapma, ürün çeşitlenme düzeyi ve pazarlama olanakları konularındadır. Diğer faktörlerin de sanayi odaklarının gelişmesinde önem kazanmasına karşılık, üretim örgütlenmesinin ve burada sağlanan birliktelik ve tamamlayıcılıkların çok önemli olduğu görülmüştür.

  - *Öneri*: Sanayi odaklarına ilişkin gerek kurumlaşma stratejilerinde gerekse mekansal düzenlemelerde ilişkileri artırmayı destekleyecek uygulamalar ve düzenlemeler gereklidir. Bunlar sunulan hizmetlerin mekanda dağılımı, ortak etkileşmenin yaratılacağı birim ve mekanlar ve bilgi aktarım merkezleri gibi çok farklı kurumların ve birimlerin oluşturulması önemlidir.

- Sanayi odaklarının uzmanlaştığı konulara bağlı olarak yenilikçilik kapasitenin önemli olduğu, ancak yenilikçiliğin dar anlamda tanımlanmasının firmaların bu konudaki çabalarını ve gerçekleştirdiklerini yansıtmadığı görülmüştür. Nitekim, bölgelere göre patent sayıları kullanılarak yapılan çalışmalar KOBİ'lerin ağırlıklı olduğu bölgelerin yenilikçilik açısından performanslarının iyi olmadığını, küçük ve orta ölçekli firmaların patent için harcama yapmakta zorlanmaları nedeniyle patent sayılarının yenilikçiliği tam olarak belirtmediği izlenmiştir. Buna karşılık bu proje çalışmasında olduğu gibi yenilikçiliği ürün geliştirme, iyileştirme ve üretim sürecini geliştirme gibi daha geniş olarak tanımlandığında elde edilen bulgular değişmiştir.

III. SONUÇ: PROJENİN KURAMSAL AÇIDAN ÖNEMLİ SONUÇLARI VE GELİŞME POLİTİKA ÖNERİLERİ

Bu sonuç bölümünde proje kapsamında yapılan çalışmaların mevcut kuramsal tartışmalara yaptığı katkılar ve bu saptamaların sonucunda ortaya çıkan öneriler özet olarak verilmeye çalışılacaktır.

- Belirli konuda uzmanlaşmış çok sayıda küçük ve orta büyüklükteki işletmelerin yer aldığı ve aynı mekanı paylaşmanın sağladığı üstünlüklerden yararlanan sanayi odaklarının diğer bölgelere göre daha başarılı olduğunu yapılan araştırma bulguları göstermektedir. Bu başarıda KOBİ'lerinin birlikteliklerinin ve ilişkilerinin sağladıkları dışsallıkların önemli olduğu araştırmanın farklı aşamalarında elde edilen bulgularla desteklenmektedir.

  • *Öneri:* Mevcut sanayi yığılmalarının sanayi odağına dönüşebilmesi için firmalar arasındaki ilişkilerin artması ve bütünleyici faaliyetlerin oluşması ve daha önemlisi ortak çıkarı sağlayabilecek stratejilerin benimsenmesi gerekmektedir. Bu yapı mevcut sanayi odaklarında kendiliğinden gelişen bir süreç olarak gündeme gelmiştir. Ancak birlikte hareket etme, rekabet yanısıra ortak çıkarları gözönüne alma eğilimi yönetişim esaslı bir uygulama ile de desteklenebilir.

- Sanayi odakları ile diğer yöreler arasındaki en önemli farklar üretim yapısının özelliklerine ilişkin olan fason iş yapma, ürün çeşitlenme düzeyi ve pazarlama olanakları konularındadır. Diğer faktörlerin de sanayi odaklarının gelişmesinde önem kazanmasına karşılık, üretim örgütlenmesinin ve burada sağlanan birliktelik ve tamamlayıcılıkların çok önemli olduğu görülmüştür.

  • *Öneri*: Sanayi odaklarına ilişkin gerek kurumlaşma stratejilerinde gerekse mekansal düzenlemelerde ilişkileri artırmayı destekleyecek uygulamalar ve düzenlemeler gereklidir. Bunlar sunulan hizmetlerin mekanda dağılımı, ortak etkileşmenin yaratılacağı birim ve mekanlar ve bilgi aktarım merkezleri gibi çok farklı kurumların ve birimlerin oluşturulması önemlidir.

- Sanayi odaklarının uzmanlaştığı konulara bağlı olarak yenilikçilik kapasitenin önemli olduğu, ancak yenilikçiliğin dar anlamda tanımlanmasının firmaların bu konudaki çabalarını ve gerçekleştirdiklerini yansıtmadığı görülmüştür. Nitekim, bölgelere göre patent sayıları kullanılarak yapılan çalışmalar KOBİ'lerin ağırlıklı olduğu bölgelerin yenilikçilik açısından performanslarının iyi olmadığını, küçük ve orta ölçekli firmaların patent için harcama yapmakta zorlanmaları nedeniyle patent sayılarının yenilikçiliği tam olarak belirtmediği izlenmiştir. Buna karşılık bu proje çalışmasında olduğu gibi yenilikçiliği ürün geliştirme, iyileştirme ve üretim sürecini geliştirme gibi daha geniş olarak tanımlandığında elde edilen bulgular değişmiştir.

• *Öneri:* Yapılan araştırmalar KOBİ'lerin azımsanmayacak bir yenilikçilik potansiyeli olduğunu göstermiştir. Firmalar rekabet güçlerini koruyabilmek için kendilerini geliştirmek ve maliyetlerini düşürmek ve ürünlerinin kalitesini geliştirmek üzere çalışmalar yapmaktadır. Ancak, bunların çoğu patent alabilecek nitelikte buluşlar değildir. KOBİ'lerin bu potansiyellerini harekete geçirebilmek için bazı destekleme mekanizmaları bulunmaktadır. Ancak yapılan çalışmalar KOBİ'lerin mevcut olanaklardan ve oluşturulan destek mekanizmalarından haberdar olmadığını göstermektedir. Bu nedenle yenilikçilik ile ilgili mevcut programlar gözden geçirilmeli ve KOBİ'leri daha çok devreye sokacak düzenlemeler yapılmalıdır.

- Sanayi odaklarında yenilikçilik düzeyini açıklayan değişkenler araştırıldığında KOBİ'lerin oranı, fason iş yapılan firma sayısı, dışsatım oranı, yeni firmaların toplam içindeki oranı, teknik ve yüksek eğitimdeki öğrenci sayısı ve AR-GE desteği kullanan firmaların sayısının önemli olduğu bulunmuştur. Bu değişkenler yenilikçilikte üretim örgütlenmesinin ve işgücü kalitesinin önemli olduğunu göstermektedir. Yukarıdaki saptamalar sanayi odaklarındaki yenilikçiliğin "üretim sürecinde gerçekleşen" bir yenilikçilik olduğunu, buna karşılık üretime dışarıdan aktarılan yeniliklerin ancak makina alımı gibi geleneksel yollar ile gerçekleştiğini göstermiştir.

  • Öneri: Üretim örgütlenmesi içinde gerçekleşen yenilikçiliği desteklemek üzere işgücünün bilgi düzeyini artırma, AR-GE desteklerini işler hale getirme, yeni firmaların kurulmasını destekleyecek girişimcilik programlarını geliştirme, firmaları dış pazar olanaklarından haberdar ederek o firmaların bu pazarlarda rekabet edebilmeleri için ürün kalitesini artırmalarını sağlayacak projeleri geliştirmek gibi önlemler yapılan çalışmaların sonucu olarak gündeme gelmektedir. Ancak araştırma üniversite-sanayi bağlantılarının çok zayıf olduğunu ve KOBİ'lerin yenilik yaparken üniversitelerin bilgi birikimini kullanmadıkları ortaya çıkmıştır. Üniversite-KOBİ işbirliğinin geliştirilmesi üzerine bugüne kadar yapılan çalışmaların değerlendirilmesi ve yeni bir modelin geliştirilmesi gereklidir.

- Yerel ilişkiler yanısıra sanayi odaklarında yer alan firmaların başarısında küresel ilişkiler önemlidir. Küresel bağlantılar için firmanın nitelikleri daha çok önem taşımasına karşın, yerel ve ulusal ağların yoğunluğunda mekan önemli etkendir. Büyük firmalar için küresel ağlar artma eğiliminde iken, firma büyüdükçe yerel bağlantılarda düşüş kaydedilmektedir.

  • *Öneri :* Yerelde yoğun ilişkileri olan KOBİ'lerin küresel ilişkilerini sağlayacak aracı kurumların, mekanizmaların ve merkezlerin geliştirilmesi, öte yandan büyük firmaların yerelden kopmaması için firmalararası ilişkileri destekleyecek yerel yönetişim birimlerinin kurulması yararlı olacaktır.

- Küresel ağların yoğunluğu verimlilik faktörünün hem nedeni hem de sonucu olup, bu durum özellikle rekabet gücünün artırılabilmesi ve böylelikle uluslararası piyasalarda var olmak için küresel ilişkilerin güçlendirilmesi gerektiğini belirtmektedir. Bu nedenle sanayi odaklarına yönelik politikaların dış bağlantıları kolaylaştırıcı ve destekleyici olması gereklidir.

- Yenilikçilik kapasitesi ve ağsallık arasında önemli bir ilişki saptanmıştır. Verilerin değerlendirilmesi sonucunda, yerel ilişkisi daha fazla olan firmaların, bulundukları yöre ile ilişkisi bulunmayan firmalara göre daha çok sayıda yenilik faaliyetinde bulunduğu görülmektedir. Yerel ilişkileri zayıf olan firmalar ya hiç yenilik yapmamış, yada çok düşük oranda yenilik faaliyetinde bulunmuştur. Bölgesel ilişkilerin yoğunluğu ile yenilikçilik arasında anlamlı ve doğru yönde bir ilişki vardır.

- Sanayi odakları arasında yerel ve küresel ilişkilerin ağırlığı açısından önemli farklar olduğunu göstemiştir. Bu farklılaşma sektörel uzmanlaşma ve rekabet gücü ile ilişkili olduğu gibi sanayi odağının olgunluk düzeyi ile de ilişkilidir.

  - *Öneri*: Mevcut sanayi odaklarının yapısının, rekabet gücünün sürekli izlenmesive bu sanayi odaklarında ortaya çıkan üretimin uluslararası piyasalarda ne ölçüde rekabet gücü olduğunun belirlenmesi ve dış piyasalara açılma stratejilerinin tanımlanması gereklidir. Bu nedenle sanayi odaklarına yönelik "***Stratejik Plan***"ların hazırlanması ve bu kapsamda "***Bölgesel Yenilik Stratejileri***"nin geliştirilmesi ve bu amaçla bir yönetişim mekanizmalarının kurulması gereklidir. AB'nin Bölgesel Yenilik Sistemlerine yönelik proje destekleri ve bilgi birikiminden de bu amaçla yararlanılabilir.

- Proje bulguları sanayi odaklarının rekabet gücünün artırmada üretici hizmetlerinin giderek önemini artırdığı ve bu hizmetlerin de geçmişte olduğu gibi yerel düzeyde sunulan hizmetlerle sınırlı olmadığı görülmüştür. Ancak bugün için kullanılan yerel üstü hizmetlerin hala pazarlama gibi bazı konularda yoğunlaştığı görülmektedir.

  - *Öneri:* Günümüz dünyasında üretici hizmetlerin dışsallaşması ile alınan hizmetin kalitesi ve ölçeği önem kazanmaya başlamıştır. Üretici hizmetlerin kalitesinin iyileştirilmesi, özel sektör tarafından sunulamayan hizmetlerin özellikle yerel sivil toplum kuruluşları tarafından sunulması için gerekli düzenlemelere gereksinim vardır. Özellikle sivil toplum kuruluşlarının bu bazı işlevleri yüklenmeleri desteklenmelidir.

Yukarıda özetlenen noktalardan izlenebileceği gibi sanayi odakları "bölgesel gelişme kuramları" açısından bir model sunma özelliğini taşımaktadır. Bu modelin üç temel özelliği vardır; üretim örgütlenmesi ile sağlanan dışsallıklar, yenilikçilik, yerel ve küresel ağlarla sağlanan dışsallıklar. Sanayi odakları ait olduğu ülkenin bir yöresini küresel sisteme taşıyan ve küresel ilişkilerin getirdiği dışsallıkları o yörenin gelişme sürecine aktarabilme özelliği göstermekte ve bu açıdan da küreselleşen dünyanın önümüzdeki yıllarda da ana üretim noktaları olmaları yanısıra, ulusal ekonomiler için önemlerini sürdürmeleri beklenmektedir.

Bu nedenle mevcut KOBİ ağırlıklı yörelerin yenilikçiliği destekleyen birimler, üretim ve hizmet ağları ve bu ağları kolaylaştırıcı kurumlaşmalarla ile desteklenmesi ve bireyselllikten birlikteliğe geçen bir anlayışın ortaya çıkabilmesi için yeni yönetişim uygulamalarının hayata geçirilmesi gerekmektedir.

Öte yandan bu projenin Türkiye için önemli katkılarından biri sanayi odakları olarak tanımladığımız yörelerin bazı konulardaki pek de tartışılmayan ve istatistiksel verilere yansımayan özelliklerini sergilemesidir. Bunlardan ilki incelenen sanayi yığılmalarının yenilikçilik kapasiteleridir. Yapılan derinlemesine araştırmalar KOBİ'lerin çoğunun farklı biçimlerde de olsa ürün ve üretim sürecini geliştirmeye yönelik önemli çabalarının olduğunu göstermektedir.

İkinci çarpıcı sonuç KOBİ'lerin küresel ilişkilerini geliştirmek için gösterdikleri çabalar ve özellikle pazarlama faaliyetleridir. Özellikle geleneksel ürünlerde uzmanlaşan KOBİ'lerin dışsatım sürecinde yer alabilmek doğrudan kurdukları küresel ilişkiler dikkate değerdir.

Yukarıda saptanan özellikler sanayi odaklarına yönelik ayrıntılı çalışmaların bu yörelerin gerçek potansiyellerinin belirlenmesi için gerekli olduğunu göstermektedir. Sanayi odaklarına yönelik çalışmalar sadece üretim dokusunu değil, sosyal ve kurumsal dokunun belirlenmesi ve dinamiklerinin anlaşılmasında çok fazla katkı sağlayacaktır. Ulus devletin alt birimleri olan bölgelerin dünya ekonomik sisteminin kurgulandığı ana ölçek olduğu gözönüne alındığında sanayi odaklarının dünya ekonomik sistemine eklemlenme biçimleri üzerine çalışmalar önem kazanmaktadır. Ancak, bu çalışmalar tek bölge üzerine kısıtlı ölçekteki çalışmalar olmaktan çok ülkenin önemli bir bölümünü kapsayan araştırmalar şeklinde tasarlanmalıdır.

REFERANSLAR

Acz, Z.J. and Audrecht, D.B. (1990), *Innovation and Small Firms*. MIT Press, Cambridge MA.

Akgüngör, S, Kumral, N., Lenger, A., (2003) National industry clusters and regional specialisations in Turkey, European Planning Studies, 11,6, 647-672

Amin A, Cohendet P, 1999, "Learning and adaptation in decentralised business networks" *Environment and Planning D: Society and Space* **17** 87-104

Amin A, Thrift N, 1994'Living in the global' in *Globalization, Institutions and Regional Development in Europe* (Oxfoord University Press,Oxford) 1-22

Amin, A. 1989 Flexible specialization and small firms in Italy: Myths and realities,*Antipode*, 7, 4: 389-405.

Amin, A. 1999 The Emilian model: Institutional challenges', *European Planning Studies*, 7, 4: 389-405.

Amin, A. 2002 Spatialities of globalisation, *Environment and Planning A*, 34: 385-399.

Amin, A. and Malmberg. A. (1992), 'Competing structural and institutional influences on geography of production in Europe', *Environment and Planning A,* vol. 24, pp. 401-416.

Amin, A. and Thrift, N. 1994 Living in the global, in Amin, A. and Thrift, N. (eds), *Globalization, Institutions and Regional Development in Europe* (Oxford: Oxford University Press), 1-22.

Angel, D. 1991 High-Technology Agglomeration and the Labour Market: The Case of Silicon Valley, *Environment And Planning A*, 23,10: 1501- 1516.

Armatlı-Köroğlu, B. 2004 SME Networks as New Engines of Economic Development and Innovativeness, unpublished Ph.D. Thesis, METU.

Armatlı-Köroğlu, B. and Beyhan, B. 2003 "The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli", (eds.) Fingleton, B., Eraydın, A., Paci, R in *Regional Economic Growth, SMEs and the Wider Europe*, pp. 229-245, Ashgate, London.

Arndt, O. and Strenberg, R. 2000 Do manufacturing firms profit from intraregional innovation linkages? An empirical based answer, *European Planning Studies*, 8, 4: 465-486.

Asheim, B. T. and Isaksen, A. 2002 Regional innovation systems: The integration of local 'sticky' and global 'ubiquitous' knowledge, *Journal of Technology Transfer,* 27: 77-86.

Asheim, B.T. 1996 Industrial districts as 'learning regions': a condition for prosperity, *European Planning Studies*, 4, 4: 379-397.

Aslanoğlu, M. (1998), 'Esnek uzmanlaşma yaklaşımı açısından Denizli havlu dokuma sanayinin analizi', *21. Yüzyıla Doğru Denizli Sanayi Sempozyumu*, pp. 185-190.

Bacaria, J and Alomar, S. B. (1998), 'The Catalan innovation system: governing rapid changes', Braczyk, H-J., Cooke, P. and Heidenreich, M. (eds) *Regional Innovation Systems: The Role of Governances in a Globalized World.* London, UCL Press, pp. 72-98

Bagchi-Sen S, Sen .J (1997) The current state of knowledge in international business in producer services. *Environment and Planning A*, 29, pp. 1153–1174.

Bahrami, H. 1992 The emerging flexible organization: Perspectives from Silicon Valley, *California Management Review*, 34, 4, 33-52.

Barro, B. J. (1991), 'Economic growth in a cross section of countries', *Quarterly Journal of Economics*, vol.106, no.2, pp. 407-444.

REFERANSLAR

Acz, Z.J. and Audrecht, D.B. (1990), *Innovation and Small Firms*. MIT Press, Cambridge MA.

Akgüngör, S, Kumral, N., Lenger, A., (2003) National industry clusters and regional specialisations in Turkey, European Planning Studies, 11,6, 647-672

Amin A, Cohendet P, 1999, "Learning and adaptation in decentralised business networks" *Environment and Planning D: Society and Space* **17** 87-104

Amin A, Thrift N, 1994'Living in the global' in *Globalization, Institutions and Regional Development in Europe* (Oxfoord University Press,Oxford) 1-22

Amin, A. 1989 Flexible specialization and small firms in Italy: Myths and realities,*Antipode*, 7, 4: 389-405.

Amin, A. 1999 The Emilian model: Institutional challenges',*European Planning Studies*, 7, 4: 389-405.

Amin, A. 2002 Spatialities of globalisation, *Environment and Planning A*, 34: 385-399.

Amin, A. and Malmberg. A. (1992), 'Competing structural and institutional influences on geography of production in Europe', *Environment and Planning A,* vol. 24, pp. 401-416.

Amin, A. and Thrift, N. 1994 Living in the global, in Amin, A. and Thrift, N. (eds), *Globalization, Institutions and Regional Development in Europe* (Oxford: Oxford University Press), 1-22.

Angel, D. 1991 High-Technology Agglomeration and the Labour Market: The Case of Silicon Valley, *Environment And Planning A*, 23,10: 1501- 1516.

Armatlı-Köroğlu, B. 2004 SME Networks as New Engines of Economic Development and Innovativeness, unpublished Ph.D. Thesis, METU.

Armatlı-Köroğlu, B. and Beyhan, B. 2003 "The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli", (eds.) Fingleton, B., Eraydın, A., Paci, R in *Regional Economic Growth, SMEs and the Wider Europe*, pp. 229-245, Ashgate, London.

Arndt, O. and Strenberg, R. 2000 Do manufacturing firms profit from intraregional innovation linkages? An empirical based answer, *European Planning Studies*, 8, 4: 465-486.

Asheim, B. T. and Isaksen, A. 2002 Regional innovation systems: The integration of local 'sticky' and global 'ubiquitous' knowledge, *Journal of Technology Transfer*, 27: 77-86.

Asheim, B.T. 1996 Industrial districts as 'learning regions': a condition for prosperity, *European Planning Studies*, 4, 4: 379-397.

Aslanoğlu, M. (1998), 'Esnek uzmanlaşma yaklaşımı açısından Denizli havlu dokuma sanayinin analizi', *21. Yüzyıla Doğru Denizli Sanayi Sempozyumu*, pp. 185-190.

Bacaria, J and Alomar, S. B. (1998), 'The Catalan innovation system: governing rapid changes', Braczyk, H-J., Cooke, P. and Heidenreich, M. (eds) *Regional Innovation Systems: The Role of Governances in a Globalized World.* London, UCL Press, pp. 72-98

Bagchi-Sen S, Sen .J (1997) The current state of knowledge in international business in producer services. *Environment and Planning A*, 29, pp. 1153–1174.

Bahrami, H. 1992 The emerging flexible organization: Perspectives from Silicon Valley, *California Management Review*, 34, 4, 33-52.

Barro, B. J. (1991), 'Economic growth in a cross section of countries', *Quarterly Journal of Economics*, vol.106, no.2, pp. 407-444.

REFERANSLAR

Acz, Z.J. and Audrecht, D.B. (1990), *Innovation and Small Firms*. MIT Press, Cambridge MA.

Akgüngör, S, Kumral, N., Lenger, A., (2003) National industry clusters and regional specialisations in Turkey, European Planning Studies, 11,6, 647-672

Amin A, Cohendet P, 1999, "Learning and adaptation in decentralised business networks" *Environment and Planning D: Society and Space* **17** 87-104

Amin A, Thrift N, 1994'Living in the global' in *Globalization, Institutions and Regional Development in Europe* (Oxfoord University Press,Oxford) 1-22

Amin, A. 1989 Flexible specialization and small firms in Italy: Myths and realities,*Antipode*, 7, 4: 389-405.

Amin, A. 1999 The Emilian model: Institutional challenges', *European Planning Studies*, 7, 4: 389-405.

Amin, A. 2002 Spatialities of globalisation, *Environment and Planning A*, 34: 385-399.

Amin, A. and Malmberg. A. (1992), 'Competing structural and institutional influences on geography of production in Europe', *Environment and Planning A,* vol. 24, pp. 401-416.

Amin, A. and Thrift, N. 1994 Living in the global, in Amin, A. and Thrift, N. (eds), *Globalization, Institutions and Regional Development in Europe* (Oxford: Oxford University Press), 1-22.

Angel, D. 1991 High-Technology Agglomeration and the Labour Market: The Case of Silicon Valley, *Environment And Planning A*, 23,10: 1501- 1516.

Armatlı-Köroğlu, B. 2004 SME Networks as New Engines of Economic Development and Innovativeness, unpublished Ph.D. Thesis, METU.

Armatlı-Köroğlu, B. and Beyhan, B. 2003 "The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli", (eds.) Fingleton, B., Eraydın, A., Paci, R in *Regional Economic Growth, SMEs and the Wider Europe*, pp. 229-245, Ashgate, London.

Arndt, O. and Strenberg, R. 2000 Do manufacturing firms profit from intraregional innovation linkages? An empirical based answer, *European Planning Studies*, 8, 4: 465-486.

Asheim, B. T. and Isaksen, A. 2002 Regional innovation systems: The integration of local 'sticky' and global 'ubiquitous' knowledge, *Journal of Technology Transfer,* 27: 77-86.

Asheim, B.T. 1996 Industrial districts as 'learning regions': a condition for prosperity, *European Planning Studies*, 4, 4: 379-397.

Aslanoğlu, M. (1998), 'Esnek uzmanlaşma yaklaşımı açısından Denizli havlu dokuma sanayinin analizi', *21. Yüzyıla Doğru Denizli Sanayi Sempozyumu*, pp. 185-190.

Bacaria, J and Alomar, S. B. (1998), 'The Catalan innovation system: governing rapid changes', Braczyk, H-J., Cooke, P. and Heidenreich, M. (eds) *Regional Innovation Systems: The Role of Governances in a Globalized World.* London, UCL Press, pp. 72-98

Bagchi-Sen S, Sen .J (1997) The current state of knowledge in international business in producer services. *Environment and Planning A*, 29, pp. 1153–1174.

Bahrami, H. 1992 The emerging flexible organization: Perspectives from Silicon Valley, *California Management Review*, 34, 4, 33-52.

Barro, B. J. (1991), 'Economic growth in a cross section of countries', *Quarterly Journal of Economics*, vol.106, no.2, pp. 407-444.

Batmaz, N. and Özcan, A. (1998), 'Denizli sanayinin yapısal özellikleri ve sorunları', *21. Yüzyıla Doğru Denizli Sanayi Sempozyumu*, pp. 302-313.

Becattini G. (1991), 'The Industrial District As A Creative Milieu', in Benko,G and Dunford, M. (eds) *Industrial Change And Regional Development,* Belhaven, London, pp. 102-113.

Becattini, G. 1989 Sectors and/or districts: Some remarks on the conceptual foundations of industrial economics, Goodman, E. and Bamford, J. (eds), *Small Firms and Industrial Districts in Italy* (London: Routledge).

Becattini, G. 1991 The industrial district as a creative milieu, in Benko, G. and Dunford, M. (eds) *Industrial Change And Regional Development* (London: Belhaven), 102-113.

Beccatini, G. 1990 The Marshallian industrial districts as a socio- economic notion in F.Pyke, G.Beccatini and W.Sengerberger (Eds) *Industrial Districts and Inter-firm Cooperation in Italy* (Geneva: International Institute for Labour Studies)

Bellandi, M. 1994 Decentralized creativity in dynamic districts, in *Technological dynamism in industrial districts: An alternative approach to industrialization in Developing Countries* (Geneva: UN), 73-87.

Bellini, N. 1996 Italian industrial districts: Evolution and change,*European Planning Studies*, 4,1: 3-25.

Belussi, F. (1999), 'Policies for the development of knowledge- intensive local production systems', *Cambridge Journal of Economics*, vol. 23, pp. 729-747.

Belussi, F. 1996 Local systems, industrial districts and institutional networks: Towards a new evolutionary paradigm of industrial economics, *European Planning Studies*, 4: 5-26.

Bergman, E. and Feser, E. J. 2001 Innovation system effects on technological adoption in a regional value chain, *European Planning Studies*, 9, 5: 629-648.

Beyers W B, Alvine M J (1985) Export services in post-industrial society, *Papers of the Regional Science Association*, 57, pp. 33– 45.

Beyers W B, Lindahl D P (1996) Explaining the demand for producer services: is cost-driven externalization the major factor?, *Papers in Regional Science*, 75, pp. 351–374.

Braun, B., Gaebe, W., Grotz, R., Okamoto, Y. and Yamamoto, K. 2002 Regional networking of small and medium - sized enterprises in Japan and Germany: Evidence from a comparative study, *Environment and Planning A*, 34: 81-99.

Breschi, S, Lissoni, F. 2001 Localised knowledge spillovers vs. innovative milieux: Knowledge "tacitness" reconsidered, *Papers in Regional Science,* 80 255-273.

Breschi, S. (2000), 'The geography of innovation: A cross-sector analysis', *Regional Studies*, vol. 34, no. 3, pp. 213-229.

Britton, J.N.H. 2004 High technology localization and extra-regional networks, *Entrepreneurship &Regional Development*, 16 :369-390.

Brusco, S. (1986), 'Small firms and industrial districts: The experience of Italy', in E. Keeble and E. Wever (eds), *New Firms and Regional Development,* Croom Helm, London, pp.184-202.

Brusco, S. 1982 The Emilian Model: Productive decentralisation and social integration, *Cambridge Journal of Economics*, 6: 167-184.

Brusco, S. 1990 The idea of industrial districts: Its genesis, in Pyke, F., Senberger W. (eds),*Industrial Districts and Local Economic Regeneration* (Geneva: International Institute for Labour Studies).

Bryson, J.R. and Rusten, G. (2004) Virtual firms and the rise of project-based-organisational forms for the supply of business service expertise: Informational communication technologies and the stretching of social relationships across space, IGU Commission on the Dynamics of

Economic Change, Service Worlds: Employment, Organisation and Technologies, Birmingham, UK, 9-13 August.

Buckley M J, Casson, M (1976) The Future of Multinational Enterprise, Macmillan, London

Camagni R, 1991, "Local Milieu, Uncertainty and Innovation Networks: Towards a New Dynamic Theory of Economic Space" in *Innovation Networks* Ed R Camagni (Belhaven, London) pp 121-144

Camagni R, Capello R, 2000, "The role of SME networking and links in innovative high-technology milieux" in *High-technology clusters, networking and collective learning in Europe* Eds D Keeble, F Wilkinson (Ashgate: Aldershot) pp 118-155

Camagni, R and Capello, R. (2001), 'Innovation and performance of SMEs in Italy: The Relevance of Spatial Aspects', *Competition and Change*, vol. 3, pp. 69-107.

Capecchi, V. 1989 The informal economy and the development of flexible specialisation in Emilia-Romagna, in Portes, A., Castells, M., Benton, L.A. (eds), *The Informal Economy Studies in Advanced and Less Developed Countries* (Baltimore: John Hopkins University Press).

Capello R, 1994, *Spatial Economic Analysis of Telecommunications Network Externalities* (Avebury: Aldershot)

Castells, M. 1994 *Technopoles of the World* (New York: Routledge)

Castells, M. and Hall, P. (1994) *Technopoles of the World*, Routledge, London and New York.

Caves, R E (1971) "International corporations: the industrial economies of foreign investment" *Economica,* 38, 1-27

Cawthorne, P.M. 1995 The rise of networks and markets of a south Indian town: The example of Tiruppur's cotton knitwear industry, *World Development*, 23: 43-56.

Cheshire, P and Magrini, S. (2000), 'Endogenous processes in European regional growth: Convergence and policy', *Growth and Change*, vol. 31, no. 4, pp. 455-480.

Collinson, S. 2000 Knowledge networks for innovation in small Scottish software firms, *Entrepreneurship & Regional Development*, 12: 217-244.

Cooke P. 1996 Building a twenty-first century regional economy in Emilia-Romagna, *European Planning Studies*, 4, 1: 53-62.

Cooke, P, Uranga, M. G. and Etxebarria, G. (1998), 'Regional Systems Of Innovation: An Evolutionary Perspective', *Environment And Planning A*, vol. 30, pp. 1563-1584.

Cooke, P. (1998) 'Global clustering and regional innovation: systemic integration in Wales, in H.-J. Braczyk, P. Cooke and M. Heidenreich (Eds) *Regional Innovation Systems: The Role of Governances in a Globalized World*, London, UCL, 245-262

Cooke, P. and Morgan, K. 1998 *The Associational Economy: Firms, Regions and Innovation* (Oxford: Oxford University Press).

Cooke, P., Uranga, M.G. and G. Extebarria (1997), 'Regional innovation systems: Institutional and organisational dimensions' *Research Policy*, vol. 26, pp.475-491.

Cooke,P. and Morgan, K. 1994 Growth regions under duress: Renewal strategies in Baden-Württemberg and Emilia Romagna, in Amin, A. and Thrift, N. (eds*) Globalisation, Institutions And Regional Development In Europe* (Oxford: Oxford University Press), 91-117.

Coriat B. and Bianchi, R. 1995 A European response to the Japanese challenge in Andersen et al. (Eds) *Europe's Next Step* (Frank Cass: Ilford), 59-77.

Cumbers, A., Mackinnon, D. and Chapman, K. (2003) "Innovation, Collaboration and Learning in Regional Clusters: A Study of SMEs in the Aberdeen Oil Complex", *Environment and Planning A*, 35, pp.1689-1706.

Curran J, Jarvis R, Blackburn R A, Black S, 1993, "Networks and small firms' constructs,

methodological strategies and some findings" *International Small Firms Journal* 11 2 13-25

Daniels P. W. and Moleart F(1991) *The Changing Geography of Advanced Producer Services—Theoretical and Empirical Perspectives*. London: Belhaven Press

Daniels P W (1985) *Service industries: A geographic appraisal* (Methuen: London)

Daniels, P.W. and Bryson, J.R. (2002) "Manufacturing services and servicing manufacturing: knowledge based cities and changing forms of production", *Urban Studies*, 39, 5-6, pp.977-991.

de la Mothe J, Paquet G, 1998, *Local and Regional System of Innovation* (Kluwer, Boston)

De Propris L, 2002, "Types of innovation and inter-firm co-operation" *Entrepreneurship and Regional Development*, 14 337-353

DeBresson C, Amesse F, 1991, "Networks of innovators: A review and introduction to the issue" *Research Policy* 20 363-379

Digiovanna, S. (1996), 'Industrial districts and regional economic development: A regulation approach', *Regional Studies*, vol. 30, no. 4, pp. 373-386.

Digiovanna, S. (1997), 'Industrial districts and regional economic development: A regulation approach', *Regional Studies*, vol. 30, pp. 373-386.

Dobson A J, 1990, *An Introduction to Generalised Linear Models* (Chapman and Hall, London)

Doner, R.E and Hershberg, E. (1999), 'Flexible production and political decentralization in the developing world: Elective affinities in the pursuit of competitiveness?' *Studies in Comparative International Development*, vol. 34, no. 1, pp. 45-83

Drass, K and Ragin C.C (1999) QC/FSA: Qualitative Comparative Fuzzy –Set Analysis (Evanston, III, Institute for Policy Research Northwestern University)

Drejer, I. (2004) "Identifying innovation in surveys of services: a Schumpeterian perspective", *Research Policy*, 33, pp.551-562.

Dunford, M.F. (1988), *Capital, the State, and Regional Development*, Pion Limited, London.

Dunning, J. H. (1993) The Globalization of Business: The Challenge of the 1990s. New York: Routledge.

Edgington, D.W. (1999), 'Firms, Governments and Innovation in the Chukyo Region of Japan', *Urban Studies*, vol. 36, no. 2, pp. 305-339.

Eraydın A, 2002, "The local embeddedness of firms in social networks in Turkish industrial districts: the changing role of networks in local development" in *Social capital and the Embedded Enterprise: International Perspectives* Eds M Taylor, S Leonard (Ashgate, Aldershot) pp 269-289

Eraydın A, 2005, "Global Networks as Open Gates for Regional Innovation Systems" in *Industry in a Networked World* Eds C. Alvstram and E. Schamp (Ashagate: Aldershot) s. 53-88

Eraydın A. 2002b The roles of central government policies and the new forms of local governance in the emergence of industrial districts, in Taylor, M. and Felsenstein, D. (eds), *Promoting Local Growth: Process, Practice and Policy* (Aldershot: Ashgate).

Eraydın, A. (1998), 'Yeni Sanayi Odaklarının Ortaya Çıkmasında Kamunun Düzenleme ve Destekleme Biçimlerinin Katkısı', Paper presented to *Yeni Yerel Sanayi Odakları Semineri* organized by State Planning Organization, State Institute of Statistics and Turkish Capital Market Board, Ankara.

Eraydın, A. (2002), 'Building up competence, institutions and networks in order to catch up in the knowledge economy' in R. Hayter and R. Le Heron (eds), *Knowledge, Territory and Industrial Space* Ashgate, Aldershot, pp 67-87.

Eraydın, A. 1992 *Post-Fordizm ve Değişen Mekansal Öncelikler* (Ankara: METU).

Eraydın, A. 1993 The new international relations, restructuring in the economy and the emerging changes in the business behavior, in Rogerson, C., Schamp, E. and Linge, G.J.R. (eds), *Business Behavior, Markets, Finance and Industrial Chang,* (Berlin Gruyter).

Eraydın, A. 1995 Local development under the pressures of restructuring: The case of Bursa, Turkey, in B. Van der Knaap and R. Le Heron (eds), *Human Resources and Industrial Spaces: A Perspective on Globalisation and Localisation* (Chichester John, Wiley).

Eraydın, A. 1997 LDC industrial districts: the challenge of the periphery in.Westeren, K. I (ed) *Cross Border Cooperation and Strategies for Development in Peripheral Regions* (Oslo: Nord-Trondelags, Forskning), 411-436

Eraydın, A. 1998a The role of regulation mechanisms and public policies at the emergence of the new industrial districts, paper presented at Symposium on New Nodes Of Growth In Turkey: Gaziantep And Denizli, Ankara.

Eraydın, A. 1998b From an underdeveloped region to a locality: The Experience Of Çorum, paper prepared for World Bank.

Eraydın, A. 1999 Türkiyedeki sanayi gelişmesinin anadolu'ya yaygınlaşması ve son dönemde gelişen yeni sanayi odakları, in *Çarktan Çip'e* (İstanbul: Tarih Vakfı), 257-278.

Eraydın, A. 2002c *Yeni Sanayi Odakları: Yerel Gelişmenin Yeniden Kavramsallaştırılması* (Ankara: METU).

Eraydın, A. and Fingleton B. 2003 Networks externalities and the performance of firms in innovative industrial clusters, paper presented at COST A17 Prague Meeting, September 2003.

Erendil A, 1998, *Using Critical Realist Approach in Geographical Research: An Attempt to Analyze the Transforming Nature of Production and Reproduction in Denizli,* unpublished PhD thesis, Department of City and Regional Planning, Middle East Technical University, Ankara.

Ersoy, M. 1993 *Yeni Liberal Politikalar ve Kentsel Sanayi* (Ankara: METU faculty of Architecture).

European Network for SME Research (1995), *The European Observatory for SMEs: Third Annual Report*, Report Submitted to Directorate General XXII, ENSR.

Eurostat (1997), *Regions: Statistical Yearbook*, EU, Luxembourg.

Evans, D. and Volery, T. (2001) "Online business development services for entrepreneurs: an exploratory study", *Entrepreneurship & Regional Development*, 13, pp.333-350.

Fariselli P, Oughton C, Picory C, Sugden R, 1999, "Electronic Commerce and the Future for SMEs in a Global Market-Place: Networking and Public Policies" *Small Business Economics* 12 261-275

Feser, E.J. and Bergman, E.M. (2000) National industry templates: A framework for applied regional cluster analysis' Regional Studies,34,1-19

Fingleton B, 1999, "Generalised linear models, loglinear models and regional dynamics" in *The Current State of Economic Science* Vol 1 Ed S B Dahiya (Spellbound Publications, Rhotak) pp 285-307

Fingleton B, Igliori D C and Moore B, 2005 "Cluster Dynamics: New Evidence and Projections for Computing Services in Great Britain", forthcoming, *Journal of Regional Science,* May 2005

Fingleton B, Igliori D C and Moore B., 2004 "Employment Growth of Small High-technology Firms and the Role of Horizontal Clusters: Evidence from Computing Services and R&D in Great Britain 1991-2000" *Urban Studies* 41 4 773-799

Fingleton B, Iglori D C and Moore B, 2003, "Employment Growth of Small Computing Services Firms and the Role of Horizontal Clusters: Evidence from Great Britain 1991-2000", in *European Regional Growth.* Ed B Fingleton (Springer Verlag, Berlin) pp 267–291.

Florida R, 1995, "Towards the Learning Region" *Futures* 27 527-536.

Freel M S, 2003, "Sectoral patterns of small firm innovation, networking and proximity", *Research Policy* 32 751-770.

Freel, M.S. 2000 External Linkages and Product Innovation in Small Manufacturing Firms, *Entrepreneurship and Regional Development*, 12: 245-266.

Freeman, C. 1995 The national system of innovation in historical perspective, *Cambridge Journal of*

Economics, 19: 5-24.

Fujita M, Krugman P, Venables A. 1999 *The Spatial Economy (*MIT Press, Boston).

Fujita M, Thisse J F. 1996 Economics of Agglomeration, *Journal of the Japanese and International Economies,* 10 339–378.

Fujita, K. (1988), 'The Technopolis - High Technology and Regional-Development in Japan' *International Journal of Urban and Regional Research,* vol. 12, no. 4, pp. 566-594.

Fukuyama, F. 1995 *Trust: The Social Virtues and The Creation of Prosperity* (New York: The Free Press).

Garafoli, G. 1991 Italian dynamics from the 1970s to the 1980s, in Benko, G., Dunford, M. (eds), *Industrial Change and Regional Development: The Transformation of New Industrial Spaces* (London: Belhaven).

Ghosh, B. (1997) *Gains from global linkages: Trade in services and movements of persons* (St. Martin's Press: New York)

Gillespie A E, Green A E (1987) The changing geography of producer services employment in Britain, *Regional Studies,* 21, 397-411

Gilsing V, 2003, *Exploration, Exploitation and Co-evolution in Innovation Networks* , Erasmus School of Management, ERIM Ph.D. Series Research in Management 32, Rotterdam.

Glaeser, E.L., Kalla, H.D.Scheinkman, J.A and Schleifer, A (1992) Growth in cities, *Journal of Political Economy,* 100, 1126-1152

Glasmeier, A. 1999 Territory based regional development policy and planning in a learning economy: the case of real service centers in industrial districts, *European Urban and Regional Studies*, 6, 1: 73-84.

Glasmeir, A. (1991), 'Technological discontinuities and flexible production networks: The case of Switzerland and the world watch industry', *Research Policy*, vol. 20, pp. 469-485.

Glasmeir, A. (1994), 'Flexible Districts, Flexible Regions? The Institutional And Cultural Limits To Districts In An Era Of Globalization And Technological Paradigm Shift' in A. Amin, and N. Thrift (eds) *Globalisation, Institutions And Regional Development In Europe,* Oxford University Press, Oxford, pp. 118-146.

Goe W R (1990) Producer services, trade and the social division of labour, *Regional Studies,* 4, pp. 327–342.

Gordon I R, McCann P, 2000, "Industrial Clusters: complexes, agglomerations and/or social networks" *Urban Studies* 37 513-32

Gordon, R. (1996), 'Industrial districts and the globalization of innovation: Regions and networks in the new economic space'. In X.Vence-Deza and J.S. Metcalfe (eds), *Wealth from diversity.* Kluwer, Rotterdam, pp. 103-133

Grabher, G. (1993), 'Rediscovering the social in the economics of interfirm relations', in G. Grabher (ed.), *The Embedded Firm. On Socioeconomics of Industrial Networks,* Routledge, London, pp. 1-33.

Granovetter, M. (1985), 'Economic action and social structure: the problem of embeddedness', *American Journal of Sociology,* vol. 19, pp. 418-510

Gregersen, B. and Johnson, B. 1997 Learning economies, innovation systems and European integration, *Regional Studies*, 31: 479-490.

Grotz, R. and Braun, B. (1997) "Territorial or Trans-territorial Networking: Spatial Aspects of Technology Oriented Co-operation within the German Mechanical Engineering Industry", *Regional Studies*, 31(6), p.545-557.

Harrison, B. (1994a), 'The Italian industrial districts and the crisis of cooperative form: Part I'. *European Planning Studies,* vol. 2, pp. 3-22.

Harrison, B. (1994b), 'The Italian industrial district and the crisis of co-operative from: Part:II', *European Planning Studies*, vol. 2, no. 2, pp. 159-174.

Harrison, B. 1992 Competiton, thrust and reciprocity in the development of innovative regional millius, *Papers of Regional Science*, 71: 905.

Harrison, B. 1992 Competiton, thrust and reciprocity in the development of innovative regional millius, *Papers of Regional Science*, 71: 905.

Harvey D, 1989, *The Condition of Postmodernity: An enquiry into the origins of cultural change,* Basil Blackwell, Cambridge

Hassink, R. (1997), 'What does the learning region mean for economic geography?', Paper presented to *Regional Studies Association 'Regional Frontiers' EURRN European Conference*, 20-23 September, Frankfurt (Oder), Germany.

Heidenreich, M and Krauss, G. (1998), 'The Baden-Württemberg production and innovation regime: past successes and new challenges', Braczyk, H.J., Cooke, P. and Heidenreich, M. (Eds) *Regional Innovation Systems: The Role of Governances in a Globalized World,* London, UCL Press, 214-244.

Heidenreich, M. (1996), 'Beyond Flexible Specialization: The Rearrangement of Regional Production Orders in Emilia Romagna and Baden-Württemberg' *European Planning Studies*, vol.4, pp. 401-417

Henderson, J.V., Kuncaro, A and Turner M. (1995) Industrial development in cities., Journal of Political Economy, 103, 1067-1085

Hill E W and Brennan J F. 2000 A methodology for defining the drivers of industrial Clusters: The foundations of competitive advantage, *Economic Development Quarterly*, 14, 65-96.

Illeris, S. (1996) *The Service Economy—A Geographical Approach.* Chichester: John Wiley & Sons.

Isard, W. (198) Methods of Regional Analysis, MIT press

Işık, O. and Pınarcıoğlu, M. (1996), 'Two faces of local transformation: The case of Denizli, Turkey', *City*, 3-4, pp. 63-70.

Jin, D. J and Stough, R. (1998). 'Learning and learning capability in the Fordist and post-Fordist age: an integrative framework', *Environment and Planning A,* vol. 30, p. 1255-1278.

Johannisson B, 2000, "Networking and entrepreneurial growth" in *The Blackwell Handbook of Entreperneurship,* Eds D L Sexton and H Landström (Blackwell, Oxford) pp 368-386

Johannisson, B. 2002 The institutional embeddedness of local inter-firm networks: leverage for business creation, *Entrepreneurship & Regional Development,* 14, 4 :297-315.

Johannisson, B., Alexanderson, O, Nowicki, K and Senneseth, K. 1994 Beyond anarchy and organization: entrepreneurs in contextual networks, *Entrepreneurship & Regional Development*, 6, 4: 329-356.

Kanter, R.M. 1996 *Wltklasse: Im globalen Wettbewerb lokal triumphieren* (Wien: Ueberreuter).

Karaalp, İ. and Batmaz, N. (1998), 'Denizli ekonomisinin sanayileşme süreci ve dış ticaretteki payı', in C. Küçüker (eds), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 101-105.

Katz M L, Shapiro C, 1985, "Network externalities, competition and compatibility" *American Economic Review* 75 424-440

Katz M L, Shapiro C, 1986, "Technology adoption in the presence of network externalities"*Journal of Political Economy* 94 822-841

Kautonen, M. 1996 Emerging innovative networks and milieux: the Case of furniture industry in the Lahti region of Finland, *European Planning Studies*, 6, 4: 439-456.

Kazdağlı, H. (1998), 'Yeni bölgesel gelişme yaklaşımları doğrultusunda Denizli ekonomisi', in C. Küçüker (eds), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 83-93.

Keane, J. and Allison, J. 2000 Policy review section: The intersection of the learning region and local and regional economic development: Analysing the role of higher education, *Regional Studies*, 34,3: 896-901.

Keeble D, 2000, "Collective Learning Processes in European High-Technology Milieux" in *High-Technology Clusters, Networking and Collective Learning in Europe* Eds D Keeble, F Wilkinson(Ashgate, Aldershot) pp 182–198.

Keeble D, Lawson C, Moore B, Wilkinson F, 1999, "Collective Learning Processes, Networking and Institutional Thickness in the Cambridge Region", *Regional Studies* 33, 319–32.

Keeble D, Wilkinson F, 2000, *High-technology clusters, networking and collective learning in Europe* (Ashgate, Aldershot)

Keeble, D and Lawson, C. (1999), 'Collective Learning Processes, Networking and 'Institutional Thickness' in the Cambridge Region', *Regional Studies,* vol. 33, no.4, pp. 319-

Keeble, D., Lawson, C., Moore, B. and Wilkinson, F. (1999) "Collective Learning Process, Networking and 'Institutional Thickness' in the Cambridge Region", *Regional Studies,* 33(4), pp. 95-104.

Keeble, D., Lawson, C., Smith, H.L., Moore, B. and Wilkinson, F. 1998 Internationalisation process, networking and local embeddedness in technology intensive small firms", *Small Business Economics*, 11: 327-342.

Keil, S. and Mack R. (1986) Identifying export potentials in the service sector, *Growth and Change,* 17, pp. 1– 7.

Kirat, T. and Lung, Y. (1999), 'Innovation and proximity: Territories as loci of collective learning process', *European Urban and Regional Studies,* vol. 6, pp. 27-38.

Kogut B, 2000, "The network as knowledge: generative rules and emergence of structure" *Strategic Management Journal* 21 405-425

Koschatzky, K. (2000) "A River is a River-Cross- Border Networking Between Baden and Alsace", *European Planning Studies*, 8(4), p.429-450.

Koschatzky, K. 1999 Innovation networks of industry and business related services-relations between innovation intensity of firms and regional inter-firm cooperation, *European Planning Studies*, 7, 6: 737-757.

Koschatzky, K. 2000 A river is a river-cross- border networking between Baden and Alsace", *European Planning Studies*, 8,4: 429-450.

Koschatzky, K. and Bross, U. 2001 Innovation networking in a transition economy: experience from Slovenia", in K. Koschatzky, M. Kulicke and A. Zenker (eds) *Innovation Networks: Concepts and Challenges in the European Perspective* (Germany: Verlag).

Krugman P, 1991a, *Geography and Trade* (MIT Press, Cambridge, Massachusetts)

Krugman P, 1991b, "Increasing Returns and Economic Geography" *Journal of Political Economy* 99 31 483–499.

Krugman, P. (1995), *Development, Geography and Economic Theory*, MIT Press, Cambridge.

Küçüker, C. (1998), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 1-14.

Landabaso, M. Oughton, C. and Morgan, K. (1999*), Learning regions in Europe: Theory, policy and practice through the RIS experience*" paper presented 3rd International Conference on Technology and Innovation Policy: Assessment commercialisation and application of science and technology and the management of knowledge Austin USA August 30-September 2

Langlois, R.N., 2001, 'Knowledge, consumption and endogenous growth', *Journal of Evolutionary Economics*, vol. 11, pp. 77-93.

Larsson, S. and Malmberg, A. 1999 Innovations, competitiveness and local embeddedness a study of machinery producers in Sweden, *Geografiska Annaler*, 81, 1: 1-18.

Lawson C, 1997, 'Territorial clustering and high-technology innovation: from industrial districts to innovative milieux', Working Paper 54, ESRC Centre for Business Research, University of Cambridge

Lechner C, Dowling M, 2000, "The evolution of industrial districts and regional networks: the case of biotechnology region Munich/Martinsried" *Journal of Manangemenyt and Governance* 99 309-338

Leigh, C.M. (ed.) (1995), *A Regional Innovation Strategy: towards a blueprint for Yorkshire and Humberside*, Yorkshire and Humberside Regional Research Observatory

Leyson A, Thrift, N (1997) *Money/ Space: Geographies of monetary transformation*, Routledge, London and New York

Lin, C.Y. (1997), 'Tehnopolis development: An assessment of the Hsinchu experience' *International Planning Studies*, vol. 2, no. 2, pp. 257-272.

Locke, R. 1995 *Remaking The Italian Economy* (Ithaca and London: Cornell University Press).

Longhi, C. 1999 Networks, collective learning and technology development in innovative high-tech regions: The case of Sophia-Antipolis, *Regional Studies*, 33, 4: 333-342.

Lundequist P Power D, 2001, "Putting Porter into Practice? Practices of Regional Cluster Building" *European Planning Studies*, 10 685-704

Lundvall, B.A. 1995 The learning economy - challenges to economic theory and policy, revised version of a paper presented to the EAEPE Conference, Copenhagen, October.

Lyons, D. (1995), 'Agglomeration economies among high-technology firms in advanced production areas: The case of Denver Boulder', *Regional Studies*, vol. 29, pp. 265-278.

Lyons, D. 2000 Embeddedness, milieu and innovation among high technology firms: a Richardson, Texas case study, *Environment and Planning A*, 32,5: 891-908.

MacPherson, A. (1997) The role of producer service outsourcing in the innovation performance of New York State manufacturing firms, *Annals of the Association of American Geographers*, 87(1), 52-71.

Maillat, D. 1995 Territorial dynamic, innovative milieus and regional policy, *Entrepreneurship & Regional Development*, 7: 157-165.

Maillat, D., Lecoq, B., Nemeti, F. and Pfister, M. (1995), 'Technology district and innovation: The case of the Swiss Jura Arc' *Regional Studies*, vol. 29, no. 3, pp. 251-263.

Malmberg, A. 1996 Industrial geography: Agglomeration and local milieu, *Progress In Human Geography*, 20, 3: 392-403.

Malmberg, A. and Maskell, P. (1997), 'Towards an Explanation of Regional Specialisation and Industry Agglomeration', *European Planning Studies*, vol. 5, pp. 1997.

Markusen, A. 1996 Sticky places in slippery spaces: a typology of industrial districts, *Economic Geography*, 72, 3 :293-313.

Marshall J N (1982) Linkages between manufacturing industry and business services, *Environment and Planning A*, 14 523-540

Marshall J N (1985) Business services, the regions and regional policy, *Regional Studies*, 353-364

Marshall, A. 1920 *Principles in Economics* (London: Macmillan).

Martin, P. (1998), 'Can regional development policies affect growth and geography in Europe?', *World Economy*, vol. 21, no. 6, pp. 757-775.

Maskell P, Eskelinen H, Hannibalsson I, Malmberg A, Vatne E, 1998, *Competitiveness, Localised Learning and Regional Development* (Routledge, London)

Maskell, P. 1998 Learning in the village economy of Denmark: the role of institutions and policy in sustaining competitiveness, in Braczyk, H-J., Cooke, P. and Heidenreich, M. (eds) *Regional Innovation Systems: The Role of Governances in a Globalized World* (London: UCL Press), 190-213.

Maskell, P. and Malmberg, A. (1999a), 'Localised learning and industrial competitiveness', *Cambridge Journal of Economics,* vol. 23, pp. 167-185.

Mc Pherson, A. (2002), 'The contribution of academic-industry interaction to product innovation: The case of New York State's medical devices sector', *Papers of Regional Science,* vol. 81, pp.121–129

McCullagh P, Nelder J A, 1989, *Generalised Linear Models* 2nd Edition (Chapman and Hall, London)

Midelfart-Knarvik,K.H.Overman,H.G, Redding,S.J and Venables, A.J (2000) The location of European industry, Economic Papers.no.142 (Brussels: European Commission, Directorate General for Economic and Financial Affairs)

Morgan, K. (1996), 'Learning-by interacting: Inter-firm networks and enterprises support', *Networks Of Enterprises And Local Development: Competing And Cooperating In Local Systems,* OECD:Paris, 53-66

Morgan, K. 1997 The learning region: institutions, innovation and regional renewal, *Regional Studies,* 31: 491-503.

Morshidi, S (2000) Globalising Kuala Lumpur and the Strategic Role of the Producer Services Sector, *Urban Studies*, Vol. 37, No. 12, 2217– 2240

Mouleart, F., Swyngedouw, J. and Wilson, A. (1988), 'Spatial Responses to Fordist and Post-Fordist Accumulation and Regulation', *Papers of the Regional Science Association*, vol. 64, pp. 11-23.

Muller, E. and Zenker, A. (2001) "Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems", *Research Policy*, 30, pp.1501-1516.

Murray, R. 1991 Flexible specialisation in small island economies: The case of Cyprus, in Pyke, F., Senberger, W., (eds), *Industrial Districts and Local Economic Regeneration* (Geneva: International Institute for Labour Studies).

Mutluer, M. (1995), *Gelişimi, Yapısı ve Sorunlarıyla Denizli Sanayii*, DSO Yayınları, İzmir.

Nadvi, K. 1992 Flexible specialization, industrial districts and employment in Pakistan (Geneva: International Labour Office)

Nelder J A, Wedderburn R W M, 1972, "Generalised linear models" *Journal of the Royal Statistical Society A*, 135, 370-384

Noyelle T J, Stanback T M (1984) *The Economic Transformation of American Cities,* Rowman and Allanheld, Totowa, NJ

Noyelle, T. J. (1987) *Beyond Industrial Dualism: Market and Job Segmentation in the New Economy.* Boulder, CO: Westview Press.

O'Farrell P N., Moffat L, Hitchens D. (1993) Manufacturing demand for business services in a core and peripheral region: does flexible production imply vertical disintegration of business service?, *Regional Studies*, 27, pp. 385– 400.

Oakey, R. 1985 High-Technology industries and agglomeration economies, in Hall, P. and Markusen, A. (eds), *Silicon Landscapes*, (Boston: Allen and Unwin).

Oinas, P. 2000 Distance and learning: Does proximity mater?, in Boekema, F., Morgan, K., Bakkers, S. and Rutten, R. (eds), *Knowledge Innovation and Economic Growth: The Theory and Practice of Learning Region* (UK Edward Elgar).

Öz, Ö. 2004 *Clusters and Competitive Advantage The Turkish Experience*, Palgrave Macmillan, New York.

Özcan G B, 1995, *Small Firms and Local Economic Development (*Avebury, Aldershot)

Özelçi, T. 2002 Institutional Aspects of Regional/Local Development, Unpublished Ph.D Thesis, METU, Ankara.

Paci, R and Usai, S. (2000), 'Technological Enclaves and Industrial Districts: An analysis of the regional distribution of innovative activitiy in Europe'. *Regional Studies*, vol. 34, pp. 97-114.

Pamuk, Ş. (1998), 'Denizli ve Gaziantep'te sanayileşmenin yakın tarihi, 1900-1980', Paper presented to *Yerel Sanayi Odakları Uluslararası Semineri*, 23-25 September, Ankara.

Park, S.O. and Markusen, A. 1995 Generalisation new industrial districts- A theoretical agenda and an application from Nonwestern economy, *Environment and Planning A*, 27,1: 81-104.

Patrucco, P.P. 2003 Institutional variety, networking and knowledge exchange: Communication and innovation in the case of Brinza technological district, *Regional Studies*, 37,2: 159-172.

Pavitt, K. Robson, M and Towsend, J. (1987), 'The size distribution of innovating firms in the UK 1945-84', *Journal of Industrial Economics*, vol. 45, pp. 297-306.

Peleikis, A. (2000), 'The emergence of a translocal community: The case of a South Lebanese Village and its migrant connections to Ivory Coast' in Cahiers d'etudes sur la Mèditeranèe orientale et le monde turco-iranien, No. 30, pp. 297-317.

Pınarcıoğlu, M. (1998), 'Peripheral development and the rise of entrepreneurialism: The characteristics of Anatolian Tigers and a comparison between the local textile and clothing industries of Bursa and Denizli', Paper presented to *the 3rd erc METU International Conference in Economics*, organized by the Economic Research Center, Middle East Technical University, 9-12 September, Ankara, Turkey.

Pınarcıoğlu, M. (2000), *Development of Industry and Local Change*, METU, Faculty of Architecture Press, Ankara.

Pinarcioğlu M, 1998, *Industrial Development and Local Change: The Rise of Textiles and Clothing Since the 1980s and Transformation in The Local Economies Of Bursa and Denizli*, unpublished PhD thesis, University College London.

Piore, M. and Sabel, C.F. 1984 *The Second Industrial Divide* (New York: Basic Books).

Plummer, P. and Taylor, M. (2000), 'Theory and Praxis in Economic Geography: Enterprising and local growth in a global economy', paper presented to *The Wisconsin Economic Summit,* November 29-December 1, Wisconsin.

Plummer, P. and Taylor, M. (2001), 'Theories of local economic growth (part 1) concepts, models and measurement', *Environment and Planning A*, vol. 33, pp. 219-236.

Porter M E, 1990, *The Competitive Advantage of Nations* (Macmillan Press, London)

Porter M E, 1998, *On Competition* (Harvard Business Review Books, Boston)

Porter, M. 1990 *Competitive Advantages of Nations*, New York; Free Press.

Porterfield S L, Pulver G C (1991) Exports, impacts and locations of service producers, *International Regional Science Review*, 14, pp. 41–59.

Porterfield S L, Cox T L (1991) The export decision of selected services-producing and manufacturing industries, *Growth and Change,* 22, 66-85

Portes, A., Haller, W. and Guarnizo, L.E. (2002), 'Transnational entrepreneurs: An alternative form of immigrant economic adaptation', *American Sociological Review*, vol. 67, no. 2, pp. 278-299.

Propris, L.D. 2002 Types of innovation and inter-firm co-operation, *Entrepreneurship & Regional Development,* 14: 337-353.

Pyke, F. and Senberger, W. 1991 *Industrial Districts And Local Economic Regeneration* (Geneva: International Institute For Labour Studies).

Pyke, F., Bacattini, G. and Senberger, W. 1990 *Industrial Districts and Inter-Firm Cooperation in Italy*, Geneva.

Rabelotti, R. 1995 Is there an industrial district model - Footwear districts in Italy and Mexico compared, *World Development*, 23,1: 29-41.

Rabelotti, R. 1997 *External Economies and Cooperation In Industrial Districts: A Comparison Of Italy And Mexico* (Basingstoke: Macmillan).

Raco, M. 1999 Competition, collaboration and the new industrial districts: Examining the industrial turn in local economic development, *Urban Studies*, 36, 5-6: 951-968.

Ragin, C.C. (2000)Fuzzy-Set Social Science (Chicago,III, University of Chicago Press)

Rama, R., Ferguson, D. and Melero, A. (2003) "Subcontracting Networks in Industrial districts: The electronic Industry of Madrid", *Regional Studies*, 37(1), p. 71-88.

Revilla-Diez, J. 2001 Metropolitan innovation systems- a comparison between Barcelona, Stockholm and Vienna, *International Regional Science Review,*

Reyhan, N. 1990 The spatial implications of restructuring of production organization of Bursa textile industry Master Thesis METU City and Regional Planning Department

Rodriquez-Pose, A. (1998), 'Social conditions and economic performance: The bond between social structure and regional growth in Europe', *International Journal of Urban and Regional Research,* vol. 22, no. 3, pp. 443-460.

Rogerson, C.M. 1994 Flexible production in the developing world: The case of South Africa, *Geoforum*, 25,1: 2-17.

Romer, P.M. (1990), 'Endogenous technological change', *Journal of Political Economy,* vol. 98, no. 5, pp. S71-S102.

Romer, P.M. (1994), 'The origins of endogenous growth', *Journal of Economic Perspectives,* no.1, pp. 3-22

Romer, P.M. 1986 Increasing returns and long-run growth, *Journal of Political Economy*, 94: 1002-1037.

Rominj, H. and Albu, M. 2002 Innovation, networking and poximity: Lessons from high-technology firms in the UK, *Regional Studies*, 36,2: 81-86.

Roper, S. (2000), *Benchmarking Regional Innovation: A Comparison Of Baden-Württemberg, Bavaria, Northern Ireland And The Republic Of Ireland*, Northern Ireland Economic Research Centre, Working Paper Series No. 56

Rosenfeld, S A. 1995 Does cooperation enhance competitiveness? Assesing the impact of interfirm collaboration, *Research Policy,* 25, 247-263

Rugman A M (1981) Inside the multinational: The Economşcs of Internal Markets, Colombia University Press, New York

Sabel, C. 1989 Flexible specialisation and re-emergence of regional economies, in Hirst, P.and Zeitlin, J. (eds), *Reversing Industrial Decline* (Oxford: Berg).

Saraçoğlu, Y. 1993 *Local Production Networks: An Opportunity For Development*, MCP Dissertation, Ankara, Middle East Technical University, Department of City and Regional Planning.

Saxenian, A.L. (1985), 'The genesis of Silicon Valley' in P. Hall and A.R. Markusen (eds), *Silicon Landscapes*, Allen & Unwin Inc., Boston, pp. 20-34.

Saxenian, A.L. (1991), 'The origins and dynamics of production networks in Silicon Valley' *Research Policy,* vol. 20, no. 5, pp. 423-437.

Pyke, F. and Senberger, W. 1991 *Industrial Districts And Local Economic Regeneration* (Geneva: International Institute For Labour Studies).

Pyke, F., Bacattini, G. and Senberger, W. 1990 *Industrial Districts and Inter-Firm Cooperation in Italy*, Geneva.

Rabelotti, R. 1995 Is there an industrial district model - Footwear districts in Italy and Mexico compared, *World Development*, 23,1: 29-41.

Rabelotti, R. 1997 *External Economies and Cooperation In Industrial Districts: A Comparison Of Italy And Mexico* (Basingstoke: Macmillan).

Raco, M. 1999 Competition, collaboration and the new industrial districts: Examining the industrial turn in local economic development, *Urban Studies*, 36, 5-6: 951-968.

Ragin, C.C. (2000)Fuzzy-Set Social Science (Chicago,III, University of Chicago Press)

Rama, R., Ferguson, D. and Melero, A. (2003) "Subcontracting Networks in Industrial districts: The electronic Industry of Madrid", *Regional Studies*, 37(1), p. 71-88.

Revilla-Diez, J. 2001 Metropolitan innovation systems- a comparison between Barcelona, Stockholm and Vienna, *International Regional Science Review,*

Reyhan, N. 1990 The spatial implications of restructuring of production organization of Bursa textile industry Master Thesis METU City and Regional Planning Department

Rodriquez-Pose, A. (1998), 'Social conditions and economic performance: The bond between social structure and regional growth in Europe', *International Journal of Urban and Regional Research,* vol. 22, no. 3, pp. 443-460.

Rogerson, C.M. 1994 Flexible production in the developing world: The case of South Africa, *Geoforum*, 25,1: 2-17.

Romer, P.M. (1990), 'Endogenous technological change', *Journal of Political Economy,* vol. 98, no. 5, pp. S71-S102.

Romer, P.M. (1994), 'The origins of endogenous growth', *Journal of Economic Perspectives*, no.1, pp. 3-22

Romer, P.M. 1986 Increasing returns and long-run growth, *Journal of Political Economy*, 94: 1002-1037.

Rominj, H. and Albu, M. 2002 Innovation, networking and poximity: Lessons from high-technology firms in the UK, *Regional Studies*, 36,2: 81-86.

Roper, S. (2000), *Benchmarking Regional Innovation: A Comparison Of Baden-Württemberg, Bavaria, Northern Ireland And The Republic Of Ireland*, Northern Ireland Economic Research Centre, Working Paper Series No. 56

Rosenfeld, S A. 1995 Does cooperation enhance competitiveness? Assesing the impact of interfirm collaboration, *Research Policy,* 25, 247-263

Rugman A M (1981) Inside the multinational: The Economşcs of Internal Markets, Colombia University Press, New York

Sabel, C. 1989 Flexible specialisation and re-emergence of regional economies, in Hirst, P.and Zeitlin, J. (eds), *Reversing Industrial Decline* (Oxford: Berg).

Saraçoğlu, Y. 1993 *Local Production Networks: An Opportunity For Development*, MCP Dissertation, Ankara, Middle East Technical University, Department of City and Regional Planning.

Saxenian, A.L. (1985), 'The genesis of Silicon Valley' in P. Hall and A.R. Markusen (eds), *Silicon Landscapes*, Allen & Unwin Inc., Boston, pp. 20-34.

Saxenian, A.L. (1991), 'The origins and dynamics of production networks in Silicon Valley' *Research Policy,* vol. 20, no. 5, pp. 423-437.

Pyke, F. and Senberger, W. 1991 *Industrial Districts And Local Economic Regeneration* (Geneva: International Institute For Labour Studies).

Pyke, F., Bacattini, G. and Senberger, W. 1990 *Industrial Districts and Inter-Firm Cooperation in Italy*, Geneva.

Rabelotti, R. 1995 Is there an industrial district model - Footwear districts in Italy and Mexico compared, *World Development*, 23,1: 29-41.

Rabelotti, R. 1997 *External Economies and Cooperation In Industrial Districts: A Comparison Of Italy And Mexico* (Basingstoke: Macmillan).

Raco, M. 1999 Competition, collaboration and the new industrial districts: Examining the industrial turn in local economic development, *Urban Studies*, 36, 5-6: 951-968.

Ragin, C.C. (2000)Fuzzy-Set Social Science (Chicago,III, University of Chicago Press)

Rama, R., Ferguson, D. and Melero, A. (2003) "Subcontracting Networks in Industrial districts: The electronic Industry of Madrid", *Regional Studies*, 37(1), p. 71-88.

Revilla-Diez, J. 2001 Metropolitan innovation systems- a comparison between Barcelona, Stockholm and Vienna, *International Regional Science Review,*

Reyhan, N. 1990 The spatial implications of restructuring of production organization of Bursa textile industry Master Thesis METU City and Regional Planning Department

Rodriquez-Pose, A. (1998), 'Social conditions and economic performance: The bond between social structure and regional growth in Europe', *International Journal of Urban and Regional Research,* vol. 22, no. 3, pp. 443-460.

Rogerson, C.M. 1994 Flexible production in the developing world: The case of South Africa, *Geoforum*, 25,1: 2-17.

Romer, P.M. (1990), 'Endogenous technological change', *Journal of Political Economy*, vol. 98, no. 5, pp. S71-S102.

Romer, P.M. (1994), 'The origins of endogenous growth', *Journal of Economic Perspectives*, no.1, pp. 3-22

Romer, P.M. 1986 Increasing returns and long-run growth, *Journal of Political Economy*, 94: 1002-1037.

Rominj, H. and Albu, M. 2002 Innovation, networking and poximity: Lessons from high-technology firms in the UK, *Regional Studies*, 36,2: 81-86.

Roper, S. (2000), *Benchmarking Regional Innovation: A Comparison Of Baden-Württemberg, Bavaria, Northern Ireland And The Republic Of Ireland*, Northern Ireland Economic Research Centre, Working Paper Series No. 56

Rosenfeld, S A. 1995 Does cooperation enhance competitiveness? Assesing the impact of interfirm collaboration, *Research Policy,* 25, 247-263

Rugman A M (1981) Inside the multinational: The Economşcs of Internal Markets, Colombia University Press, New York

Sabel, C. 1989 Flexible specialisation and re-emergence of regional economies, in Hirst, P.and Zeitlin, J. (eds), *Reversing Industrial Decline* (Oxford: Berg).

Saraçoğlu, Y. 1993 *Local Production Networks: An Opportunity For Development*, MCP Dissertation, Ankara, Middle East Technical University, Department of City and Regional Planning.

Saxenian, A.L. (1985), 'The genesis of Silicon Valley' in P. Hall and A.R. Markusen (eds), *Silicon Landscapes*, Allen & Unwin Inc., Boston, pp. 20-34.

Saxenian, A.L. (1991), 'The origins and dynamics of production networks in Silicon Valley' *Research Policy,* vol. 20, no. 5, pp. 423-437.

Saxenian, A.L. 1990 Regional networks and resurgence of Silicon Valley, *California Management Review*, 33, 1: 89-112.

Saxenian, A.L. 1991 The origins and dynamics of production networks in Silicon Valley, *Research Policy*, 20: 423-437.

Saxenian, A.L. 1994 *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, (Cambridge: Harvard University Press).

Schmitz, H. (1990), 'Small firms and flexible specialization in developing countries' *Labor and Society*, vol.15, no.3,

Schmitz, H. (1999), 'Collective efficiency and increasing returns', *Cambridge Journal of Economics*, vol. 23, pp. 465-483

Schmitz, H. 1995 Small shoemakers and Fordist giants: Tale of a supercluster, *World Development*, 23: 9-28.

Schmitz, H. 1998 Responding to Global Competitive Pressure: Local Co-Operation And Upgrading In The Sinos Valley, IDS Working Paper 82, Sussex. Institute Of Development Studies.

Schmitz, H. and Musyck, B. 1994 Industrial districts in Europe - policy lessons for developing-countries, *World Development*, 22,6: 889-910.

Scitovsky T, 1954, "Two concepts of external economies" *Journal of Political Economy* 62 143-51

Scott A, 1998, *Regions in the World Economy: The Coming Shape of Global Production, Competition and Political Order* (Oxford University Press, Oxford)

Scott, A. J and Storper, M. (1987), 'High technology industry and regional development: A theoretical critique and reconstruction' *International Social Science Journal*, vol. 112, pp. 215-232

Scott, A.J. and Angel, D.P. (1988), The global assembly-operations of US semiconductor firms: a geographical analysis. Environment and Planning A, 20: 1047-1067

Shennan, S. (1997). Quantifying Archeology Edinburg University Press: Edinburg)

Simmie, J. (2002) "Knowledge Spillovers and Reasons for the Concentration of Innovative SMEs", Urban Studies, 39, pp.885-902.

Simmie, J., Sennett, J., Wood, P. and Hart, D. (2002) "Innovation in Europe: The Tale of Networks, Knowledge and Trade in Five Cities", *Regional Studies*, 36(1), p. 47-64.

Solow, R.M. (1994), 'Perspectives on Growth Theory', *Journal of Economic Perspectives*, vol. 8, no. 1, pp. 45-54.

Staber, U. 1996 Accounting for variations in the performance of industrial districts: The case of Baden-Württemberg, *International Journal of Urban and Regional Research*, 299-316.

Staber, U. 1997 Specialisation in a declining industrial districts, *Growth and Change*, 28: 475-495.

Stein, R. (2002) Producer Services, Transaction Activities, and Cities: Rethinking Occupational categories in Economic Geography, *European Planning Studies, Vol. 10, No. 6, 2002*

Storper M, 1997a, "Territories, flows and hierarchies in the global economy" in *Spaces of Globalization: Reasserting the Power of the Local* Ed K Cox (Guildford, New York) 19-44

Storper M, 1997b, *The Regional World: Territorial Development in the World Economy* (Guildford, New York)

Storper, M. 1990 Industrialisation and regional question in the Third World: Lessons of post-imperialism and prospects of post-Fordism, *International Journal of Urban and Regional Research*, 423-444.

Storper, M. 1993 Regional worlds of production: Learning and innovation in the technology districts of France, Italy and USA, *Regional Studies*, 27: 433-455.

Storper, M. 1995 The resurgence of the regional economies ten years later: The region as a nexus of untraded interdependencies, *European Urban And Regional Studies*, 2, 3: 191-215.

Storper, M. and Walker, R. 1989 *The Capitalist Imperative: Territory, Technology and Industrial Growth* (Blackwell).

Stöhr, W. B. and Pönighaus, R. (1992), 'Towards a data-based evaluation of the Japanese technopolis policy and organizational infrastructure on urban and regional development', *Regional Studies*, vol 26, pp. 605-538.

Strenberg, R. 2000 Innovation networks and regional development_evidence from the European Regional Innovation Survey (ERIS): Theoretical concepts, methodological approach, empirical basis and introduction to the theme issue, *European Planning Studies*, 8, 4: 390-407.

Sundbo, J., Lhonston, R., Mattsson, J., Millett, B. (2001) "Innovation in service internationalisation: the crucial role of the frantrepreneur", *Entrepreneurship & Regional Development*, 13, pp.247-267.

Sydow, J and Staber, U. 2002 The institutional embeddedness of project networks: The case of content production in German television, *Regional Studies*, 36, 3: 215-227.

Symth, I. 1992 Collective efficiency and selective benefits: The growth of rattan industry of Tegalwangi, *Bulletin Institute of Development Studies*, 23, 3: 51-56.

Şengün, İ. (1998), 'Denizli ekonomisine tarihsel bir bakış', in C. Küçüker (eds), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 94-96.

Şenses, F. 1989 *1980 Sonrasi Ekonomi Politikalari Isiginda Turkiye'de Sanayilesme* (Ankara: V Yayinlari).

Taylor, M. 1999 Enterprise, embeddedness and exclusion: Buyer-supplier relations in a small developing country, paper presented at IGU Commission On Industrial Space, The 1999 Meeting Haifa and Beer Sheva.

Tekeli, İ. 1994 Ankara'da tarih içinde sanayinin gelişimi ve mekansal farklılaşma, *Ankara Ankara*, Yapı Kredi Yayınları, İstanbul, 171-200.

Thomas-Hope, E. (1999), 'Return migration to Jamaica and its development potential', *International Migration*, vol. 37, no. 1, pp. 183-207.

Torre, A. and Gilly, J. P. 2000 On the analytical dimension of proximity dynamics, *Regional Studies*, 34, 2: 169-180.

Tödling, F. 1994 The uneven landscape of innovation poles: Local embeddedness and global networks, in Amin, A. and Thrift, N. (eds), *Globalisation, Institutions And Regional Development In Europe* (Oxford: Oxford University Press), 68-90.

Tödling, F. and Kaufmann, A. 1999 Innovation systems in Europe-A comparative perspective, *European Planning Studies*, 7, 6: 699-717.

Tödling, F. and Kaufmann, A. 2001 The role of the region for innovation activities in SMEs, *European Urban and Regional Studies*, 8, 3: 203-215

Upton G J G, Fingleton B, 1989, *Spatial Data Analysis by Example*, Volume 2 (Wiley, Chichester)

van den Berg, L., Braun, E and van Winden, W. (2001), 'Growth clusters in European Cities: An integral approach', *Urban Studies,* vol. 38, no. 1, pp. 185-205

van Dijk, M.P. and Sverrisson, A. (2003) Enterprise Clusters in Developing Countries: Mechanisms of transition and stagnation, *Entrepreneurship & Regional Development,* 15, 183-206.

van Oort, F. 2004 *Urban Growth and Innovation* (Aldershot: Ashgate)

Varol Ç, 2002, *Entrepreneurial Networks in Local Industrial Development: A Comparative Analysis of Denizli and Gaziantep Cases*, unpublished PhD thesis, Department of City and Regional Planning, Middle East Technical University, Ankara.

Wang, J. and Wang, J. (1998), 'An analysis of new-tech agglomeration in Beijing: a new industrial district in the making?', *Environment and Planning A*, vol. 30, pp. 681-701.

Wasserman S, Faust K, 1994, *Social Network Analysis: Methods and Applications* (Cambridge University Press, New York)

Wernerheim, M. and Sharpe, C.A. (2003) "High order producer services in metropolitan Canada: How footloose are they?", *Regional Studies*, 37, 5, pp.469-490.

Wood P E (1986) The anatomy of job loss and job creation: some speculations on the role of the producer service sector, *Regional Studies*, 20, 37-46

Wood P E (1991) Flexible accumulation and the rise of business services, *Transactions Institute of British Geographers*, 16, 160-172

Wood, P. (2002) "Knowledge intensive services and urban innovativeness", *Urban Studies*, 39, 5-7, pp.993-1002.

Yeung, H.W.C. 2000 Organizing 'the firm' in industrial geography; networks, institutions and regional development, *Progress in Human Geography*, 24, 2: 301-315.

EK 1: PROJE KAPSAMINDA YAPILAN ÇALIŞMALAR SONUCUNDA YAPILAN YAYINLAR

Projenin ilk aşamasında yapılan çalışmalar ***Regional Economic Growth, SMEs and Wider Europe*** başlıklı kitapta yer almaktadır. Bu uluslararası kitabın hazırlanmasında editör olarak ve diğer aşamalarda proje grubunun üyeleri yer almışlardır.

Bu kitap içinde grup üyelerinin özgün katkıları ise aşağıdaki başlıklardadır.

- Fingleton, B., Eraydın, A ve Paci, R.,. 2003, "Introduction" *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

- Eraydın, A., 2003, "Dynamics and Agents of Regional Growth: The Performance of SME Clusters in Europe" *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

- Armatlı-Köroğlu, B. ve Beyhan,B."The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli" " *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128

Bu kitap dışında yapılan çalışmalar ve yayınlar ise şunlardır

- Eraydın, A., 2001, "Regional labor markets, growth and SMEs" "Regional Economies in Transition" Uddevalla Symposium 2001, Research Reports: University of Trolhattan:Uddevalla, s. 201-216

- Eraydın, A., 2005, "The role of SME clusters on Regional Economic Growth and Innovation" Paper presented "Knowledge and Regional Economic Development" Open Conference 2005, June 9-11 Barcelona Spain (yayına hazırlanma aşamasında)

- Eraydın, A. ve Fingleton, B., 2005, Networks relations and local economic development: some causes of differentiated network structures and intensities among Turkish industrial firms ***Environment and Planning A*** *yayınlanıyor*

- Eraydın, A. Armatlı-Köroğlu, B., 2005, Innovation, Networking and the New Industrial Clusters: the Characteristics of Networks and Local Innovation Capabilities in the Turkish Industrial Clusters, ***Entrepreneurship and Regional Development,*** 17, Temmuz, s. 237-266

- Eraydın, A. Armatlı-Köroğlu, B., 2005, Globalisation and diversification of producer services: Increasing role of services in competitive power and innovativeness of firms and industrial clusters, ***European Planning Studies***, değerlendiriliyor

EK 2: EYLEMLER

1. ULUSLARARASI KONFERANS

"Knowledge and Regional Economic Development" June 9-11 2005 Barcelona Spain - Konferansı düzenleyenler listesi ekte verilmektedir.

2. AVRUPA BİRLİĞİ 6 ÇERÇEVE İÇİN HAZIRLANAN PROJE ÖNERİLERİ

- Çerçeve Programı kapsamında yürütülen COST programının çeşitli üyelerinin yer aldığı "Regional Model of European Socio-economomic Development" önerisi Viyana Üniversitesi Şehir ve Bölge Planlama Bölümü önderliğinde hazırlanmış ve KISSED acronym'i ile başvuru yapılmış, ancak destek sağlanamıştır.
- 2005 Nisan ayında ise Türkiye COST grubu önderliğinde aşağıdaki proje önerisi hazırlanmıştır. Değerlendirme sonucu henüz belli değildir.

  Proje Adı: Multi-level Governance for the Reconciliation of Sustainable Development and Competitiveness: The New Agenda of the Dynamic Regions of the European Periphery

Participant no	**Participant organisation name**	**Participant org. short name**
1. (Co-ordinator)	Middle East Technical University, Department of City and Regional Planning	METU-DURP
2.	University of Thessaly, Department of Planning and Regional Development Greece	DPRD-UTh
3.	Slovak Academy of Sciences, Slovakia	SAS
4.	Czech Technical University in Prague, Faculty of Civil Engineering, (City Planning Department) Czech Rep.	CTU – FCE
5.	Budapest Department, Centre for Regional Studies, Hungarian Academy of Sciences Hungary	**BD CRS HAS**
6.	University "Dunarea de Jos" , Faculty of Economics and Administrative Sciences Romania	**UGAL-RO**
7	Institute of Socio-Economic Geography and Spatial Management Faculty of Geosciences of Adam Mickiewicz University Poland	**AMU-ISEGSM**
8	University of Łódź Department of City and Regional Management, Faculty of Management Department of the Built Environment and Spatial Policy, Faculty of Geographical Sciences	KZMiR/ KZSiPP
9.	Laboratoire D'economie Et Gestion, Universite De Bourgogne And Cnrs Groupe D'economie Urbaine, Regionale Et Des Ressources Naturelles	LEG-CRNS
10	Dipartimento Ricerche Economiche e Sociali – Università di Cagliari Centre for North South Economic Research	CRENoS
11	Regional Quantitative Analysis Research Group, Department of Economics, Statistics and Spanish Economy, University of Barcelona	AQR
12	Institute of Geography, Hungarian Academy of Sciences	GRI-HAS
13.	University of Antwerp, Research Group on Poverty, Social Exclusion, and the City	UA-OASeS

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EK 3: PROJE KAPSAMINDA YAPILAN KURAMSAL VE GÖRGÜL ARAŞTIRMALARIN SONUÇLARININ SUNULDUĞU MAKALELER

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Chapter 1

Introduction

Bernard Fingleton, Ayda Eraydın and Raffaele Paci

The purpose of this book is to explore, by combining interesting and relevant case studies, the different processes underlying regional economic growth and the contribution of SMEs to development. The contribution of SMEs is acknowledged to have underpinned regional policies in many countries in the last two decades, but there is only limited appraisal of the impact. In this book we examine economic development with SMEs in mind, since a key question for all the authors is what instruments can be used to best stimulate the development of lagging regions. What is important in this book is the relative economic growth of regions, the nature of the dynamics and the type of convergence, if any, that might in the long run occur, and what role SMEs might play in this process. The book is written by authors who, on the whole, would considered themselves to live, either physically, emotionally or culturally, on the margins of Europe, or as we like to call it within 'the wider Europe'. The wider Europe is a place where peripherality is a big issue; it is where an adverse location delivers relatively poor access to markets and suppliers, and where small size and remoteness from the corridors of power limit access to the agenda setting debate about the continent's governance. The problems posed by a relatively remote location and exclusion from the social and economic mainstream of the continent therefore loom large in the consciousness of the contributing authors, whether they come from Sardinia, Norway, Slovakia, Ireland or Turkey. This commonality of experience, of being on the outside and looking towards the centre, with relatively limited control over our economic prospects, is what provides a unity of purpose and perception which is a thread running through the book. In spite of our diversity in terms of theoretical stance, preferred methodological tools, or interpretation of the dominant forces controlling the economic landscape we inhabit, there is an underlying harmony among the contributors which elevates to a high status questions of policy and process related to the relative economic development of the regions, from which all else flows.

After the crisis in traditional regional policy in the 1970s, there have been several attempts to theorise the dynamics of territorial and regional development

and to define new policies accordingly. Local potential based on small and medium enterprises (SME) and industrial clusters were at the core of the regional development literature in the 1980s. This interest continued in the decade that followed via soft institutional theories with increasing emphasis on learning and innovation. Concurrently, economists were interested in explaining contemporary issues by modifying the traditional theories of economic growth. Both of these two theoretical perspectives, however, have recently been criticised because of their limited contribution to regional policy issues. The evidence shows that while the inequality between countries has decreased, only the most dynamic regions have profited from integration. This situation leads a crucial question, whether the peripheral regions will ever be able to catch up with the core regions in Europe.

This is why there is need for a critical evaluation of growth at the European regional level as well as evaluation of the regional policies and their outcomes at national and regional levels. By examining regional policies focused on SMEs in different national and cultural settings, including the prospective EU-accession countries, it will be possible to assess how the currently in vogue model based on endogenous growth and SMEs can be reformulated in such a way that the peripheral regions become part of the learning economy. By addressing the changing roles of SMEs in different regions of Eastern Europe, it is hoped that this book will help us to understand the different dimensions of SME development and to unravel the complex relationship between SMEs and regional growth.

The contributions in this volume are written by researchers who have explored the regional growth concept in some detail, with some emphasis on SMEs at a range of scales (EU, national and regional). The varied background and experiences of the contributors means that together they have been able to collaborate to produce a book which provides deep insights about the role of SMEs in regional development. They came together initially as part of a European Concerted Research Action designated as COST Action A17 and entitled *Small and Medium Enterprises, Economic Development, and Regional Convergence in Europe*. This book is one outcome of this work, which is edited by members of the Management Committee of the Action. We would like to thank the European Commission for their support of the work of the COST Action and all colleagues who have been involved in its success, particularly the Chairman Professor Jordi Suriñach. Without their encouragement and critical insights as various Chapters were presented at meetings in Brussels, Vanersborg, Ankara, Oslo, Barcelona and Cambridge, this work would not have been possible.

The Volume comprises three main sections. The first section is devoted to more theoretical issues, which clearly identifies the different theoretical discourses on regional growth as well as illustrating some significant empirical findings concerning the growth dynamics of the European regions. In the second section of the Volume the experience of certain countries with regards to regional development strategies and the role of attributed to SMEs in this process are

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presented. The third part of the book presents the case studies that discuss the contribution of SMEs on the growth potential of different regions.

Chapter 2 (Fingleton) presents a wide-ranging theoretical overview that provides a context for subsequent Chapters. The intention is to highlight, explain and evaluate various approaches that have been used to gain insight into the prospects for Europe's regions. The Chapter therefore discusses in varying levels of detail mainstream neoclassical growth theory, endogenous growth theory, new economic geography or geographical economics, systems models of cumulative causation, stochastic equilibrium and the work of mathematical geographers using complex systems analysis, commenting on their theoretical assumptions and empirical coherence with regard to the real world. The consensus view is that, almost irrespective of the theoretical stance, there is unlikely to be smooth convergence to a single equilibrium level of GDP per inhabitant across the EU's regions. The future seems to be one in which regions will be differentiated in terms of relative output per worker or inhabitant, and possibly polarized between core and periphery, unless there is policy intervention across Europe on an unprecedented scale. To highlight this, the Chapter gives some empirical analysis and simulated outcomes for EU regions, which show that significant regional disparities are likely to remain a feature of the geo-economics of Europe into the foreseeable future.

Chapter 3 (López-Bazo) concentrates mainly on the mainstream theories related to economic convergence as the background to the empirical analysis, which again concerns the ensemble of EU regions. However, the analytical approach adopted differs from the standard neoclassical growth model analysis, which provides only a limited view of regional growth dynamics. The main data analysis method used, namely the stochastic kernel, provides insights regarding the entire distribution of GDP per capita by region and its evolution, showing that the EU's regions are converging to a steady state which is still somewhat dispersed and which is not collapsing to a single point as is predicted by the simplest neoclassical growth theory. Moreover, rather than a smooth progression to steady-state, we see intra-distribution dynamics as regions transit between income states with different probabilities. Overall, the picture obtained, is therefore not unlike that produced by the simulations described in Chapter 1. The Chapter concludes that geographical location and proximity to markets are of prime importance in explaining interregional disparities, and that industrial structure also plays a part, although much remains unknown.

Chapter 4 (Paci, Pigliaru and Pugno) starts a process of dissaggregation that continues as we move towards the core of the book, by examining the relationship between economic growth and unemployment from a sectoral perspective, and by arguing that a better understanding of convergence is possible by means of a multi-sectoral perspective. The analysis divides the economy into agriculture, industry and services, which provides a unified framework, and it is the differences between these sectors in terms of their capacity to employ labour and induce output and productivity growth, that lies at the core of the analysis in the Chapter. Regional

differences in these components are seen as important for convergence, and there is a role for economic policy targeted at the sectoral mix within a region. The Chapter provides evidence suggesting that out-migration from agriculture is strongly associated with convergence in aggregate productivity, and that the magnitude of the impact of agricultural out-migration on aggregate growth depends significantly on which sector absorbs the migrating workers.

Chapter 5 (Eraydın) provides a bridge between the foregoing emphasis on regional economic growth and the subsequent focus in Part II on the role of SMEs in regional development, drawing together the diverse literatures on regional growth theory and SMEs, and highlighting the limitations of the former and the reasons why the latter have become prominent as a potential instrument in policy circles. The Chapter adds to the diversity of the theory reviewed in this book by referring to territorial models of growth, and specifically to the literature described under the headings of innovative milieux, industrial districts, new industrial spaces and learning regions. The point is made that while these approaches rightfully emphasise localized externalities and increasing returns mechanisms, they are also somewhat obscure and it is difficult to get a clear or precise view of what they actually imply for the dynamics, growth and change. The Chapter also emphasise clusters and the production advantages they evidently provide by virtue of enhanced access to knowledge, but again the emphasis on case studies in much of this literature makes it difficult to scientifically evaluate the relative contribution of different factors. The empirical analysis in the Chapter seeks to provide an objective comparative evaluation of relative effects of factors hypothesised to be important for growth, such as innovativeness, externalities associated with clustering, human capital and human resources. With regard to the impact of SME clusters on growth, the Chapter shows that in spite of scepticism about the sustainability of growth in SME, most of the regions with higher shares of SMEs have performed quite well, although the relation is not strong. The chapter concludes by calling for refinement in both data and in analytical techniques.

The second part of the book concentrates on the role of SMEs in regional development in various countries including EU members Denmark and Ireland and Lithuania and Czech Republic which are accession countries. It also includes Norway, which has a special position with respect to the European Union.

The Chapters in this section of the book indicate an upsurge of interest in regional development together with the changing context and tools for regional development. There are different national trends that are related to the varied economic backgrounds of the countries studied. However, all of them have a common feature, the search for new ways to deal with the increasing divergence that is seen among their regions. In Norway there is a change from strong redistributive policies, the so-called Scandinavian Model, towards a more liberal view. This is manifest in the loss of some of the public-funded schemes of regional development that characterized the earlier period, although the low population density regions remain on the agenda. In Ireland, on the other hand, there is a

renewed interest in regional policies. The National Development Plan for the period 2000-2006 places a greater emphasis on regional development and the Irish government is currently drawing up a national spatial strategy.

The two accession countries, the Czech Republic and Lithuania, are faced with the problem of defining their regional policies as they move into a period of rapid economic transition. The Czech experience is one of continuous efforts to handle economic and industrial restructuring while at the same time giving close attention to their impact on different regions. In Lithuania the interest in regional policies, which were overlooked for a long time due to the emphasis on national economic development, is rather new.

What is also evident from all Chapters is that SMEs are defined as major agents of development, especially for initiating growth in less developed regions. Obviously the role and weight of SMEs in the national and regional economies vary extensively and this situation reflects itself in the various definitions of SMEs used in the various Chapters. In Norway a large company is defined as one which has more than 100 employees, a small company employs less than 20 and a micro company less than 5, whereas in Ireland and the Czech Republic more than 250 employees identifies large companies whereas those with 10 to 250 are denoted as SMEs. In Lithuania enterprises with less than 9 employees are classed as small, those with 10 to 49 are medium sized while it takes only 50 or more for a firm to be considered large. Obviously, this situation increases the difficulty of making comparisons between countries regarding the importance of SMEs for regional growth.

Chapter 6 (Madsen and Jensen-Butler) concentrates on an accounting framework for modelling SMEs in a regional economy and emphasises the need to define the contribution of SMEs at different scales in a country where they constitute an important part of the economy. In this chapter therefore they introduce a SAM (social accounting matrix) in order to capture economic activity in the form of SME's and their interaction with the rest of the production system, including forward and backward interaction, both intra- and interregional, as well as interaction between production and intermediate and final demand. The paper makes a significant new contribution in that it includes discussion of how positive externalities deriving from the interaction between the SME's and the regional system can be identified. The analysis begins with a pure linear and "simple" description of the regional economy and the interaction between firms. By gradually including interaction (for example externalities) and non-linearities (increasing returns to scale in production etc.) a more realistic and full picture of the role in SME's in the regional economy is given. Unfortunately, the SAM framework described theoretically in this chapter has not yet been made operational.

Chapter 7 (Johansen) is an interesting contribution that reminds us that even in resource-rich countries, regional problems may still be very important, although they may also be substantially different from the regional development problems faced by many less prosperous countries. The Chapter places emphasis on the

difference between regional development and regional growth in Norway. Being a rich country where most of the wealth comes from oil, for a long time redistributive policies and a flow of resources in support of local government were important instruments used to overcome unwanted over-centralisation and depopulation of the peripheries. Recently, however, under the pressure of EEA and EU regulations, there has been a change to regional development policies that emphasize endogeneous processes of sustainable regional growth. According to Johansen, these new trends may cause new regional problems and if this happens then endogenous factors and small medium size enterprises will become more important to regional economic development.

Chapter 8 (O'Malley and Morgenroth) reflects the renewed interest in regional development in Ireland in the wake of the exceptional national growth performance of recent years. This has been accompanied by increasing divergence between the Irish regions, and in this context the Chapter discusses the contribution of different types of enterprise, particularly SMEs, in regional and national economic performance. The Chapter presents interesting features of the Irish experience. Firstly, as *O'Malley* and *Morgenroth* emphasise, somewhat in contrast to many countries, the analysis of economic growth in Ireland necessarily involves foreign owned multinational enterprises (MNEs) due to their weight in the economy (more than 9 per cent of manufacturing employment and 76 per cent of manufacturing gross output). The findings indicate that in the period from the 1960s to the 1980s, foreign MNEs and large enterprises, tended to locate in the least industrialised regions, which contributed to convergence between the regions. This situation changed in the 1990s, when foreign owned firms began to go increasingly to the more highly developed regions, with consequences for convergence since these firms were important determinants of the relative growth performance of different regions. In contrast the Irish indigenous manufacturing sector showed little growth and actually declined from the mid-1960s to the late 1980s, although then this weak performance was reversed even though its growth still lagged behind that of the MNE sector. Small enterprises are observed to have been more active in generating employment during the 1973-87 period in the indigenous manufacturing sectors. Interestingly the growth of SMEs and decline of larger firms during the 1970s and 1980s was seen a problem that needed to be rectified, given the objective to build companies with competitive power in international markets. In fact the figures show that after 1987 while the contribution of SMEs to employment is limited, the larger enterprises become the major source of new employment opportunities.

Secondly, O'Malley and Morgenroth examine patterns of growth by size class at the regional level in four different periods. According to their findings, the relationship between regional growth and the weight of SMEs in each region is rather mixed. During the 1973-79 period, at the national level employment in large firms declined in contrast to the increase in SMEs, so that SMEs made an important contribution to regional growth. The next period, 1979-87, also shows a

relation between relatively good growth and the relative importance of SMEs in each region. However the general trend in the third period (1987-93) is completely different since in this period the large firms made a greater contribution to regional growth. In the most recent period covering the years 1993-99, which is an era of exceptional growth in the national economy, there is little indication of a relationship between regional growth and size of firms. In the light of this evidence, the authors maintain that they have not found compelling evidence that SMEs have generally had an especially important role in regional growth in Ireland.

In many Eastern European countries the concept of regional development is relatively novel, although in the past they sometimes experienced command economy style of territorial planning which is strongly associated with the influence of the former Soviet Union. Chapter 9 outlines the attempts at economic development and its consequences for the regions of Lithuania. The chapter gives special emphasis to small and medium size business, which is believed to be crucial for the economic development of the country. In the Chapter *Snieška, Virvilaitė, Banytė, Kvainauskaitė* and *Savanevičienė* argue that increasing regional divergence in Lithuania can only be controlled by attracting SMEs and creating growth poles in different regions. They add, however, that their research shows that rather unfavourable social and economic conditions hinder the effective growth and development of SME's in the peripheral regions, thus limiting their role in Lithuania's economic development. However they also show that SMEs make quite an important contribution to the generation of new jobs, since regions with higher numbers of SMEs per capita exhibit relatively lower rates of unemployment.

Chapter 10 (Vaclav and Frkova) is dedicated to economic transition, industrial restructuring and the search for the new regional policies in the Czech Republic. The change in the political system at the end of 1980s was marked by the need to define new economic and regional policies. These involved SMEs which became one of the major instruments of industrial restructuring and a means of solving problems of structurally deficient and lagging regions within the country. One of the reasons why SMEs are seen as so efficacious, according to Vaclav and Frkova is their low investment requirement, which is only half that of large enterprises. However that is not the only reason why they emphasise their importance for regional development. In addition, they highlight the significance of SMEs as a factor promoting social cohesion, in enhancing the supply of certain services, and in facilitating the adaptation to changing conditions and innovative activities. However, they also note that in order to fully realise these benefits, there is still a need to get rid of obstacles in the path of further SME development in the Czech Republic.

The papers presented in Part 2 have shown how SMEs affect the aggregate growth of the whole country, in Part 3 we have assembled four case studies which allow us to gain some useful insight into the various factors which play a key role in the performances of SME's and consequently in the local growth processes of

the wider Europe. The contributions deal with candidate countries (Turkey, Croatia, Slovakia) as well as a member country (Sweden). A positive feature of this part of the volume is that the methodological approaches are quite different, ranging from the core-periphery model to the industrial district methodology, and from the local innovation system approach to sociological analysis.

The first case study, discussed in Chapter 11, is strictly related to the Part 2 Chapters although it takes a more specific perspective since it examines the role played by SMEs in the development process of a specific area. Bilge Armatlı Köroğlu and Burak Beyhan present a well documented investigation of the long run development of Denizli, a province of the Aegean region which in recent decades has experienced remarkable economic development based on the textile industry. Using as their theoretical background the industrial district model, the authors show how the development of the region has followed a continuous process of adapting to new market conditions in which SMEs have played a crucial role. With a basis in a strong tradition of artisan fabric production, the driving force behind rapid growth and rapid capital accumulation in Denizli was the homogeneous identity of the population; this was the foundation upon which local cooperation among SMEs was built. Cooperation was based on both formal and on informal relations, such as friendship and residence in the same town. Following these earlier developmental stages, the next stage of development shows the integration of the industrial district with the global production network. However the export boom attracted new firms and population from all regions of the country, and this resulted in a decline in cooperative relationships. At the same time the emergence of leading firms producing for the international markets gave new impetuous to the development of the area. The valuable lesson from this Chapter is the importance of the two-way link between changes in market conditions and social transformation in the local area.

These themes constitute the core interest of Chapter 12 where Drago Čengić presents a sociological analysis, based on interviews with owners and managers of 230 SMEs, of the role of small entrepreneurs in the development of the Međimurje county, a region situated in north-eastern Croatia. Within a book mainly devoted to economic analysis, this Chapter suggests a very fruitful approach to the relationship between SMEs and local economic growth involving a deep analysis of historical, social and cultural factors. The Chapter helps to provide answers to problems which are of a more general concern: the internal or external nature of local development; the propensity to establish entrepreneurial networks; the forms of cooperation between SMEs and large companies at the local level and abroad; and the role of state regulation of entrepreneurs. As regards the nature of local development the results are somehow discordant. On one hand social capital seems to have been partly imported into Međimurje by generations of workers employed abroad who, having returned, often established their own small shops and crafts. At the same time the survey does not show any direct impact on the development of local businesses in Međimurje of trans-border cooperation. Moreover, no

significant entrepreneurial networking has been perceived, probably due to factors such as weak competition and the presence of monopoly in the domestic market, the perception of networking as being both a time-consuming and organizationally very demanding activity, and the lack of trust among business partners which generates scepticism towards new forms of industrial organization.

Chapter 13 concentrates on the relationship between SMEs, universities and research institutes in the Bratislava regions. The main aim of Jana Gašparíková, Milan Buček and Štefan Rehák's work is to assess how economic policy helps to develop innovation networks and human potential in the area. It presents the preliminary results of a survey carried out on 35 SMEs (in the electro-technical, chemical and machinery industries) and 20 research institutes, looking at their potential for cooperation and collaboration and at the nature of technology and knowledge transfer. The Bratislava region proves to be a very interesting case study for analysing the effects of innovation policy in a transition economy, given the location in the area of a growing number of SMEs strongly associated with innovative activities. Moreover this area benefits from a well developed university infrastructure, public research centres and also a well educated workforce. The results show that in spite of the fact that Bratislava enjoys a favourable situation in terms of industrial structure and research facilities it does not make full use of these opportunities. The survey shows that firms tend to concentrate on internal problems due to the insufficient level of knowledge transfer from the research institutes. This situation prompts the authors to call for new legislation aimed at promoting effective cooperation between research institutes and SME's, through the establishment of research branch companies and regional innovation centres.

The last Chapter in the volume is a methodological contribution where the leader-follower model is applied to the analysis of the industrial development in a specific area, the Uddevalla region located north of Gothenburg in Western Sweden. Charlie Karlsson and Martin Andersson present an interesting methodological approach which offers precise guidelines about how to analyse the composition and development of the industrial structure in a specific region. The idea behind this spatial industrial dynamics model is that in each country it is possible to identify a limited number of leading urban regions where economic activities are continuously created, imitated and developed. Over time those activities tend to diffuse to other peripheral locations due to forces like product life cycles, changes in the organization of production, and increased demand in non leading regions. Given these hierarchical patterns of functional urban regions the lead-lag model is used by the authors to assess the development process of an individual region taking into account some basic features of its industrial structure, namely the number of plants and their employment and growth rate, the level of industry diversification, and educational intensity. This valuable approach also allows one to describe more precisely the direction of future development in different regions and to designate appropriate policy measures. For instance it allows one to assess which industries in the follower region are expected to gain

new jobs and therefore the number of workers in each different profession or trade that are required to bring about the structural change process.

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Chapter 5

Dynamics and Agents of Regional Growth: The Performance of SME Clusters in Europe

Ayda Eraydın

Introduction

Following the crisis in 'traditional' regional policy in the 1970s, there have been several attempts to theorise the dynamics of territorial / regional development. These attempts evolved under the influence of different perspectives ranging from The New Growth Theory to several theories of territorial development. They have a common feature, however, which is an interest in unveiling the endogenous nature of growth.

Local potential based on small and medium enterprises (SME) and industrial clusters was the core of the regional development literature in the 1980s (Brusco, 1982, 1986; Beccatini, 1991; Schmitz, 1999). This interest continued by means of soft institutional theories in the following decade with increasing emphasis on learning and innovation (Belussi, 1999; Breschi, 2000; Torre and Gilly, 2000; Kirat and Lung, 1999; Maskell and Malmberg, 1999a and 1999b; Amin and Cohendet, 1999). At the same time, economists were interested in explaining contemporary issues via the modification of traditional theories of economic growth. Both of these two theoretical perspectives recently have been criticized due to their limited contribution to regional policy issues. That is why there is an increasing concern to build a "third way" between the hard theories of economics and the soft theories of territorial development (Plummer and Taylor, 2000).

It is the aim of this Chapter to discuss the relations between regional growth and the factors that provide competitive advantages to regions, such as clustering, innovation and human capital with reference to both territorial models of growth and also the new growth theory of neo-classical economics. Although, these two perspectives have different starting points they have several focal concepts in

common, which is used in the empirical work on the European regions. The chapter begins by summarizing the recent theoretical debates on regional economic growth, which concentrate on the dynamics of clustering and the role of human capital in growth process. Secondly, it attempts to explain why and how SMEs became central to the territorial growth agenda. Third, the growth performance of regions as indicated by the concentration of SMEs and their innovativeness are reviewed, using evidence from the European regions. The fourth part of the chapter is devoted to the question why some of these regions experience relatively higher rates of growth than others. The last and concluding part of the chapter reviews the findings with reference to existing theoretical debates and outlines the need to update some of the premises used in recent theoretical work.

New Attempts to Theorise Growth

The first type of new theoretical debate on growth stemmed from the need to revise neo-classical growth theory. Accordingly, New Growth Theory theorists modified the assumption of diminishing returns to capital and introduced monopolistic competition as the underlying market form (Langlois, 2001). With the help of these extensions it then became possible to endogenise technological progress, which is interpreted as the whole collection of accumulable factors of production, such as human capital and the stock of knowledge (Solow, 1994, p. 49). New Growth Theory has attracted wide interest since it is consistent with increasing divergence among the growth rates of countries, instead of convergence as predicted by neo-classical growth theory. Assuming that each unit of capital not only increases the stock of physical capital but also the level of technology for all firms, the new model proposes endogenously defined technological level due to knowledge spillovers (Romer, 1990, 1994). The main argument is summarized by Romer (1994, p. 3), who argues that "growth is an endogenous outcome of an economic system, not the results of forces impinged from outside". More recently, this theory, integrating technological progress into the neo-classical growth model, has been transferred to spatial economics. The work pioneered by Krugman (1995), commonly referred to as the New Economic Geography, defines *local externalities* as the resource of increasing returns. According to him the factors of increasing returns are external to a firm but internal to a region. This situation explains the importance of agglomeration economies and how agglomerations sustain increasing returns via knowledge spillovers although he argues that the source is pecuniary not technological externalities.

The same emphasis can be observed in theoretical discourses, popular since the 1970s, that can be grouped together under the title of territorial models of growth, namely innovative milieux, industrial districts, new industrial spaces and learning regions (Eraydın, 2002). These models of territorial development are strongly influenced by the issues raised in institutional and evolutionary economics and the neo-Schumpeterian perspective on the role of innovation and technology, They

have slightly different points of emphasis, however, they mainly concentrate on local externalities of learning and innovation.

The industrial district literature emphasizes collective learning based on small firms that are specialized in different stages of production, and their innovative capacities. Belussi (1999, pp. 734-736), based on the experience of Italian industrial districts, lists the factors that enable the collective learning processes and the diffusion of technical change and know-how within local clusters. He emphasises the sunk nature of knowledge, fluid interactions and many channels where information can quickly circulate among the firms in spatial and social proximity, higher levels of inter-firm cooperation, low transaction costs and a stimulating environment for enterprises to adopt innovation process more rapidly. In this approach, in addition to other historical and socio-economic factors within the industrial cluster, the transmission of tacit knowledge, which is facilitated by trust and reciprocity among local firms, gets a special emphasis. The literatures on *high technology industrial clusters or new industrial spaces* also concentrate on local interdependencies and knowledge transfer among firms, while giving special emphasis to research and development (R&D) and institutions that create externalities. In this approach a cluster is a place where knowledge for new products and processes appears and spreads under the existing social regulation mechanisms prominent in that area. According to Scott and Storper (1987, p. 29) social regulations define the new industrial spaces by coordinating inter-firm transactions, organizing local labor markets and supporting community formation and social reproduction. *The theory of regional innovation systems* focuses on the institutional basis of learning following the debate on national innovation systems. The argument indicates that the different kinds of R&D institutions complement and compete with one another in support of learning processes and innovative activities (Gregersen and Johnson, 1997). At the regional scale, Cooke, Uranga and Etxebarria (1997) define an innovative industrial cluster as the area likely to have firms with access to others in similar or complementary sectors as customers, suppliers and partners. They also have access to such knowledge infrastructure as universities, research institutes, contact research organizations and technology transfer agencies. The interactive learning process in these areas are assumed to be promoted by governance structure of business associations, chambers of commerce and public economic development, training and promotion agencies as well as government departments. In *innovative milieux*, learning and innovation depends on the capacity of firms through relationships with other agents within a 'co-operative atmosphere'. Finally, the learning region model integrates these ideas in order to indicate the conditions for building knowledge-based dynamic competitive capacities (Morgan, 1997).

All of these theoretical debates are quite informative, but it is rather difficult to read from these theoretical attempts, as Malmberg (1996, p. 398) has indicated, how the relations hold in an industrial system and difficult to obtain precise knowledge of the dynamics of spatial agglomeration and change. That is also why Krugman (1995) criticized these soft theoretical frameworks due their anti clarity,

a view which is also shared by Plummer and Taylor (2000). One thing that is quite obvious in these theoretical debates, however, *is the importance of localized externalities and the factors that enable increasing returns in clusters.*

Emphasis on Clustering and the Assets of Clusters.

It is not difficult to understand this concurrence of hard and soft theories of growth. One reason is the relaxation of an important assumption of neo-classical economics by the New Growth Theorists, namely "once produced knowledge spills easily into the hand of others with zero marginal costs". The change in this assumption indicates the importance of the cost of knowledge transactions, especially involving transactions of tacit knowledge, and puts agglomeration economies back on the agenda. In fact, there is a wide literature that can be labeled "*proximity dynamics*" (Kirat and Lung, 1999), that discusses this phenomenon. Although sharing the same location does not guarantee the existence of production and knowledge networks and collective learning processes, the literature agrees that proximity facilitates interactive activities (Amin and Cohendet, 1999; Maskell and Malmberg, 1999b), especially learning and innovation. Additionally, proximity provides opportunities for entrepreneurs to specialize and to respond to volatile demand more easily, since it enables interaction and cooperation, an easy information interchange, frequency of interpersonal contacts and higher factor mobility within the boundaries of a local area.

What are major advantages of these clusters? The discussions above clearly show that the advantage of clusters lies in "relational" aspects and "institutions" that facilitate these relations. These assets have been defined with the concepts of "production networks", "institutional thickness, "learning" and "human capital" in the recent literature.

Local production networks are expected to promote local innovative capacity and the dissemination of technology, which are the end results of interactive learning process and face to face relations in local industrial clusters (Digiovanna, 1997). In fact, successful industrial clusters are described as nodes where growth is stimulated by the intensive production networks among specialized industries (Park and Markusen, 1995; Mouleart, Swyngedouw and Wilson, 1988). Besides these production networks (Schmitz, 1990), the social networks are important, where information exchanges are facilitated by various forms of social capital, especially the cultural norms of trust, cooperation and reciprocity (Brusco, 1986; Fukuyama, 1995).

The different studies on territorial development discuss several locally embedded relations that enforce clustering and improve localized and generalized capabilities. It is possible to extend this by indicating the importance of local institutionalization via the concept of institutional thickness (Tödling, 1994), as well as the contribution of central and local government institutions in the development process of regions (Cooke and Morgan, 1994; Stöhr and Pönighaus, 1992; Scott and Angel, 1988; Castells and Hall, 1994; Scott and Storper, 1987;

Harrison, 1994a and 1994b; Lin, 1997). In particular the theoretical discussions, which are in much the same spirit as institutional economics, try to define critical institutions influencing the path of growth, including rules, practices, routines, traditions as well as entrepreneurial spirits, culture and other values native to an area.

These assets of clusters are not adequate to sustain their viability in the global economic system. That is why, in the 1980s and early 1990s, the evolution of industrial clusters became a new area of interest extending the context of discussions beyond the localization process. Gordon (1996) claims that the viability of an industrial cluster is a product of their ability to articulate a coherent industrial presence within a global milieu that can be achieved via knowledge and learning. It should be noted that globalization can also act as a process of ubiquitification of many previously localized capabilities, production factors and embedded tacit knowledge (Maskell and Malmberg, 1999b). In that respect learning is the key issue, since it is the source of innovativeness and obviously long-range growth. Learning, however, is a concept which is quite loose and in general human capital is accepted as the core factor that denotes human learning capability and which is used as a proxy for learning and innovativeness.

While many studies emphasize the importance of human capital, Romer (1990, p. S73) made a more definitive statement of the connection between growth and human capital by saying "stock of human capital determines the rate of growth". In building this thesis, firstly he defines human capital not as a public good, but as both a rival and excludable good. Human capital can be used either in the final-output sector or in the research sector. He claims that research output depends on the amount of human capital devoted to research as well as on the stock of knowledge available to the person doing research. Secondly, by using human capital as a scale variable, Romer (1990, p. S95) proves that human capital has the effect of quickening the rate of growth.

The Agents of Growth: The Significance of SMEs.

In the theoretical debates discussed above, SMEs are explicitly or implicitly defined as the main agents of economic growth (Amin and Malmberg, 1992). Analysis at the firm level and discussions of the contribution of individual small and medium-sized firms to regional growth are very important in this evaluation. The neo-classical perspective emphasizes the importance of SMEs due to their potential for employment generation and comparatively low capital requirement. It has been often claimed that SMEs can use indigenous resources more efficiently and the entrance and exit of SMEs into production activities is comparatively easy. Nevertheless, the importance of these firms is usually tied to their role in labor markets, especially the use of low wage labor market niches.

The main focus of territorial models, however, is the group of SMEs that is closely linked to a geographical area. They define SMEs as the active agents of learning and innovation. *The theory of innovative milieux* defines SMEs as a vital

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part of production systems. Their privileged relationships form the basis of the milieu, which can be defined by a co-operative atmosphere and by strategic relations (Camagni, 1991). The emphasis on SMEs is clearer in the *industrial district literature* (Brusco, 1982). It stresses collective learning between small firms that are specialized in different stages of production and in their innovative capacities. *The theory of high technology industrial clusters and the new industrial spaces literature,* which concentrates on local interdependencies and knowledge transfer among firms, also emphasize the crucial role of small firms in these clusters. SMEs are also the main focus in the *theory of regional innovation system,* which aims to define the institutional basis of learning. Regional Innovation Systems (RIS) are defined as an innovative industrial cluster of small firms in an area likely to have firms with access to others in similar or complementary sectors as customers, suppliers and partners (Cooke, et al., 1997).

While the theoretical studies emphasize the role of SMEs in economic growth, most of the literature related to the dynamics of clusters provides evidence about individual success stories. These findings, however, are less supported by analytical studies on regions, which include controversial findings on the relations between regional growth and the concentration of SMEs. Using evidence from Italy, Camagni and Capello (2001) asked the question whether regions with a high share of firms have a better performance than others. Their finding is that "the regions with greater share of small firms are no longer characterized by better performance and employment growth as happened during the seventies". Additionally, these two researchers found that in some regions good performance was associated with good industrial employment growth, whereas in other regions it was associated with severe employment cuts.

SME Clustering and Regional Growth: Empirical Evidence

This section of the chapter deals with a similar question to that posed by Camagni and Capello (2001) in the European regional context, in order to check the empirical support for the theoretical emphasis on the crucial role of SMEs in the development process. In other words, it tries to answer the question "whether the performance of European regions with higher shares of SMEs are better than large-enterprise regions or not", which is followed by a preliminary analysis of the innovativeness of different types of regions. The analysis of the factors, which contributed to growth process is presented in the later sections of the chapter.

As with all studies that attempt to study the regions in the European Union, the biggest problem is related to differences in definitions of the main parameters and to the non-standardized data basis. The definition of SMEs is different across Europe, even in the documents that emanate from the various institutions of the European Union. In some documents SMEs are defined as firms with fewer than 250 employees, having an annual turnover of not more than 40 million ECU, and or a balance sheet valuation of not more than 27 million ECU and with less than

half owned by a large enterprise (European Commission, 1999). However, in this study we follow the definition given in the report by The European Observatory for SMEs, in which SMEs are defined as firms that employ 10-499 employees (European Network for SME Research, 1994).

The share of SMEs in total firms has wide variation among the European regions. While in the south of Europe micro enterprises and SMEs are dominant, this picture changes as we move towards northern parts of the Union. According to the reports (European Commission, 1999), there are 18 million enterprises in the Union excluding agriculture and non-market services and out of these 99.8 per cent are enterprises employing fewer than 250 people. These firms are estimated to account for two-thirds of the jobs in EU (excluding agriculture and non-market services) and 55 per cent of turnover. As may be observed, the definition above includes the micro enterprises that employ less than 10 employees. Unfortunately the data on SMEs at the European regional level is very limited and very difficult to find. This situation explains why there are very few cross-regional studies dedicated to SMEs in Europe. In this study also it has not been possible to find the actual data on the number of SMEs or their share in the total number of enterprises for all EU regions. As a result, the analysis presented in this section of the paper is restricted to 74 regions of 5 countries, namely Belgium, Italy, Spain, Portugal and France. The reason why the other European Union countries are not included basically depends on the lack of compatible data for the same years. The data on the share of SMEs is from SME Research Network.

In order to illustrate the relationship between SMEs and regional growth, we firstly present a scatter diagram (Figure 5.1). This diagram shows the distribution of regions according to their relative change in income per capita during 1986-96 period and the share of small firms in total employment at the beginning of the period[1]. The x axis relates to the SME data, comprising firms that employ between 10-499 employees. The y-axis denotes the relative change in income per capita (RC_i) that is calculated as follows:

$$RCI_i = I_{i,1996}/AI_{eu15,1996} - I_{i,1986}/AI_{eu1996}$$

where I_i regional income in purchasing power parity (PPS) and
AI_{eu15} the average income of the 15 European Union countries in PPS

The correlation coefficient of these two variables is equal to 0.3050 (t=2,71) which is statistically significant at the 0.01 level. The visual analysis of the diagram, however, provides more detailed information. Using the shares of employment created by SMEs and the relative change in income per capita data sets, it is possible to identify four groups of regions, categorized according to the averages of the regions studied. The definition of these groups is as follows: GROUP1: Regions with higher shares of employment created by SMEs and above average changes in relative income per capita, GROUP2: Regions with lower shares of SME employment than the average, but higher relative change in income

per capita, GROUP 3: Regions with lower shares employment by SMEs and relatively slower growth in income per capita and GROUP 4: Regions with high shares of employment in SMEs than the average, but relatively the lower rates of income per capita growth.

The figure clearly shows that the regions with higher shares of SMEs improved their relative income per capita levels within the European Union, whereas regions with lower shares of SMEs in total employment experienced a different growth trajectory. There is a group of regions, with higher shares of employment created by large firms, which were not successful in retaining their earlier positions in the EU in terms of income levels, but others reached higher rates of per capita income growth than the 74 regions average. It is quite interesting to see that there are only two regions with high SME shares in total employment that lost their earlier positions in terms of income per capita.

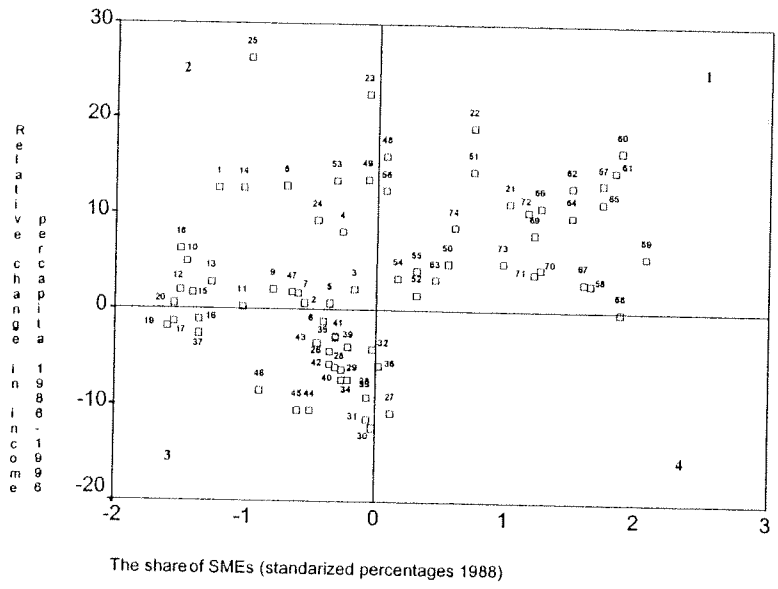

Figure 5.1 The share of SMEs and regional growth.

Source: Data is obtained from European Network for SME Research (1994, 1995) and Eurostat (1997).

Note: See Appendix 1 for the name of the regions indicated in numbers on the graph.

The figure above shows that the regions where SMEs have higher contribution to total employment had a good performance in terms of income growth.

Following this evidence, the second issue that needs further attention is whether this growth depended upon the innovative capacity of these regions. In the literature there are contrasting debates on the innovativeness of SMEs. While one group of studies claim that SMEs are more innovative (Acz and Audretsch, 1990; Pavitt et al, 1987), other research findings indicate that innovation by SMEs is somewhat different, occurring "in an incremental and defensive way introducing small changes in their products and services" (Tödling and Kaufmann, 2001, p. 212). Figure 5.2 presents the distribution of regions based on their shares of SMEs in total employment and patent applications per region. In both of the axes the standardized values are used. The correlation coefficient of these two variables is -0.234 (t=-2.042), which is low but a statistically significant negative relation at the 0.10 level.

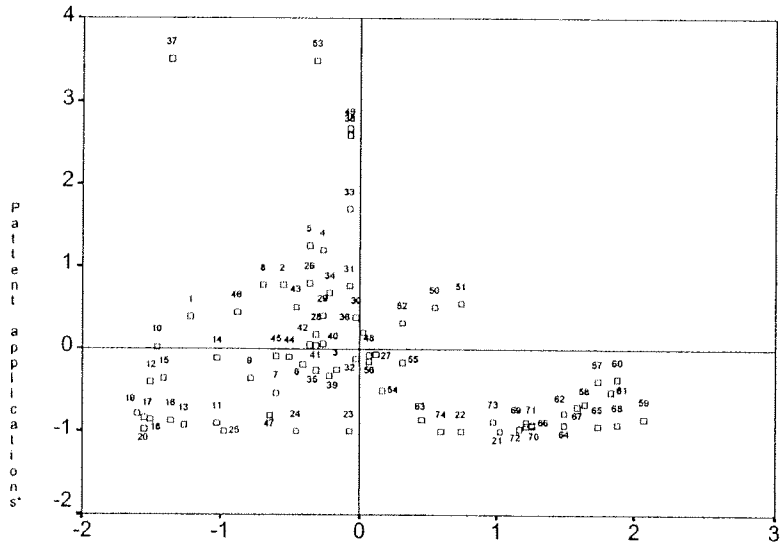

Figure 5.2 The share of SMEs and innovativeness.

Source: Data is obtained from European Network for SME Research (1994, 1995) and Eurostat (1997).

Note: See Appendix 1 for the name of the regions indicated in numbers on the graph.

The distribution of regions in the Figure 5.2 is quite different from the Figure 5.1 distribution. The number of patent applications remains below the average in

most of the regions with higher shares of SMEs, while the number of innovative regions with higher shares of SMEs seems to be limited. However, as the low correlation coefficient suggests, there is also an important number of regions with a relatively higher contribution to employment from large enterprises, but with lower innovativeness. It is interesting to see that these findings are supported by the outcomes of the SME Policy and Regional Dimension of Innovation (SMEPOL) and European Regional Innovation Survey (ERIS) Projects. These two European Union projects indicate that SMEs are less engaged in innovation (Tödling and Kaufmann, 2001; Strenberg, 2000). However, there is a need to be careful when analyzing patent data, since many small firms are reluctant to apply the European Patent Office (EPO), due to the high cost and lengthy procedures.

Growth, Innovation and Human Capital in SME Clusters

The descriptive graphs above provide some evidence on the relatively higher growth performance of many SME clusters, but which is not enhanced by their innovative activities. This situation prompts a major question, "why do some regions experience relatively higher rates of growth than the others?"

Neo-classical growth theory is based on a decreasing returns to scale mechanism. According to the theory, countries and regions with lower capital stocks and per capita income have a higher marginal product and return to capital. This situation leads to capital accumulation and faster growth in poor regions compared with rich regions and to convergence between them. As discussed earlier, the neo-classical growth theory has been widely criticized at theoretical level and its main assumptions have been revised by the New Growth theorists. It has been also argued that the convergence measures critically depend on the way in which the empirical model is specified (Cheshire and Magrini, 2000) and on the chosen time horizon and the spatial unit of analysis (Martin, 1998).

That is why, following the debates on regional/territorial growth, actual growth performance is viewed as the outcome of a multivariate process and the aim is focused on defining the various determinants of growth. In fact, the increasing mobility of traditional locational factors and the removal of some resource bottlenecks changed the factors that define the growth potential of regions. It is true that the emphasis in growth theories on economic and technological factors had led a certain neglect of social forces, but recently there is increasing concern about the role social conditions in economic growth performance (Rodriquez-Pose, 1998).

As the discussions on the last decade clearly stressed, there is need for a clearer understanding of processes in terms of their impact on economic growth. Endogenous growth theories and territorial models emphasize the role of certain variables on the economic growth process, such as physical and human capital accumulation, clustering, innovation and institutionalization for knowledge

creation. The importance of these factors, however, needs to be tested with the help of cross-country studies, since individual case studies can be quite misleading.

In this study a model is defined so as to analyze the factors that contributed to convergence of the regional income per capita during 1986-1966 period and which contributed to divergence.

The model is; $RCI_i = \beta_0 + + \beta j\ X_{ij,t0} + \varepsilon_{i,j,t0}$

where $RG_{ij} = (I_{i,t1}/AI_{eu15,it1}, -I_{i,t0}/AI_{eu,t0})$ is the relative change of income per capita by regions during 1986-96 period, $\beta_{j,\ j=1....k}$ are unknown parameters, $X_{ij,t0}$ are explanatory variables in region i at time t_0 and $\varepsilon_{i,j,t0}$ denotes random error terms. The variables are presented in Table 5.1. The explanatory variables used in order to explain regional growth differentials represent different facets of growth defined in theoretical discussions.

Table 5.1 Definition of the variables used in regression analysis.

THEORETICAL CONCERNS		EXPLANATORY VARIABLES
Convergence		INCOME86: The relative income per capita in 1986 (EU average=100)
Clustering		SHARESME: The share of SMEs in the regions in 1988
Innovation and learning		EXPRD: The share of R&D expenditures as a % of GDP (Spain, 1989;France,1991; Belgium,1989; Italy,1994; Portugal, 1990)
Human capital	Educational attainment	HIGHEDU: The level of educational attainment of population between 25-59 years old in higher education institutions (% of total) 1986-87
	Research oriented personnel	SHARERD: % of R&D personnel in active population (for Spain, 1989, Italy, 1994; France, 1991; Belgium, 1994; Portugal, 1990)
Local human resource base		POP1564: The share of active population (15-64 ages) in total population 1990
Inadequate job opportunities and structural problems		UNEMP87: The rate of unemployment in 1986-87
National impact/ national dynamics		NATIMPACT: The rate of growth in country in which region occurs

The first variable is the relative income per capita levels (standardized measures) of regions at the initial period. Following the neo-classical framework a negative relation between the income levels and growth rates are expected.

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The first variable is the relative income per capita levels (standardized measures) of regions at the initial period. Following the neo-classical framework a negative relation between the income levels and growth rates are expected.

Although there is a well developed critical literature relating to this issue there are also many studies that provide evidence that supports the neo-classical approach. One important study is by Sala-i-Martin who showed that over a long period (1950-90) a pattern of convergence emerging across Europe. Similarly the analysis of 104 regions by Martin (1998) indicates convergence between European regions, albeit at a lower pace. In fact, there is also counter evidence indicating the divergence among European regions. Moreover, it is possible to see that the convergence between countries can overshadow the divergence inside the countries. In fact, there are many studies that indicate the convergence between countries and regions in Europe, but the consequences are increasing regional inequalities within certain countries. The OLS results for the 74 regions between 1986-96 period given below also show a negative relation.

There is, however, still need to define another explanatory framework based on different determinants of regional growth. In this model the central thesis of endogenous growth theory is taken as a starting point and the growth determinants are defined as, externalities due to the clustering of small and medium enterprises, the innovative nature of firms and organizations, a strong institutional basis that support learning and innovative activities and the availability of human capital, including local human resources. The main hypothesis is that higher rates of growth can be achieved in regional industrial clusters with an innovative nature and possessing higher amounts of human capital. The most appropriate variables are selected on the basis of the underlying theory and according to the data that is available for empirical analysis.

The variable reflecting the regional clustering of firms is the share of SMEs in total employment. This choice reflects therefore the extent to which small and medium enterprises dominate the local economic structure of regions. Theoretically, many small and medium sized firms sharing the same location enables the development of production and other types of networks, which will generate important externalities to firms in the process of learning, adaptation and facing external shocks. It is obvious that the type of SMEs, ranging from traditional to high technology, is important in defining the newly generated comparative advantages of different regions. Nonetheless, there is a strong expectation that clustering will make a positive contribution, with a strong body of empirical support coming from data for individual regions.

The second component of growth that has received wide attention in recent years is innovation. Innovation, which can lead to monopolistic conditions for firms and organizations, provides certain advantages to innovative agents compared with others. It is obvious that due to communication and information networks it not easy to protect advantages, due to the ubiquitification process of knowledge. Recently, besides technical innovations there is an increasing concern for innovations related to social organizations, however it is very difficult to identify the latter. The same problem holds, but even more so, for the technical type of innovation. Although patents are used as a proxy for innovation, many studies indicate that firms and people are reluctant to apply to patent offices for

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The second component of growth that has received wide attention in recent years is innovation. Innovation, which can lead to monopolistic conditions for firms and organizations, provides certain advantages to innovative agents compared with others. It is obvious that due to communication and information networks it not easy to protect advantages, due to the ubiquitification process of knowledge. Recently, besides technical innovations there is an increasing concern for innovations related to social organizations, however it is very difficult to identify the latter. The same problem holds, but even more so, for the technical type of innovation. Although patents are used as a proxy for innovation, many studies indicate that firms and people are reluctant to apply to patent offices for

various reasons. That is why, although there may be a strong positive relation between growth and innovation, it is difficult to find the evidence.

The recent literature is keen on the role of institutions, especially the ones that are designed to support innovative activities. The importance of institutions is measured across regions by the ratio of R&D expenditures as a per cent of GDP. It is assumed that R and D expenditures represent the focus and involvement of different economic agents within regions, and it is for this reason that R&D expenditure as a percentage of GDP is taken as the third variable.

The fourth group of variables is related to human capital. As discussed earlier there is a heavy emphasis on human capital both in the New Growth Theory and in various territorial models of growth. It is usually defined as a proxy for learning, new knowledge generation and innovation, which are believed to promote growth. Human capital denotes a special segment of human resource. In the economics literature there is high level of consensus about the positive role of human capital in growth. Similarly, in recent debates about territorial development, there is a special concern about the role of human capital. The various definitions of human capital, however, are highly differentiated. Firstly, human capital is defined through educational attainment (Barro, 1991). Education facilitates an understanding of the society and the world people live in and allows them to articulate their present and future conditions. In fact, specialised educational institutions, training establishments (Scott and Storper, 1987; Lyons, 1995) and teaching programs that are set up in the community are important elements of local reproduction and economic growth (Capecchi, 1989; Schmitz and Musyck, 1994). In particular, universities are defined as critical institutions for generating human capital. They play several different roles in the development process, such as generating knowledge both in basic and applied science, training the labor force that is crucial for new technologies, and acting as entrepreneurs by means of supporting their research spin-offs into a network of industrial firms and business ventures (Castells and Hall, 1994). In the analysis, the share of people between 25-29 age group that have attained access to higher education institutes is defined as the first of two variables devoted to showing the potential of human capital in different regions.

Secondly, human capital is defined with reference to learning and innovation. Learning is not restricted to education and R&D activities, but covers knowledge creation and improvement through learning-by doing, learning by interacting and learning by imitating. The learning capacity of an agent is described as "the capacity to create, acquire and transform knowledge and upgrade its skills, expertise and competencies to fulfil its objectives in a fast changing and turbulent economic environment" (Jin and Stough, 1998). That is why in the recent past there has been strong support to both private and public R&D activities, although not all learning activities end up with innovations. In fact, although several studies describe successful examples of regional growth based upon increasing R&D, it is difficult to say that how far these examples conform to the basis of the new model of economic growth. In the OLS analysis, the ratio of R&D personnel in the active

population is used to represent human capital engaged in research and development.

The third interpretation of human capital is related to the enterprise culture (Plummer and Taylor, 2000). In fact the number of new enterprises is one of the indicators that explains how far human capital is engaged directly in the process of income generation and growth. However, the new firm formation across the regions were not available across the regions.

The other two variables are related to the labor force available in regions. In the literature, the attitude towards the contribution of human resources is not consistent. Romer (1994) claims that large amounts of human resource make no contribution to growth, contrary to classical arguments that emphasize the importance of available manpower in the growth process. Even when one considers high technology firms one sees that they require important amounts of non-skilled labour force at several stages of the production process, so it is not possible to disregard the availability of human labor as an asset.

In this analysis unemployment rates are used as an indicator of structural problems of the regional economy. Although in the neo-classical framework unemployment rates indicate labor waiting for new jobs and eager to accept lower wages, it is evident that in most of the cases there is an inconsistency, or mismatch, between the labor demanded and the labor force that is available.

The last variable used in the analysis is the relative change of income per capita with respect to EU average over the period 1986-96 period. This variable is added to see whether the growth performance of countries has any significant impact on regional performance. One way to approach this question is to add country dummies in the regression. However in this study, underlying differences in policy and institutions and economic cycles that influence differential national rates of growth are represented by a continuous variable, similar to the study by Cheshire and Magrini (2000). Since the number of countries is limited, being only five, the contribution of this variable to the model should be evaluated carefully.

Several models are tested in this analysis, four of which are presented in Table 5.2, namely the convergence model, the best- fit model, the general model and the general model with a dummy variable for national growth rates. The convergence hypothesis is supported by the findings of all models. The variable, the income per capita index for 1986, has a negative sign as expected in the hypothesis. It implies that lower income regions have the tendency to grow faster. It is also statistically significant at the 0.001 level. This convergence can be due to different factors including government policies and the regional policies of the European Union, since many of the programs and funds the Union are directed to lower income regions of the European periphery[2]. Having controlled all these effects, in this analysis the main concern is to define the regionally specific variables that contribute the explanation of growth differentials.

The stepwise regression analysis defines a best fit model accounting for 49,5 per cent of the relative change of income per capita between the regions during 1986-96 period. The value of $F(5,72)=13,114$ (significant at 0.001 level) provides

strong evidence in favor of the hypothesis that this set of variables accounts for statistically significant amount of variability. In this model four region specific variables, namely the percentage of R&D personnel in active population, population in the active age group, the share of SMEs in total employment and unemployment levels at the beginning of the period are statistically significant with signs as expected.

Those regions with higher amounts of R&D personnel are predicted to have higher rates of growth. Similarly those regions with higher shares of SMEs have higher estimated rates of growth, which enable them to improve their relativities in terms of income per capita. The variable that indicate the ratio of population in active age groups (POP1564) has also a positive sign, which indicates the regions with higher human resources are predicted to have higher rates of growth. On the other hand, the share of unemployed in the total population has a negative sign showing that the regions with higher unemployment rates are predicted to have lower economic growth performance. This is also an expected outcome since as defined earlier the high unemployment rates indicate some structural problems and loss of vitality in the economy of regions. The other two variables were not statistically significant and excluded from the model due to multicollinearity problem between high education and the share of SMEs (R=0.523) and between the R&D expenditures and the share of R&D personnel in active population (R=-0.672).

The general model (Model 3), which includes all variables explains 51,9 per cent of the relative change of income per capita between the regions during 1986-96 period, which is slightly higher than the previous model. Nevertheless the two factors included in the model do not change the sign of the other coefficients and the level of significance of the variables included in the model except the significance of the variable on the share of SMEs. It is interesting to note that high education is not statistically significant in this model. This situation implies that the high access to higher education institutions may be over emphasized in territorial models of growth, or at least that among the sample regions, high levels in higher education have had a limited impact on growth. The same finding occurs when we consider R&D expenditures. Obviously, it is surprising to have a negative sign for R&D expenditure, which was intended to capture the impact of efforts at creating an innovative environment. The important emphasis on research and innovation, however, is reflected by the variable defined as the share of R&D personnel in active population, which is positive and statistically significant.

In fact, among the European countries, national economic policies still account for important differences, which have important impact, as predicted by the model, on the regional growth performances of the five countries studied. The correlation coefficient (R^2) between the regional rates of income growth and national income growth rates is equal to 0,41. In fact, in order to find out whether the national rates of growth are important in the growth rates of regions, a dummy is added to the equation. After including this new variable, the set of variables now accounts 58,8 per cent of the relative change in income per capita during the same period. In this

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new model two variables, income per capita at the base period and share of R and D personnel in total population, are statistically significant as well as the dummy variable representing national growth rates. The significance of the other variables are reduced after introducing the dummy variable (see Table 5.2). This change is quite understandable since the variance in the shares of SMEs by region and unemployment levels by region are quite related to the economic structure of the country.

Table 5.2 OLS analysis: Per capita GDP growth 1986-1996

Variables	MODEL 1: Convergence	MODEL2: Best fit	MODEL 3: All variables	MODEL3: All variables+ National dummy
(Constant)	15,635 (4,383)***	-132,162 (4,438)***	-120,72 (-3,761)***	-,66145 (-1.927)*
INCOME86	-1,41 (-3,586)***	-,305 (-6,745)***	-0,294 (-5,804)***	-0,156 (-2,460)**
SHARESME		,121 (2,527)**	0,061 (1,044)	-0,07396 (0,604)
EXPRD			-3,387 (-1,632)	-4,047 (-1,277)
HIGHEDU			0,177 (1,246)	0.286 (1,821)**
SHARERD		3,678 (2,010)**	5,972 (2,2077)**	4,531 (1,821)*
POP1564 (1990)		2,424 (5,082)***	2,271 (4,416)***	1,284 (2,263)**
UNEMP87		-,574 (-3,179)**	-0,620 (-3,353)***	-5.99 (-3.469)***
NATIMPACT				1,735 (3,259)**
R	0,389	0,703	0,721	0,767
R2	0,152	0,495	0,519	0,588
F-test	F(1,73)= 12,856***	F(5,72)= 13,114***	F (7,72)= 10,036***	F(8,72)= 11,409***

Notes: t values are in brackets
*Statistically significant 0.10 level
** Statistically significant at 0.05 level
***Statistically significant at 0.01 level

There are various criticisms that can be made of OLS models that attempt to analyze growth (Cheshire and Magrini, 2000). The scepticism depends on whether the OLS models appropriately reflect underlying theories and/or the data used are

appropriate. Taking all the weaknesses of linear regression models into consideration, nevertheless the findings still provide important clues regarding our understanding of real life experiences. In fact, the analysis presented provides evidence which supports the main theoretical arguments that have dominated the recent literature. They indicate the importance of human capital engaged in research and development, and the role of clustering and human resources as factors affecting the growth performance of the regions of the Southwest European countries, namely Spain, Portugal, Italy, France and Belgium.

Following on from this analysis, further insight is gained by using similar models in order to explain the growth dynamics of the three Groups of Regions[3] which were defined earlier (see Appendix 2). Using only two variables, we can account for 47,1 per cent of the relative change of regional income growth rates among the regions of Group 1. These two variables are the share of active population in total employment and the rate of unemployment. What is interesting in this, apart from the impact of the level of unemployment, is the negative sign of the active population. In the analysis of Group 2, none of the models pass the F-test, indicating the inadequacy of these variables as explanations of the relative change of income in the regions, which are characterized by relatively higher shares of large firms and relatively higher growth rates. It is of some interest that innovation, R&D and human capital do not explain a substantial amount of variation in growth rates between these regions. Controversially for Group 3, only one variable, the share of SMEs, accounts for 28,4 per cent of the income growth differentials, which is statistically significant. In this group of regions, with relatively larger enterprises but lower relative change in income per capita, having small enterprises seems a disadvantage for growth.

Conclusive Remarks: Empirical Results and Theoretical Explanations

There are several important findings deriving from the empirical studies presented in this paper. What do these findings mean in terms of the ongoing theoretical debates? Firstly, the figures show that there is a statistically significant positive relation between the share of SMEs and the relative income growth rates among the European regions. It means that, although there is increasing scepticism about the sustainability of growth in SME regions and their performance in adapting to the changing economic conditions (Glasmeir, 1991, 1994; Staber, 1997), the empirical findings do not support this scepticism. According to empirical estimates most of the regions with higher shares of SMEs have performed quite well, although the relation is not very strong. Obviously, the figures do not define any causal relations, but they provide a useful insight into what puts regions on different growth trajectories.

In contrast, these are other findings that do support increasing scepticism about SME clusters, namely the negative relation between innovativeness (the number of patent applications) of regions and their shares of SMEs in total employment.

Obviously, however, one might question the extent to which patent applications reflect the innovativeness of firms or clusters of firms. As Paci and Usai (2000) explain, it remains true that firms, especially small and medium-sized firms, are reluctant or do not have adequate information to apply to the European Patent Office. That is why the existing analysis provides only a very rough picture.

Thirdly, the paper aims to define the main factors that explain the growth performance of regions. The theoretical framework created an impetus for the analysis of the relation between growth and several region specific factors, such as innovativeness, the externalities associated with clustering, human capital and human resources. Four different regression models are used to identify the significant factors accounting for regional growth differences among 74 regions in 5 European countries. The results of the analysis show there is convergence among these regions, a propensity which is supported by higher levels of human capital devoted to R&D activities, the tendency to cluster and higher activity levels. Higher unemployment levels, which indicate economic problems and the non-vitality of the local economy, is seen to have a negative effect on regional growth rates.

These three sets of findings provide several hints about the future conduct of theoretical debates and they emphasize the need for further across-country studies. At present most studies are based on individual regions and most of them are descriptive in nature, although there is an increasing interest in quantitative analysis (Cheshire and Magrini, 2000; Martin, 1998; Rodriquez-Pose, 1998). These are obviously very helpful, but on the other hand they are misleading since they overemphasize some issues which may be irrelevant for other regions. On the other hand, there is some, albeit limited, interest amongst economists in regional growth issues, although it is often said that "the world is becoming a mosaic of regions", so this interest should grow. The findings of the present study show that some of the core issues raised by theoretical discussions and by studies based on casual observation are not actually supported by empirical evidence. In saying that we should be aware of the need for refinement of both data and of analytical techniques. However, as Plummer and Taylor (2001) state, this situation should not stop us emphasising the need to re-evaluate theoretical discussions and attempting to fill the gap between descriptive studies and abstract models of economic growth.

Notes

1 It was not possible to find 1986 figures
2 Informal analysis of the residuals does not suggest the presence of spatial autocorrelation among the residuals, although we would want to look at this issue in more detail subsequently to see if this materially affects the conclusions drawn from our preliminary regression analysis
3 Since Group 4 has only two regions, it is not included in the statistical analysis.

References

Acz, Z.J. and Audrecht, D.B. (1990), *Innovation and Small Firms*. MIT Press, Cambridge MA.

Amin, A. and Cohendet, P. (1999), 'Learning and adaptation in decentralised business networks', *Environment and Planning D: Society and Space,* vol. 17, pp. 87-104.

Amin, A. and Malmberg. A. (1992), 'Competing structural and institutional influences on geography of production in Europe', *Environment and Planning A,* vol. 24, pp. 401-416.

Barro, B. J. (1991), 'Economic growth in a cross section of countries', *Quarterly Journal of Economics*, vol.106, no.2, pp. 407-444.

Becattini G. (1991), 'The industrial district as a creative milieu', I G. Benko and M. Dunford (eds) *Industrial Change and Regional Development,* Belhaven, London, pp.102-114.

Belussi, F. (1999), 'Policies for the development of knowledge- intensive local production systems', *Cambridge Journal of Economics*, vol. 23, pp. 729-747.

Breschi, S. (2000), 'The geography of innovation: A cross-sector analysis', *Regional Studies*, vol. 34, no. 3, pp. 213-229.

Brusco, S. (1982) 'The Emilian model: productive decentralization and social integration', *Cambridge Journal of Economics,* vol. 6, pp. 167-184.

Brusco, S. (1986), 'Small firms and industrial districts: The experience of Italy', in E. Keeble and E. Wever (eds), *New Firms and Regional Development,* Croom Helm, London, pp.184-202.

Camagni, R. (1991), 'Local milieu, uncertainty and innovation networks: Towards a new dynamic theory of economic space' in R. Camagni (ed), *Innovation Networks*. Belhaven, London, 121-144.

Camagni, R and Capello, R. (2001), 'Innovation and performance of SMEs in Italy: The Relevance of Spatial Aspects', *Competition and Change*, vol. 3, pp. 69-107.

Capecchi V. (1989), 'The Informal Economy and the development of Flexible Specialization in Emilia-Romagna', in A. Portes, M. Castells and L.A. Benton (eds), *The Informal Economy Studies in Advanced and Less Developed Countries*, John Hopkins University Press, Baltimore, 189-215

Castells, M. and Hall, P. (1994), *Technopoles of the World*, Routledge, London and New York.

Cheshire, P and Magrini, S. (2000), 'Endogenous processes in European regional growth: Convergence and policy', *Growth and Change*, vol. 31, no. 4, pp. 455-480.

Cooke, P. and Morgan, K. (1994), 'Growth regions under duress: Renewal strategies in Baden-Württemberg and Emilia Romagna', in A. Amin and N. Thrift (eds), *Globalisation, Institutions and Regional Development in Europe*, Oxford University Press, Oxford, pp. 91-117.

Cooke, P., Uranga, M.G. and G. Extebarria (1997), 'Regional innovation systems: Institutional and organisational dimensions' *Research Policy*, vol. 26, pp.475-491.

Digiovanna, S. (1997), 'Industrial districts and regional economic development: A regulation approach', *Regional Studies*, vol. 30, pp. 373-386.

Eraydın, A. (2002), 'Building up competence, institutions and networks in order to catch up in the knowledge economy' in R. Hayter and R. Le Heron (eds), *Knowledge, Territory and Industrial Space* Ashgate, Aldershot, pp 67-87.

European Network for SME Research (1994), *The European Observatory for SMEs: Second Annual Report*, Report Submitted to Directorate General XXII, ENSR.

European Network for SME Research (1995), *The European Observatory for SMEs: Third Annual Report*, Report Submitted to Directorate General XXII, ENSR.

Eurostat (1997), *Regions: Statistical Yearbook*, EU, Luxembourg.

Fukuyama, F. (1995), *Trust: The Social Virtues And The Creation Of Prosperity,* The Free Press, New York.

Glasmeir, A. (1991), 'Technological discontinuities and flexible production networks: The case of Switzerland and the world watch industry', *Research Policy*, vol. 20, pp. 469-485.

Glasmeir, A. (1994), 'Flexible districts, flexible regions? The institutional and cultural limits to districts in an era of globalization and technological paradigm shift'. in A. Amin and N. Thrift (eds), *Globalisation, Institutions and Regional Development in Europe,* Oxford University Press, Oxford, pp.118-146.

Gordon, R. (1996), 'Industrial districts and the globalization of innovation: Regions and networks in the new economic space'. In X.Vence-Deza and J.S. Metcalfe (eds), *Wealth from diversity.* Kluwer, Rotterdam, pp. 103-133

Gregersen,B. and Johnson, B. (1997), 'Learning economies, innovation systems and European integration', *Regional Studies*, 31,5, 479-490.

Harrison, B. (1994a), 'The Italian industrial districts and the crisis of cooperative form: Part I'. *European Planning Studies,* vol. 2, pp. 3-22.

Harrison, B. (1994b) The Italian industrial districts and the crisis of cooperative form: Part II". *European Planning Studies*, vol. 2, pp. 159-174.

Jin, D. J and Stough, R. (1998). 'Learning and learning capability in the Fordist and post-Fordist age: an integrative framework', *Environment and Planning A,* vol. 30, p. 1255-1278.

Kirat, T. and Lung, Y. (1999), 'Innovation and proximity: Territories as loci of collective learning process', *European Urban and Regional Studies,* vol. 6, pp. 27-38.

Krugman, P. (1995), *Development, Geography and Economic Theory*, MIT Press, Cambridge.

Langlois, R.N., 2001, 'Knowledge, consumption and endogenous growth', *Journal of Evolutionary Economics*, vol. 11, pp. 77-93.

Lin, C. Y. (1997), 'Technopolis development: An assessment of the Hschchu experience', *International Planning Studies,* vol. 2, pp. 257-272.

Lyons, D. (1995), 'Agglomeration economies among high-technology firms in advanced production areas: The case of Denver Boulder', *Regional Studies*, vol. 29, pp. 265-278.

Malmberg, A. (1996), 'Industrial geography: agglomeration and local milieu', *Progress in Human Geography,* vol. 20, pp. 392-403.

Martin, P. (1998), 'Can regional development policies affect growth and geography in Europe?', *World Economy*, vol. 21, no. 6, pp. 757-775.

Maskell, P. and Malmberg, A. (1999a), 'Localised learning and industrial competitiveness', *Cambridge Journal of Economics,* vol. 23, pp. 167-185.

Maskell, P. and Malmberg, A. (1999b), 'The competitiveness of firms and regions: Ubiquitification and the importance of localized learning', *European Urban and Regional Studies,* vol. 1, pp. 9-25.

Morgan, K. (1997) 'The learning region: Institutions, innovation and regional renewal', *Regional Studies,* vol. 31, pp. 491-503.

Mouleart, F., Swyngedouw, J. and Wilson, A. (1988), 'Spatial Responses to Fordist and Post-Fordist Accumulation and Regulation', *Papers of the Regional Science Association*, vol. 64, pp. 11-23.

Paci, R and Usai, S. (2000), 'Technological Enclaves and Industrial Districts: An analysis of the regional distribution of innovative activitiy in Europe'. *Regional Studies*, vol. 34, pp. 97-114.

Park, S. O. and Markusen, A. (1995), 'Generalizing New Industrial Districts - A Theoretical Agenda and an Application from a Nonwestern Economy', *Environment And Planning A*, vol. 27, pp. 81-104.

Pavitt, K. Robson, M and Towsend, J. (1987), 'The size distribution of innovating firms in the UK 1945-84', *Journal of Industrial Economics*, vol. 45, pp. 297-306.

Plummer, P. and Taylor, M. (2000), 'Theory and Praxis in Economic Geography: Enterprising and local growth in a global economy', paper presented to *The Wisconsin Economic Summit*, November 29-December 1, Wisconsin.

Plummer, P. and Taylor, M. (2001), 'Theories of local economic growth (part 1) concepts, models and measurement', *Environment and Planning A*, vol. 33, pp. 219-236.

Rodriquez-Pose, A. (1998), 'Social conditions and economic performance: The bond between social structure and regional growth in Europe', *International Journal of Urban and Regional Research*, vol. 22, no. 3, pp. 443-460.

Romer, P.M. (1990), 'Endogenous technological change', *Journal of Political Economy*, vol. 98, no. 5, pp. S71-S102.

Romer, P.M. (1994), 'The origins of endogenous growth', *Journal of Economic Perspectives*, no.1, pp. 3-22

Schmitz, H. (1990), 'Small firms and flexible specialization in developing countries' *Labor and Society*, vol.15, no.3,

Schmitz, H. (1999), 'Collective efficiency and increasing returns', *Cambridge Journal of Economics*, vol. 23, pp. 465-483

Schmitz, H. and Musyck, B. (1994), 'Industrial Districts in Europe - Policy Lessons for Developing-Countries', *World Development*, vol. 22, pp. 889-910.

Scott, A.J. and Angel, D.P. (1988), The global assembly-operations of US semiconductor firms: a geographical analysis. Environment and Planning A, 20: 1047-1067

Scott, A. J and Storper, M. (1987), 'High technology industry and regional development: A theoretical critique and reconstruction' *International Social Science Journal*, vol. 112, pp. 215-232

Solow, R.M. (1994), 'Perspectives on Growth Theory', *Journal of Economic Perspectives*, vol. 8, no. 1, pp. 45-54.

Staber, U. (1997), 'Specialisation in a declining industrial district', *Growth and Change*, vol. 28, pp. 475-495.

Stöhr, W. B. and Pönighaus, R. (1992), 'Towards a data-based evaluation of the Japanese technopolis policy and organizational infrastructure on urban and regional development', *Regional Studies*, vol 26, pp. 605-538.

Strenberg, R. (2000), 'Innovation networks and Regional Development- Evidence from the European Regional Innovation Survey (ERIS): Theoretical concepts, methodological approach, empirical basis and introduction to the theme issue', *European Planning Studies*, vol. 8, no. 4, pp. 389-408.

Tödling, F (1994), 'The uneven landscape of innovation poles: local embeddedness and global networks', in A. Amin and N. Thrift (eds), *Globalisation, Institutions and Regional Development in Europe*. Oxford University Press, Oxford.

Tödling, F. and Kaufmann, A. (2001), The role of region for innovation activities of SMEs, *European Urban and Regional Studies*, vol. 8, no. 3, pp. 203-215.

Torre, A. and Gilly, J. P. (2000), 'On the analytical dimension of proximity dynamics', *Regional Studies*, vol. 34, pp. 169-180.

Paci, R and Usai, S. (2000), 'Technological Enclaves and Industrial Districts: An analysis of the regional distribution of innovative activitiy in Europe'. *Regional Studies*, vol. 34, pp. 97-114.

Park, S. O. and Markusen, A. (1995), 'Generalizing New Industrial Districts - A Theoretical Agenda and an Application from a Nonwestern Economy', *Environment And Planning A*, vol. 27, pp. 81-104.

Pavitt, K. Robson, M and Towsend, J. (1987), 'The size distribution of innovating firms in the UK 1945-84', *Journal of Industrial Economics*, vol. 45, pp. 297-306.

Plummer, P. and Taylor, M. (2000), 'Theory and Praxis in Economic Geography: Enterprising and local growth in a global economy', paper presented to *The Wisconsin Economic Summit*, November 29-December 1, Wisconsin.

Plummer, P. and Taylor, M. (2001), 'Theories of local economic growth (part 1) concepts, models and measurement', *Environment and Planning A*, vol. 33, pp. 219-236.

Rodriquez-Pose, A. (1998), 'Social conditions and economic performance: The bond between social structure and regional growth in Europe', *International Journal of Urban and Regional Research*, vol. 22, no. 3, pp. 443-460.

Romer, P.M. (1990), 'Endogenous technological change', *Journal of Political Economy*, vol. 98, no. 5, pp. S71-S102.

Romer, P.M. (1994), 'The origins of endogenous growth', *Journal of Economic Perspectives*, no.1, pp. 3-22

Schmitz, H. (1990), 'Small firms and flexible specialization in developing countries' *Labor and Society*, vol.15, no.3,

Schmitz, H. (1999), 'Collective efficiency and increasing returns', *Cambridge Journal of Economics*, vol. 23, pp. 465-483

Schmitz, H. and Musyck, B. (1994), 'Industrial Districts in Europe - Policy Lessons for Developing-Countries', *World Development*, vol. 22, pp. 889-910.

Scott, A.J. and Angel, D.P. (1988), The global assembly-operations of US semiconductor firms: a geographical analysis. Environment and Planning A, 20: 1047-1067

Scott, A. J and Storper, M. (1987), 'High technology industry and regional development: A theoretical critique and reconstruction' *International Social Science Journal*, vol. 112, pp. 215-232

Solow, R.M. (1994), 'Perspectives on Growth Theory', *Journal of Economic Perspectives*, vol. 8, no. 1, pp. 45-54.

Staber, U. (1997), 'Specialisation in a declining industrial district', *Growth and Change*, vol. 28, pp. 475-495.

Stöhr, W. B. and Pönighaus, R. (1992), 'Towards a data-based evaluation of the Japanese technopolis policy and organizational infrastructure on urban and regional development', *Regional Studies*, vol 26, pp. 605-538.

Strenberg, R. (2000), 'Innovation networks and Regional Development- Evidence from the European Regional Innovation Survey (ERIS): Theoretical concepts, methodological approach, empirical basis and introduction to the theme issue', *European Planning Studies*, vol. 8, no. 4, pp. 389-408.

Tödling, F (1994), 'The uneven landscape of innovation poles: local embeddedness and global networks', in A. Amin and N. Thrift (eds), *Globalisation, Institutions and Regional Development in Europe*. Oxford University Press, Oxford.

Tödling, F. and Kaufmann, A. (2001), The role of region for innovation activities of SMEs, *European Urban and Regional Studies*, vol. 8, no. 3, pp. 203-215.

Torre, A. and Gilly, J. P. (2000), 'On the analytical dimension of proximity dynamics', *Regional Studies*, vol. 34, pp. 169-180.

Appendix 1 THE NAMES AND NUMBERS OF THE REGIONS THAT ARE INCLUDED IN THE STATISTICAL ANALYSIS

1	Veneto	38	Rhone-Alpes
2	Piemonte	39	Limousin
3	Marche	40	Poitou--Charentes
4	Emilia-Romagna	41	Basse-Normandie
5	Lombardia	42	Bretagne
6	Toscana	43	Midi-Pyrenees
7	Umbria	44	Aquitaine
8	Friuli-Venezia Giulia	45	Languedoc-Roussillon
9	Abruzzo	46	Provence-Alpes-Cote d'Azur
10	Liguria	47	Corse
11	Puglia	48	Limburg
12	Valle d'Aosta	49	Antwerpen
13	Molise	50	Oost-Vlaanderen
14	Trentino-Alto Adige	51	West-Vlaanderen
15	Lazio	52	Liege
16	Campania	53	Brabant Wallon
17	Sardegna	54	Hainaut
18	Basilicata	55	Namur
19	Sicilia	56	Luxembourg
20	Calabria	57	Navarra
21	Norte	58	Pais Vasco
22	Centro	59	La Rioja
23	Alentejo	60	Cataluna
24	Lisboa e Vale do Tejo	61	Madrid
25	Algarve	62	Aragon
26	Franche-Comte	63	Asturias
27	Champagne-Ardenne	64	Cantabria
28	Lorraine	65	Castilla-La Mancha
29	Haute-Normandie	66	Castilla y Leon
30	Picardie	67	Comunidad Valenciana
31	Centre	68	Murcia
32	Pays de la Loire	69	Galicia
33	Alsace	70	Andalucia
34	Bourgogne	71	Baleares
35	Nord-Pas-de-Calais	72	Extremadura
36	Auvergne	73	Canarias
37	Ile de France	74	Ceuta y Melilla

Appendix 2

GROUP OF REGIONS 1:

Model	Variables	B	Std. Error	t	Sign.
1	(Constant)	111,758	43,592	2,564	,019
	POP1564 (1990)	-1,540	,642	-2,398	,026
2	(Constant)	213,430	50,252	4,247	,000
	POP1564 (1990)	-2,845	,698	-4,076	,001
	UNEMP87	-1,413	,474	-2,982	,008

R^2=0,471 F (2,21)=8,476 (,002)***

GROUP OF REGIONS 2:

Model	Variables	Coefficients	Std. Error	t	Significance
1	(Constant)	12,671	26,726	,474	,641
	INCOME86	5,569E-02	,142	,391	,700
	PERRD	7,877	5,710	1,380	,185
	EXPRD	-4,458	6,145	-,725	,477
	ACTIVITY	-,132	,561	-,235	,817
	SHARESME	5,894E-02	,119	,493	,628
	UNEMP87	-,243	,255	-,954	,353
	HIGHEDU	-,228	,464	-,492	,628

R^2= 0.317 F(7,25)= 1.195 (0.355)

GROUP OF REGIONS 3

Model	Variables	Coefficients	Std. Error	t	Significance
1	(Constant)	1,145	2,478	,462	,649
	SHARESME	-,209	,073	-2,887	,009

R^2=0,284 F(1,22)=8,335 (,009)***

published in *Regional Economic Growth, SMEs and Wider Europe* (2003) edited by Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp. 229-245

Chapter 11

The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli

Bilge Armatlı Köroğlu and Burak Beyhan

Introduction

In recent debates, SMEs have been defined as the leading agents of economic growth. The traditional model of growth based on state intervention and the external transfer of capital and knowledge has been increasingly challenged by the endogenous growth approach based on the decisive role and capacity of small and medium-sized enterprises. The analysis of the evolution of local economic systems reveals that the role of SMEs in economic growth is subject to transformation in the face of changing global conditions. This transformation is such that SMEs have employed different adoption mechanisms, by which they have not only sustained their livelihood but also challenged the substantive economy of their respective territories as a result of competing with their global rivals.

In this context, the aim of this Chapter is to unveil the changing role of SMEs in local economic growth, with special reference to the case of Denizli, which has experienced remarkable economic development in the last two decades. As has been pointed out above, one of the major distinctions between the old and the new group of approaches and theories is the increasing importance assigned to SMEs. Among the new theories and approaches, the industrial district approach has a leading role, because of its ability to explain the nature of complex relationships among SMEs. In industrial district debates, SMEs have been defined as the main agents of economic growth due to their role in employment generation and flexible production relations. In recent studies pertaining to this approach, the relationship between SMEs and economic growth are analysed in relation to collaborative relations, sectoral specialization, cultural characteristics and attributes of knowledge.

In the last two decades, Turkey has witnessed the emergence of new industrial growth nodes in which SMEs have played vital roles in fostering local economic growth. Before the 1980s, regional economic growth had mainly depended on the state's income redistribution and welfare policies. During this inward-oriented policies era a few metropolitan regions dominated Turkey's industrial production. However, after 1980, it became difficult to sustain interventionist state policies within the context of globalisation processes and state-led development strategies were replaced by market-directed and export-oriented policies. In this context, some less developed areas have exhibited rapid increases in manufacturing activities, showing the potential of areas outside the major industrial metropolises (İstanbul, Ankara, İzmir and Bursa). There are many industrial districts, the so-called 'Anatolian Tigers', which are located in different parts of Turkey: Denizli in the Eagean region, Çorum, Konya and Kayseri in central Anatolia, and Gaziantep and Kahramanmaraş in south-east Anatolia (see Figure 11.1). They have some important common characteristics: a rapid increase both in the number of firms and employees in manufacturing industry, the domination of small firms and their network relations and a specialisation in labour intensive sectors. In particular, textiles and clothing have developed as the leading sectors of growth and have become the most important export sectors in these districts (Eraydın, 2002). Most notably, Denizli has a strong reputation for its remarkable success in textile production and exports.

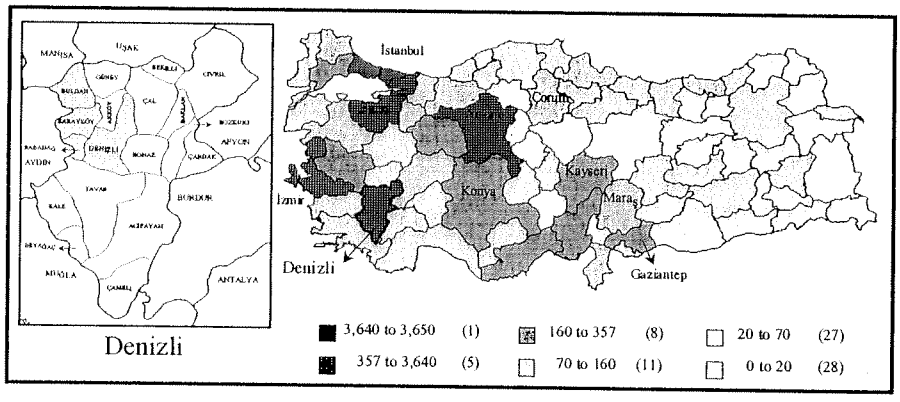

Figure 11.1 Number of establishments in manufacturing by the provinces in Turkey and districts of Denizli with strong tradition in textile industry, 1999.

Source: Unpublished manufacturing statistics, State Institute of Statistics (SIS).

Note: The shaded areas on the map, located on the left-hand side of the figure, show the districts, among which the darker ones have a strong tradition of textile production.

This Chapter assesses the experience of Denizli, which has achieved remarkable economic growth in the last two decades. What is observed in Denizli is a continuous growth process, in which SMEs have played quite important roles in the growth of the textile industry and the transformation of Denizli as a whole. What is striking about the economic growth of Denizli is that, at the beginning of the 1970s, it was a backward region of Turkey, with little anticipation that it would become a focal point for growth. The unprecedented economic growth of Denizli owes much to its specialisation in textile production, through which it has been articulated into the global production networks and markets since the early 1980s. With the impetus created by the demand in international markets for the products (especially textile products) of Denizli, between 1980 and 1996, Denizli's share of the total number of firms in Turkey increased from 1.34 per cent to 2.32 per cent. During the same period, Denizli's share of the number of employees increased from 0.93 per cent to 1.60 per cent (Eraydın, 2002). Moreover, SMEs are an important component of the industrial structure of Denizli, accounting for around 90 per cent of all establishments during the period between 1992 and 1997. However, within the same period, the share of SMEs with respect to the number of employees increased from 45.91 to 50.40 per cent (Table 11.1). Also, below the level of SMEs, in 1992 there were 4869 micro firms employing less than 10 workers each.

What follows is a historical analysis of this economic growth, with a special emphasis on the contexts within which conditions of economic growth reveal themselves. For this purpose, the remaining part of the Chapter is arranged into four main subheadings that discuss the transformation of the role of SMEs in the economic growth process. The first two parts summarize the roots of economic growth and the role of SMEs in this process, from the early years of the Turkish Republic to the 1980s. The third part focuses on the peaceful relations between small and large firms, in order to integrate with the global production networks in the 1980s. In the fourth part, the textile boom of the 1990s is analysed as a transformative pressure on the textile production organisation and institutional structure. Finally, after revealing the basic characteristics of the transforming nature of the role of SMEs in the growth process, the concluding section remarks on some of the issues concerning the future economic growth of Denizli.

Building the Tradition of Collective Action and the Promotion of Local Clustering in Denizli

Success stories are not built on a tabula rasa. A rich institutional and historical background can be observed in nearly all of the successful industrial districts (see, for example the watch industry of the Swiss Jura Arc (Glasmeier, 1991; Maillat, et al., 1995), the machinery industry of Jæren in Norway (Hassink, 1997), the electronics and computer industry of Silicon Valley in USA (Saxenian, 1985 and

1991)). Parallel to this, it comes as no surprise that artisanal textile (fabric) production in Denizli has a strong tradition. It can even be traced back to the Greco-Roman period (Mutluer, 1995; Batmaz and Özcan, 1998). Towards the end of the Ottoman period, and during the early Republican period, there were some production units operating in a capitalist way, but the artisanal form of (textile) production was still dominant in Denizli (Pınarcıoğlu, 2000; Erendil, 1998). In especially mountainous regions of the province, where the land is not suitable for agricultural production, for many centuries the economy was inevitably restricted to artisanal textile production. According to the first industrial census, conducted in 1927, there were 1581 establishments in all the sectors in Denizli (Mutluer, 1995). The number of establishments operating in the textile sector was 423 (Erendil, 1998; Pamuk, 1998).

In less developed regions, the transition from the artisanal form and traditional sectors of production to the modern form and sectors of production required a strong impetus, created by either the public or the private sector. The roles played by public enterprises in the Mezzogiorno of Italy and in the steel industry of France illustrate this trend (Dunford, 1988). Not only state holding companies, but also large MNCs and state-supported firms, provide small and medium-sized entrepreneurs with the transformative pressure to upgrade their technological level. The role played by Toyota in the Chukyo region of Japan (Edgington, 1999), and state-owned or supported semiconductor companies in the Malaysian state of Penang (Doner and Hershberg, 1999), and in Hsinchu Science City of Taiwan (Lin, 1997), illustrate this second trend. In the early years of the Republican Period, the opportunities available for such a transition and transformation in Denizli were very limited. During the 1930s, the state opened four cotton yarn factories but none of them was located in Denizli (Pınarcıoğlu, 2000).

At first glance, the fact that Denizli did not receive important public investments directed towards industrial production might be considered as a negative factor for the economic development of the province. But, as Şengün (1998) argues, in the 1930s and 1940s this situation, giving rise to cooperatives, helped the formation of an entrepreneurial spirit and economic growth in Denizli. Indeed, from 1930s onwards, many small textile producers in Denizli had established cooperatives, with the backing of the state, in order to protect themselves from the tradesmen who controlled the textile production. At the end of 1930s, there were 5 textile cooperatives in Denizli (Mutluer, 1995). During the II.World War, the number of textile cooperatives in the centre of the province increased to 16, because Sümerbank[1], which was given the responsibility of preventing the black market conditions in cotton yarn provision caused by the war, employed the cooperatives for the distribution of cotton yarn (Erendil, 1998). With the help of the cooperatives, small textile producers in Denizli began to learn collective responsibility and develop a tradition of mutual trust and support, which has played an important role in the growth of Denizli (Eraydın, 2002; Erendil, 1998).

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The collaboration between Sümerbank and the cooperatives had also been extended to the development of local clustering. Indeed, the contribution of public enterprises to the development of local clustering is very important. Although, in the early years, these initiatives are important for the formation of local clustering, in the subsequent years they tend to create some drawbacks, too. What was observed in Denizli illustrates this trend. After the II. World War, the state decided to open five new cotton yarn factories. In 1953, one of these factories was established in Denizli province center (Mutluer, 1995). During the 1950s and early 1960s, small textile producers in Denizli benefited very much from this factory. But, in 1964, the factory established by Sümerbank began to produce fabric and initiated printing and dyeing operations (Erendil, 1998), and, as a result, small textile producers in Denizli, compared with the other districts that specialized in the textile production, were no longer able to get cotton yarn as cheaply and easily as before (Eraydın, 2002). Although, in the late 1960s, this hindered the operations of many small textile producers in Denizli (Eraydın, 2002), subsequently, in the 1970s, a few private sector firms started to establish new cotton yarn factories and also provide small firms with modern cotton yarn treatment (Pınarcıoğlu, 2000).

In the early 1960s, electricity also began to be used in Denizli province center. This led to the first great technological transformation in the textile industry of Denizli: a lot of electrically-driven looms were bought from Bursa and Adana (Erendil, 1998; Pamuk, 1998). Together with the existence of the Sümerbank factory, this paved the way for the development of Denizli province center as the center of textile production in the province. As a result, Denizli has attracted people from its textile districts, especially Babadağ. During the 1960s many small but modern textile firms were established in Denizli province center (Pınarcıoğlu, 2000). Even local producers started to produce their own electrically-driven looms. Not only small but also factory-sized establishments emerged during this period, thanks to the possibility of increasing production, due to the widespread use of electricity, and the existence of strong family ties (Erendil, 1998, p. 182). According to the industrial census conducted in Denizli in 1964, there were 626 wage workers, employed by 13 private textile firms (Pınarcıoğlu, 2000). These relatively large firms were the first attempts at capital accumulation by the members who could establish their own family firms in the following years (Erendil, 1998). During this period, in Denizli, the relationship between producers was very dense. As the textile industry was relocated and concentrated in the province center, trade also became very important and attractive for the textile producers.

Denizli as a Growing Node

During the 1970s, Denizli experienced remarkable progress with regard to investments, which was triggered by two important factors. Firstly, in 1973, Denizli was designated as a province having priority for development (Mutluer,

1995). This has been a policy of the state to support industrial development in the lagging regions of the country since the 1970s[2]. As Eraydın (2002) argues, the inclusion of Denizli among the first priority regions was primarily aimed at the elimination of the problems associated with the extension of the cotton yarn production of Denizli Sümerbank factory into the fabric production and printing-dyeing operations. The second important factor in the economic development of Denizli, in the 1970s, was the external transfer of capital by local people. Investments realized by the Turkish emigrants working abroad (especially in Germany) were crucial for Denizli (Eraydın, 2002; Pınarcıoğlu, 1998 and 2000)[3]. During the period between 1971 and 1982, approximately 20 firms were established in Denizli as multi-partner workers' enterprises[4]. Although only a limited number of these firms operated in the textile sector, and most of them were unsuccessful (Erendil, 1998; Mutluer, 1995), the experience accumulated through these investments helped the transfer of technical know-how from abroad to Turkey and created an atmosphere of local entrepreneurship (Pınarcıoğlu, 1998 and 2000)[5].

Taken together with the family groups who had accumulated capital in the previous periods, the factors mentioned above gave rise to the emergence of new firms, in quite different sectors, ranging from electronics to the textile and food industries. It can be argued that, in this period, Denizli experienced relative sectoral diversity. Between 1971 and 1979, the number of firms operating in Denizli and employing more than 10 workers increased from 34 to 95 (Erendil, 1998). But only 21 of firms employing 2,500 workers operated in the textile industry (Pınarcıoğlu, 2000; Pamuk, 1998). As Pınarcıoğlu (2000) argues, and as is also evident from the studies of Mutluer (1995), Pamuk (1998) and Erendil (1998), among the newly established textile firms three were of crucial importance for the economic development of Denizli. These firms can be considered as mounting a challenge to Sümerbank, which, during the 1950s and the early 1960s, had dominated the cotton yarn provision and treatment of the province. Two of these firms, the one established in 1975 by the Turkish emigrants working abroad, and the other one established in 1977 by a family from Babadağ, were producing cotton yarn. The third one, Denizli Dyeing and Printing Factory, founded by 174 partners (including both textile producers and tradesmen), was the first big private establishment providing the small textile producers with modern cotton yarn treatment, dyeing and printing facilities.

One of the most important characteristics of Denizli, which was sustained up to the 1980s, and should be emphasised in relation to economic growth and SMEs, is the homogeneous identity that it possessed (Eraydın, 2002; Erendil, 1998). Compared with the other provinces of Turkey, until recently, Denizli did not receive important migration from other parts of the country. In the 1970s, 93 per cent of the population was born in the province center. Until the 1980s, Denizli was able to attract people only from its own hinterland (especially Babadağ), to which, as Işık and Pınarcıoğlu (1996) argue, Denizli owes much of its social cohesion and economic growth. The textile producers who migrated to the

province center from Babadağ helped the creation of an atmosphere of local collaboration. In other words, the homogeneous population of Denizli – homogeneous in terms of ethnicity – also reflects 'the homogeneous structure of textile producers in Denizli', which played a crucial role in the growth of Denizli as an important node of textile production, both in Turkey and in international markets.

The Integration to Global Production Networks

In the beginning of the 1980s, Turkey started to implement export-oriented development policies. The central government provided new incentives and institutional supports for foreign trade. As a consequence of these policies, in 1986, Turkey became one of the most important textile exporting countries, and small firms became the agents of this integration process. During this period, "the export-oriented policies have created the favourable conditions for the rapid transformation in the textile sector and export activities in Denizli" (Erendil, 1998, p. 189).

In Denizli, a few textile producers, who had strengthened their position in terms of capital accumulation and marketing relations in the previous period, entered into the export markets (Erendil, 1998). In this process, trade firms, operating in İstanbul and aiming at fulfilling the subcontracting requests of western enterprises (particularly in textiles), played quite important roles (Işık and Pınarcıoğlu, 1996). During this period, some enterprises attended foreign fairs with their samples, among which there was sufficient demand for towels in export markets (Pınarcıoğlu, 2000)[6]. In the foreign fairs, enterprises perceived the demand for bathrobes and updated their production organization accordingly. The relatively higher value of bathrobes gave an opportunity to some firms to set up new units and to transform themselves into relatively large-scale firms in time.

These relatively large firms, which played a leading role, have been important in generating growth motivation and in the internationalization process, and have become the initiators of local transformation and specialization in towel and bathrobe production (Pınarcıoğlu, 1998). These firms, which had founded subcontracting relations with western enterprises in the textile industries, drew many medium-sized firms into the export-oriented production field (Pınarcıoğlu, 1998). This interactive environment has attracted a large number of small firms and led them to benefit from the opportunities provided by the town. Therefore, it has also been noted by Erendil (1998) that the major facilitator of this process can be defined as 'following successful examples'. According to the literature on Denizli, the total production capacity of export firms was not enough to meet the demands of export markets, and, most of the time, the labour-intensive stages of production have been subcontracted to small firms.

The leading firms of Denizli, producing for the global markets, were forced to improve their technology and quality to adapt to international production

standards. Consequently, Denizli has upgraded its production technology in a step-by-step fashion, from large firms to small ones. Some leading "firms started to invest in machinery, especially the second-hand machinery from Italy and started to export basically home furnishing products (bed sheets and other fabrics) to Middle-Eastern countries and EU countries" (Erendil, 1998, p. 192). Small firms were also able to upgrade to the minimum level of technology required for the export markets through, again, the second-hand market that has been created by the local large and medium-sized firms, that either renewed their stock of machinery or enlarged their production capacities (Eraydın, 2001). This upgrading process has resulted in a local technological configuration such that the levels of technology employed in large and small firms were more or less complementary or similar to each other, which played a very important role in the establishment of the subcontracting relationships between large and small firms (Kazdağlı, 1998; Aslanoğlu, 1998).

In this transformation process, the cooperation which was established among the small and medium-sized firms, has been the driving force behind the rapid growth in Denizli. Cooperation was built upon both the formal relations and the informal relations, such as friendship, kinship and membership of the same town. Being from the same area, or being from the same family, has always been very important in the establishment and the growth of firms (Eraydın, 2002), especially among the textile producers born in Babadağ. The partnerships and mutual aids in the form of provision of information and capital were very dense among the producers from Babadağ (Erendil, 1998). In addition, within the context of relationships between compatriots, they have helped each other in the export markets.

In this respect, a general strategy that was widely used by the textile producers in Denizli, during the 1980s, has been the establishment of partnerships on a temporal basis. Partnerships have been formed both between members of the same family and the same town, due to similar backgrounds and trust-based relations, formed in Denizli in previous periods (Eraydın, 2001). On the other hand, the 1980s could be considered as the initial stage of the process of integration into global production networks. In this process, the relations between small and large firms were generally constructed through sub-contracting relations, which depended on the collaborative tradition in textiles and the relatively homogeneous local environment. These egalitarian subcontracting relations among small and large firms have been lost, in the later stages of growth, and the role of SMEs in the growth process has transformed Denizli.

The Consequences of the Export Boom: The Decline of Cooperative Relations

By the end of the 1980s, Denizli had increased its exports, but the boom came in the first half of the 1990s, with the help of local opportunities and state incentives in the textile sector. During the period of the export boom, catching up with

standards. Consequently, Denizli has upgraded its production technology in a step-by-step fashion, from large firms to small ones. Some leading "firms started to invest in machinery, especially the second-hand machinery from Italy and started to export basically home furnishing products (bed sheets and other fabrics) to Middle-Eastern countries and EU countries" (Erendil, 1998, p. 192). Small firms were also able to upgrade to the minimum level of technology required for the export markets through, again, the second-hand market that has been created by the local large and medium-sized firms, that either renewed their stock of machinery or enlarged their production capacities (Eraydın, 2001). This upgrading process has resulted in a local technological configuration such that the levels of technology employed in large and small firms were more or less complementary or similar to each other, which played a very important role in the establishment of the subcontracting relationships between large and small firms (Kazdağlı, 1998; Aslanoğlu, 1998).

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international standards in the quality of products became crucial. But, at the beginning of the 1990s "the quality of production in Denizli stayed behind the requirements of the international market" (Eraydın, 2001, p. 6). For this reason, leading firms started to modernize their machinery, by importing automatic looms, in the so-called second technological transformation. In this technological renewal, as in the case of the first one, the state took on important responsibilities, such as decreasing the minimum investment requirements for an investment incentive certificate, at the beginning of the 1990s (Erendil, 1998). Therefore, this provided an opportunity for many small and medium-sized firms to benefit from these incentives (Pınarcıoğlu, 2000) to update their machinery, as well as large entrepreneurs.

Table 11.1 The number of establishments and employees in the textile sector of Denizli compared with the total of all sectors according to the size of the establishments.

Year	Size of Establishment	Number of Establishment	Number of Textile Establishment	Number of employees	Number of Textile employees
1980	**Total**	**117**	**29**	**7452**	**3865**
1985	**Total**	**115**	**37**	**9679**	**4302**
1990	**Total**	**99**	**36**	**12201**	**6638**
1992	Small(10-49)	108	47	2304	959
	Medium(50-249)	44	24	4495	2682
	Large(249+)	16	12	7174	5423
	Total	**168**	**82**	**13973**	**9114**
1997	Small(10-49)	296	182	6500	4042
	Medium(50-249)	100	67	10859	7637
	Large(249+)	31	27	17080	15213
	Total	**427**	**276**	**34439**	**26892**
1998	Small(10-49)	241	144	6029	3651
	Medium(50-249)	93	63	10337	7192
	Large(249+)	37	32	20214	18068
	Total	**371**	**239**	**36580**	**28911**
1999	Small(10-49)	228	133	5479	3231
	Medium(50-249)	94	61	10679	6918
	Large(249+)	36	32	19034	17277
	Total	**358**	**226**	**35192**	**27426**

Source: SIS, Unpublished Manufacturing Statistics (only establishments with more than 10 employees are included).

With the export boom, many new entrepreneurs, who were from different provinces, and even from non-textile-oriented professions (such as medicine), entered the market, in order to benefit from the opportunities in the town. Consequently, the number of firms and employees, and the amount of textile exports from Denizli, increased sharply in the 1990s. As it can be seen from Table 11.1, between 1990-1992 the number of establishments increased from 99 to 168, and nearly 49 per cent of them were textile firms in 1992. In the same period, the number of textile employees increased from 6638 to 9114. Table 11.3 shows that the region's textile industry recorded an impressive growth rate between 1992 and 1997, which reveals an increasing specialization in textile-related industries.

As can be observed in Table 11.2, the average size of firm changes within the limits of the medium-sized firms (50-249 employees). The average size of firm in the textile industry is larger than the average of total manufacturing sectors, due to the labor-intensive nature of textiles. Nearly 44 per cent of textile employment in 1997 was in firms with less than 250 employees. In other words, it is possible to argue that the number of small and medium-sized firms in textiles has dramatically increased between 1992 and 1997. Consequently, Table 11.3 illustrates the fact that small firms in textiles, and all other manufacturing sectors, recorded impressive growth rates, in terms of number of firms and employees, compared with medium-sized and large firms.

Table 11.2 The share of establishments and employees in the textile sector of Denizli and average firm sizes.

Years	Share of Textile Establishment (%)	Share of Textile employees (%)	Average Firm Size	Average Firm Size in Textile
1980	24,79	51,87	64	133
1985	32,17	44,45	84	116
1990	36,36	54,41	123	184
1992	48,81	65,23	83	111
1997	64,64	78,09	81	97
1998	64,42	79,03	99	121
1999	63,13	77,93	98	121

Source: Calculated from Unpublished Manufacturing Statistics, SIS.

In this rapid growth, the micro firms entering the market have evolved, according to different scales, from small to large ones. Erendil (1998) explains this asymmetry by defining two different types of producers found in Denizli. The first type of producers uses old technology and produces low-quality goods for

domestic markets. The second type of producers employs modern technology and produces high-quality goods for international markets. The increasing gap between these two different types of producers has had quite a negative effect on the horizontal network relations, and it has brought about an asymmetric environment, which has led to the domination of a small number of large firms in Denizli.

Table 11.3 The growth rates of firms and employment in manufacturing and textile industry.

Years	Size of Establishment	Growth Rate of Firms (%)		Growth Rate of Employment (%)	
		Total Industry	Textile Industry	Total Industry	Textile Industry
1980-1985	Total	-1,71	27,59	29,88	11,31
1985-1990	Total	-13,91	-2,70	26,06	54,30
1990-1992	Total	69,70	127,78	14,52	37,30
1992-1997	Small (10-49)	174,07	287,23	182,12	321,48
	Medium (50-249)	127,27	179,17	141,58	184,75
	Large (249+)	93,75	125,00	138,08	180,53
	Total	154,17	236,59	146,47	195,06
1997-1999	Small (10-49)	-22,97	-26,92	-15,71	-20,06
	Medium (50-249)	-6,00	-8,96	-1,66	-9,41
	Large (249+)	16,13	18,52	11,44	13,57
	Total	-16,16	-18,12	2,19	1,99
1980-1999	Total	205,98	679,31	372,24	609,60

Source: Calculated from Unpublished Manufacturing Statistics, SIS.

In the 1990s, the leading firms extended their customer base in Europe and USA. This expansion of demand required faster and better-quality production (Pınarcıoğlu, 2000). Therefore, a tendency emerged for big firms to integrate all the complementary parts of the production in the firm (Erendil, 1998). Inadequate quality and time constraints, especially in periods of high demand, could be seen as the main reasons for these kinds of integration and technological upgrading, supported by the policies of the state. The use of automatic shuttleless looms forced entrepreneurs to decrease subcontracting relations, and this caused a structural transformation. However, during the 1980s, most of the production had been carried out using shuttle looms, in small and large firms, and no major problems had been experienced between the subcontractor and subcontracting firms. In order to meet the increasing quality expectations, in the 1990s, export firms preferred integrated production, instead of subcontracting, as small

subcontractors had problems with satisfying the quality requirements of the upper segments of the European market.

In Denizli, the emergence of leading firms had been considered as the force which led SMEs to integrate into the global production networks, in the initial stages of growth. In the same way, although large firms are not a large proportion of the firms in Emilia-Romagna, their importance to the economic growth of the region should not be underestimated (Digiovanna, 1996). However, in the second part of the 1990s, the domination of large firms become obvious, and small firms have been forced into a minor position in Denizli. In this growth process, network relations have become much more loose and fragmented due to the power struggle among the firms (Pınarcıoğlu, 2000). Since the middle of the 1990s, the necessity for collective action in global export markets has diminished, as the demand has been guaranteed by the large firms. Similar events have been experienced in Italian industrial districts. Harrison (1994a, 1994b) concluded from his survey that leading powerful firms threaten the collaborative nature of inter-firm relations in Italian districts. Cooke and Morgan (1994) also emphasized that corporate hierarchies appear in the industrial districts because of growing concentration of capital. In some cases, new vertical networks have begun to replace the traditional horizontal networks of collaboration. In this process, small establishments have become more vulnerable, compared with the big firms, due to the lack of financial resources, lack of adequate skills, and lack of supporting institutions (Özcan, 1995; Erendil, 1998). However SMEs, with their flexible characteristics, still have a significant place in employment and production processes. In this context, it is important to discover new production strategies for sustaining collaboration among small and large firms.

All these problems experienced by the SMEs during the period of domination by large firms gave rise to new form of collaborative action in Denizli, which depends on a solidarity and trust tradition. In 1993, a many-partnered foreign trade company: the Aegean Ready-Garment Producers Association (EGS) was founded by small enterprises to compete with the leading large firms (Eraydın, 2002). EGS was initiated by 464 small producers, and the percentage of producers from Denizli in this cooperative was very high (57 per cent). In this cooperative, each member's share could not be more than 3 per cent. With its roles and values, EGS could be considered as a capitalist form of the traditional cooperatives (Pınarcıoğlu, 1998). The aim of this company has been to provide services, such as export, transportation, and insurance. In these services, collective companies have been formed, while the member firms remained autonomous. In 1996, a bank and a trade firm were founded to solve the financial and export-related problems. The success of the EGS model originated from supplying the major needs of small producers, which depended upon solidarity, mutual trust and the self-help tradition. Therefore, this organization shows that today capitalist institutions and organizations are starting to take the place of traditional communitarian relations.

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During the 1997-1999 period, macro-economic problems were experienced by the Turkish economy, as a result of the world economic crisis that began in Russia

and East Asia. In this period, industrial production and exports were negatively affected by the decreasing demand in national and international markets (Eraydın, 2002). After 1997, due to the effects of the economic crisis, and the changing strategies of large firms, most of the firms, especially the small ones that produced for domestic markets, had been negatively affected, and the number of SMEs and employees began to decrease (Table 11.1). A large number of newcomers, from different occupations, could not survive in the crisis era, because of the lack of experience to deal with the crisis. Moreover, entry into, and existence within, the market was no longer as easy as it used to be. As can be seen from Table 11.3, the growth rates of SMEs, in the period between 1997-1999, were negative in all manufacturing and textile industries. However, in this period, large firms sustained a positive growth rate that was lower than the one experienced in the previous period (1992-1997).

In the late 1990s, parallel to these developments, it seemed difficult for the town to continue to articulate with the global textile networks, as a producer of towels and bathrobes. In this period, the EGS lost its collaborative structure, and also its power, in Denizli. Although the share of each member could not be more than 3 percent, the dominance of large firms had became obvious in the decision making process in the EGS. Conflicting interests could not survive within the same institutions, so different power groups constituted their own institutions, in order to maintain and increase growth rates within the highly competitive crisis era. Under these conditions, many small communities that were newly emerging caused an institutional split in Denizli (Eraydın, 2002). Small firms and large firms belonged to different collaborative associations and institutions, due to having different aims and problems. Since the beginning of the 1990s, the number of associations which contain mostly small enterprises have increased. The most important group among them is MUSIAD (Independent Entrepreneurs Association), members of which have a tendency to implement the rules of Islam in economic activities.

After the 1990s, in this fragmented collaborative environment, it became difficult to depend on existing local potential. Moreover, it was obvious that the existing products and production practices of Denizli were inadequate for the updating of competitive power in global markets. Therefore, ready-made garments started to be an important product in the later years of growth in Denizli. Recently, most of the entrepreneurs in Denizli, especially the second generation that studied in the management field in US and European universities, have tried to reorganize production, and have understood that management and marketing have been as important as production in economic growth. Schmitz (1999) also argues that traditional industrial districts, focusing on labor-intensive exports, may not automatically lead to sustainable growth, and that a shift to other stages, such as design or marketing, is required.

Conclusion

In the globalization process, adapting to changing conditions and increasing competitive power become more important for growth nodes. Although, in the technologically advanced countries of Europe, the role of SMEs has gradually shifted from the provision of flexibility to the production of knowledge, in the technologically less advanced countries, located at the periphery of Europe, SMEs are still seen as a factor of flexibility. Indeed, the increasing importance assigned to SMEs in high-tech clusters in Europe stems from their knowledge creation capacity. But, in peripheral countries, the role of SMEs is still evaluated in relation to flexible production organization, employment generation, cost minimization and non-unionization.

The economic growth experienced in Denizli points to a success story associated with the dominance of SMEs. But what is evident from this Chapter is that the role of SMEs in the economic growth of Denizli has gradually changed from a dominant position to a minor position. Between 1930 and 1950, the dominance of SMEs was due to the limited opportunities available for capital accumulation. In the earlier years, this paved the way for more collaborative type of relations such as the cooperatives of the 1930s. With the impetus of the first technological renewal and the Sümerbank cotton yarn factory in the 1950s and 1960s, entrepreneurs began to achieve important capital accumulation, challenging their substantive economy. This pre-take-off period had witnessed the establishment of the first large private establishments in Denizli. But the predominance of SMEs in textile production had continued during these years. From the 1970s until the 1980s, the capital accumulation among SMEs had further intensified, and the number of large establishments gradually increased. The 1980s could be seen as the period of integration into the international markets, within which small and large firms have a complementary position in sustaining economic growth. The textile boom of the 1990s could be seen as a period in which there was pressure to transform the organization and institutional structure of textile production. In the most recent years of global integration, the export success, which required increasing output and quality of product, led to the emergence of large vertically integrated firms, due to the inadequate complementary services in Denizli.

The evolution of local economic systems is associated with the changing nature and role of SMEs in the economic growth process. Although, in earlier periods, it is the limited opportunities available for capital accumulation that creates advantages for SMEs over large firms, in subsequent periods, associated with increasing opportunities for capital accumulation, it is the already established production networks among SMEs, and between SMEs and large firms, that sustains the importance of SMEs in the growth process. The vertical integration process prevailing in the textile industry tends to undermine the relative importance of SMEs, but the flexibility that they provide still seems to be an important ingredient in the sustained local economic growth.

The path-dependent characteristics of Denizli are very evident in its specialization in the textile industry. Although it has benefited very much from this path-dependency, its future is very uncertain. The recent increase in quotas has so far helped avoid any negative aspects associated with this path-dependency, but ultimately these seem unavoidable. However, it should also be noted that Denizli might well survive along this path, if it explores other areas, such as the garment-clothing and fashion-based sectors. The economic growth of Denizli has culminated in a situation in which it is no longer possible to sustain the existing path of specialization with any visible profitability. The urgent need to reflect on this is not only a result of the objective evaluation provided by this Chapter, but also an issue subject to consensus among the economic actors of Denizli, who should immediately take initiatives to create an alternative economically sustainable path for their region to follow.

Notes

1 In the early years of the Turkish Republic, a kind of private sector-led economic development policy was adopted. But the great depression of the 1930s necessitated the direct involvement of the state in industrial production. During the great depression, the Turkish Republic took important measures in order to guarantee and sustain the economic development of the country. Because of the limited capital accumulation by the private sector, the state had to intervene in the economic system through the establishment of state enterprises, each of which was responsible for the production of different industrial products. Sümerbank, established in 1933, was one of these state enterprises, responsible for textile production in Turkey.

2 Similar support schemes can also be observed in other developed and developing countries. Indeed, state incentives are very important for the development of backward regions. The case of the Mezzogiorno in Italy and the steel industry in France illustrate this very well (Dunford, 1988). Among other incentive tools, special tax treatments have a widespread applicability all around the world, especially in technology-oriented sectors and regions (see for example Wang and Wang (1998: 686-687), Castells and Hall (1994), Fujita (1988: 575) and Lin (1997: 264)). The incentive tools granted to investors range from exemption from customs duties and fund levies, investment allowances, Value Added Tax deferral for imported and locally purchased machinery and equipment, to cheap credits.

3 The potential significance of immigrants for economic development in the countries of origin is well documented in the literature (see for example Portes, Haller, and Guarnizo (2001), Thomas-Hope (1999) and Peleikis (2000)).

4 Although, within the context of economic transnationalism, it is possible to observe capital movements from the developed countries to the less developed countries, through the agency of immigrants, the type of remittances experienced in Denizli seem to be unique, in many respects, because of their collectivist nature, which may be attributed to its distinct socio-cultural characteristics.

5 As Portes, Haller, and Guarnizo (2001) argue, at present, the increase of migrant remittances has caught the attention of the respective sending governments. Indeed, many developing countries have initiated programmes to attract the investment of their respective diasporas (the case of Jamaica (Peleikis, (2000) illustrates this very well).

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6 Similarly to the case of Denizli, in Sinos Valley, local enterprises did not just wait for opportunities to export. They invited foreign buyers and foreign journalists to visit their national shoe fair, in which they promoted Brazilian shoes to the global export markets (Schmitz, 1995).

References

Aslanoğlu, M. (1998), 'Esnek uzmanlaşma yaklaşımı açısından Denizli havlu dokuma sanayinin analizi', *21. Yüzyıla Doğru Denizli Sanayi Sempozyumu*, pp. 185-190.

Batmaz, N. and Özcan, A. (1998), 'Denizli sanayinin yapısal özellikleri ve sorunları', *21. Yüzyıla Doğru Denizli Sanayi Sempozyumu*, pp. 302-313.

Castells, M. and Hall, P. (1994) *Technopoles of the World*, Routledge, London and New York.

Cooke, P. and Morgan, K. (1994), 'Growth regions under duress: Renewal strategies in Baden Württemberg and Emilia-Romagna', in A. Amin and N. Thrift (eds), *Globalisation, Institutions and Regional Development*, Oxford University Press, pp. 91-174.

Digiovanna, S. (1996), 'Industrial districts and regional economic development: A regulation approach', *Regional Studies*, vol. 30, no. 4, pp. 373-386.

Doner, R.E and Hershberg, E. (1999), 'Flexible production and political decentralization in the developing world: Elective affinities in the pursuit of competitiveness?' *Studies in Comparative International Development*, vol. 34, no. 1, pp. 45-83

Dunford, M.F. (1988), *Capital, the State, and Regional Development*, Pion Limited, London.

Edgington, D.W. (1999), 'Firms, Governments and Innovation in the Chukyo Region of Japan', *Urban Studies*, vol. 36, no. 2, pp. 305-339.

Eraydın, A. (1998), 'Yeni Sanayi Odaklarının Ortaya Çıkmasında Kamunun Düzenleme ve Destekleme Biçimlerinin Katkısı', Paper presented to *Yeni Yerel Sanayi Odakları Semineri* organized by State Planning Organization, State Institute of Statistics and Turkish Capital Market Board, Ankara.

Eraydın, A. (2002), 'The Local Embeddedness of Firms in Social Networks in Turkish Industrial Districts: The Changing Roles of Networks in Local Development', in M. Taylor (eds), *Social Capital and the Embedded Enterprise: International Perspectives*, forthcoming.

Erendil, A. (1998), 'Using Critical Realist Approach in Geographical Research: An Attempt to Analyze the Transforming Nature of Production and Reproduction in Denizli', Unpublished Ph.D Thesis, Middle East Technical University, The Department of City and Regional Planning.

Fujita, K. (1988), 'The Technopolis - High Technology and Regional-Development in Japan' *International Journal of Urban and Regional Research*, vol. 12, no. 4, pp. 566-594.

Glasmeier, A. (1991), 'Technological discontinuities and flexible production networks: The case of Switzerland and the world watch industry' *Research Policy*, vol. 20, pp. 469-485.

Harrison, B. (1994a), 'The Italian industrial district and the crisis of co-operative from: Part:I', *European Planning Studies*, vol. 2, no. 1, pp. 3-22.

Harrison, B. (1994b), 'The Italian industrial district and the crisis of co-operative from: Part:II', *European Planning Studies*, vol. 2, no. 2, pp. 159-174.

Hassink, R. (1997), 'What does the learning region mean for economic geography?', Paper presented to *Regional Studies Association 'Regional Frontiers' EURRN European Conference*, 20-23 September, Frankfurt (Oder), Germany.

Işık, O. and Pınarcıoğlu, M. (1996), 'Two faces of local transformation: The case of Denizli, Turkey', *City*, 3-4, pp. 63-70.

Karaalp, İ. and Batmaz, N. (1998), 'Denizli ekonomisinin sanayileşme süreci ve dış ticaretteki payı', in C. Küçüker (eds), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 101-105.

Kazdağlı, H. (1998), 'Yeni bölgesel gelişme yaklaşımları doğrultusunda Denizli ekonomisi', in C. Küçüker (eds), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 83-93.

Küçüker, C. (1998), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 1-14.

Lin, C.Y. (1997), 'Tehnopolis development: An assessment of the Hsinchu experience' *International Planning Studies*, vol. 2, no. 2, pp. 257-272.

Maillat, D., Lecoq, B., Nemeti, F. and Pfister, M. (1995), 'Technology district and innovation: The case of the Swiss Jura Arc' *Regional Studies*, vol. 29, no. 3, pp. 251-263.

Mutluer, M. (1995), *Gelişimi, Yapısı ve Sorunlarıyla Denizli Sanayii*, DSO Yayınları, İzmir.

Özcan, G.B. (1995), *Small Firms and Local Economic Development*, Avebury, London.

Pamuk, Ş. (1998), 'Denizli ve Gaziantep'te sanayileşmenin yakın tarihi, 1900-1980', Paper presented to *Yerel Sanayi Odakları Uluslararası Semineri*, 23-25 September, Ankara.

Peleikis, A. (2000), 'The emergence of a translocal community: The case of a South Lebanese Village and its migrant connections to Ivory Coast' in Cahiers d'etudes sur la Mèditeranèe orientale et le monde turco-iranien, No. 30, pp. 297-317.

Pınarcıoğlu, M. (1998), 'Peripheral development and the rise of entrepreneurialism: The characteristics of Anatolian Tigers and a comparison between the local textile and clothing industries of Bursa and Denizli', Paper presented to *the 3rd erc METU International Conference in Economics*, organized by the Economic Research Center, Middle East Technical University, 9-12 September, Ankara, Turkey.

Pınarcıoğlu, M. (2000), *Development of Industry and Local Change*, METU, Faculty of Architecture Press, Ankara.

Portes, A., Haller, W. and Guarnizo, L.E. (2002), 'Transnational entrepreneurs: An alternative form of immigrant economic adaptation', *American Sociological Review*, vol. 67, no. 2, pp. 278-299.

Saxenian, A.L. (1985), 'The genesis of Silicon Valley' in P. Hall and A.R. Markusen (eds), *Silicon Landscapes*, Allen & Unwin Inc., Boston, pp. 20-34.

Saxenian, A.L. (1991), 'The origins and dynamics of production networks in Silicon Valley' *Research Policy,* vol. 20, no. 5, pp. 423-437.

Schmitz, H. (1995) 'Small shoemakers and Fordist giants: Tale of a supercluster', *World Development,* vol. 23, no. 1, pp. 9-28.

Schmitz, H. (1999), 'Global competition and local cooperation; Success and failure in the Sinos Valley, Brazil', *World Development,* vol. 27, no. 9, pp. 1503-1514.

Şengün, İ. (1998), 'Denizli ekonomisine tarihsel bir bakış', in C. Küçüker (eds), *Anadolu'da Hızla Sanayileşen Kentler: Denizli Örneği,* Türkiye Ekonomi Kurumu, Ankara, pp. 94-96.

Thomas-Hope, E. (1999), 'Return migration to Jamaica and its development potential', *International Migration*, vol. 37, no. 1, pp. 183-207.

Wang, J. and Wang, J. (1998), 'An analysis of new-tech agglomeration in Beijing: a new industrial district in the making?', *Environment and Planning A*, vol. 30, pp. 681-701.

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The role of SME clusters on Regional Economic Growth and Innovation

Ayda Eraydın

I. Introduction

The recent literature on development and industrial geography has been emphasising the importance of industrial clusters. Since the 1970s it is possible to observe the change in regional industrial patterns in many countries, although to a lesser extend in many developing countries. The traditional model that was mainly based upon east-west and north-south dichotomies has been dissolved, while the new nodes of industrial growth have been emerged. The importance of small and medium firms in the economic development of these new nodes attracted the attention to the role of SMEs in regional economic development. Moreover, there appeared various analytical studies on SME clusters indicating them as the nodes of growth and innovation.

Why industrial clusters are growing more rapidly and more innovative? What are the factors that enable them to grow faster and to become more innovative? There are many theoretical debates that try to explain the successful performance of these newly emerging industrial clusters. The rich literature describes several characteristics of these areas, although most of which are not verified by empirical findings.

The aim of this paper is twofold. Firstly, to discuss whether the industrial clusters are really fast growing and innovative areas, or the generalisations based on a handful of clusters show only one side of the total picture. In other words, the paper aims to find out whether there is a significant difference between clusters and other sub-regions in terms of the rate of growth and the numbers of innovations. Secondly, the paper tries to find out what are the factors that define the rate of growth and innovativeness in industrial clusters and whether these factors are different among industrial clusters or non-cluster sub-regions.

To reach these aims, the first part of the paper is focused on the review of the literature that explains the main factors that define the growth and innovation activities of SME clusters, and the variables that can be used in order to verify the theoretical debates. In such an analysis obviously how to identify the clusters has a crucial importance. That is why the third part of the paper is devoted to methods used to define the clusters. The empirical study is introduced in the fourth section of the paper. It presents the findings of the empirical research and describes major factors that identify growth dynamics of industrial clusters based on the analytical studies on industrial clusters of Turkey.

II. Theoretical debates on the growth and innovativeness of industrial clusters

Why the recent literature defines the SME clusters as the places of growth and innovation? The theoretical debates emphasise certain issues. Firstly, they are defined as the places, where cluster externalities provide advantages not only for firms, but to all members of in that

cluster. In other words they are the places where "the spatially bounded externalities that result in higher economic rates across regions and also higher levels of innovation" (van Oort, 2004). In fact, the basic idea of the literature on industrial clusters is that it is the entire productive system rather than the firm itself that should be considered in understanding differentiated business performance.

This type of approach has a long history, which defines external economies due to agglomeration of firms as the focal point. Since the work of Alfred Marshall (1920), the studies on different industrial clusters tried to define the context in which firms operate. This interest is reflected itself both formal models of industrial concentration described by Krugman (1991a, 1991b) and also on the new industrial geography literature, which comprise many descriptive studies.

There are four attributes of industrial clusters, which make clusters very attractive; externalities, knowledge spillovers, innovativeness and their increasing role in global markets.

Firstly, formal models of industrial clusters all assume that increasing returns, which is the key to new understanding of the new growth theory, is the outcome of the dynamic and cumulative advantages of spatial proximity (van Oort, 2004). The studies of industrial geography, on the other hand, have been concentrated on defining the different sources of externalities defined by Marshall (1920), namely the existence of thick markets for specialised labour, the occurrence of knowledge and technology spillovers, and the emergence of supplementary trades. While labour market conditions (Angel 1991; Oakey 1985; Schmitz and Muscyk 1994) received special attention as the sources of externalities, the various terms such as flexibility through specialisation and interfirm cooperation (Pyke and Senberger 1991), subcontracting relations among vertically disintegrated firms specialised in different stages of production (Piore and Sabel 1984), interaction between 'more-or-less equal small enterprises (Piore and Sabel 1984), local production networks (Saxenian 1990, 1991; Bahrami 1992) untraded interdependencies are used to define the benefits of clustering of production units. Porter (1990) using some of the earlier work readdressed cluster externalities under a different heading; "competitive advantage". He explained firm's competitive advantage in certain areas as a result of the interaction of factor conditions, demand conditions, related and supporting industries and lastly by firm strategy, structure and rivalry.

Secondly, the new attention on clusters is due to advantages o these places in terms of knowledge spillovers and innovation. While human capital and knowledge spillovers, most naturally will induce innovations, became the core of the new growth theory, the industrial geographers paid more attention to the spatial diffusion of knowledge and innovation. According to van Oort (2004:42) two types of approach can be distinguished in spatial diffusion of knowledge and innovation; those stressing physical proximity and those focusing on functional linkages in hierarchically equivalent but not necessarily nearby locations. Socially constructed inter-firm relationships employing both tacit and codified knowledge (Camagni 1991, Pyke and Senberger 1991, Storper 1995, Belussi 1996, Malmberg 1996), *institutional thickness* (Amin and Thrift 1994, Tödling 1994, Locke 1995, Rabelotti 1997, Gregersen and Johnson 1997), collaboration instead of competition (Brusco 1990), cooperation by strong collective networks (Harrison 1992) and common cultural and social background (Bagnasco 1988 cited in Rabelotti 1995; Beccatini 1989, 1990) are, on the other hand, are defined as the social and cultural factors that facilitate knowledge spillovers and firm-to-firm knowledge transfers.

Thirdly, there are some theoretical debates focused on innovation and networking, which define the major assets of clusters, such as learning regions (Florida, 1995) and innovative milieu models (Camagni, 1991; Lawson, 1997). Learning region model, assure that firms'

behaviour with respect to innovation and their innovation performance are affected by the environment in which they operate (de Propris, 2002). According to innovative milieu model geographical proximity and informal relationships between firms facilitate information and knowledge exchange. Collective learning may be a cause of enhanced innovative behaviour by firms and has been seen as an uncertainty reducing mechanism in a rapidly-changing technology context (Keeble, 2000; Longhi, 1999).

The fourth reason of interest on clusters is due their export performance. Although most of the discussions on industrial clusters pay less attention to linkages external to existing clusters (Markusen, 1996; Britton, 2004), they are the places where international exports are the feasible activity of firms. This argument is especially true for the industrial clusters located in the peripheral countries, due to two main reasons. Firstly, thin local markets and lack of adequate local/domestic demand enforce industrial clusters in these countries to form close linkages with the global market. Export potential, which is the best indicator of competitiveness, means also capital transfer from the external world and creating multiplier effects on local industries. It is worth to reconsider Romer's remarks on trade (1986: S98); "growth seems to be correlated with the degree of integration into worldwide markets". It means that while local linkages among firms and institutions are important, global trade linkages have even a more vital role. Secondly, limited endogenous resources and knowledge accumulation encourage the utilisation of external resources and, as Breschi and Lissoni (2001) explain, to use agents who can combine local tacit knowledge with the external knowledge. The output of this interaction is the improvement of products and production processes and enhancement of the technological level of manufacturing firms.

III. The definition and critical assets of clusters

Based on the brief summary on theoretical debates it is possible to formulate a hypothesis related to the major factors that define the sources of competitiveness and growth of clusters as "externalities, including knowledge and technology spillovers and networking that enhances collective learning, which all of them induce innovativeness and exports potential".

Obviously, this hypothesis is based upon a certain definition of clusters, which are not always easily identifiable entities. Despite the amount of work on industrial clusters, this term still needs clarification. Sometimes the term 'industrial district' is used interchangeably with 'clusters' in the literature (Öz, 2004). Pyke, Beccatini and Senberger (1990, p.2) provide the following definition: 'Industrial districts are geographically defined productive systems characterised by a larger number of firms that are involved at various stages, and in various ways, in the production of a homogeneous product' or as Park and Markusen (1994) define "they are the sizeable and spatially delimited area of trade-oriented economic activity which has a distinctive economic specialisation'. Both of these definitions and many others on clusters, such as the definition adopted by Rosenfeld (1995) 'a geographically bounded area agglomeration of related firms that together achieve synergy' and Hill and Brennan 'a geographic concentration of firms and establishments in the same industry that either have close buy-sell relationships with other industries in the region, which use common technologies or share the specialised labour pool' provide only a very generalised view. Asheim (1996) has the answer for making distinction from industrial clusters to other industrial agglomerations; 'existence of agglomeration economies'. However, it is still not adequate, since as Markusen (1996) claims we come across different type of industrial clusters; namely Marshallian industrial districts, hub-and-spoke districts, satellite industrial platforms and state-anchored industrial clusters.

Among them Marshallian industrial districts received wider attention, which became popular in the 1970s and 1980s with the help of the observation of the experience of Italian industrial districts a long time after the original formulation of Marshall. According to this

definition, industrial districts define a new trajectory of industrial development based on flexible production organisation (Pyke and Senberger 1991). Flexible production relies on subcontracting relations among vertically disintegrated firms specialised in different stages of production, which enables them to produce diversified products in small quantities (Piore and Sabel 1984). It is claimed that agglomeration of specialised small firms in industrial districts provides untraded interdependencies, which can be defined as knowledge creation, reproduction and learning involved in socially constructed inter-firm relationships employing both tacit and codified knowledge (Camagni 1991, Pyke and Senberger 1991, Storper 1995, Belussi 1996, Malmberg 1996).

All of these work indicate the lack of a clear definition of industral clusters and there is a continuos change in the context and attributes of the terms "industrial district" and "industrial clusters", although there are several attempts to define the different types and categories of industrial clusters (Markusen, 1996; van Dijk and Sverisson, 2003). Therefore it is reasonable to identify them as 'a geographic concentration of specialised firms that form local networks for reducing the cost of the production but increasing the quality of products in order to reach national and international markets', which is based on their four features that have been discussed earlier.

The above definition is helpful to design a research framework in order to define whether a certain industrial agglomeration can be defined as an industrial district or not. However, such a study has important data requirements and needs detailed analysis. Therefore, different techniques are introduced in order to make the identification of clusters more operational. There is, however, no consensus in the literature on the best means of measuring geographic concentration. Moreover, the techniques already used have several problems; especially defining the units of analysis is one of the critical issues. Identifying the boundaries of a cluster is another crucial issue since industrial clusters do not necessarily conform to political boundaries. It should be noted that problems may also emerge if a purely statistical approach is used to identify geographic concentration. This situation is mainly because the definition of clusters itself is not easily quantifiable, given that it involves social relations and value systems as well as production relations. As Oz (2004) indicates a purely statistical approach can fail to spot places that are clearly concentrated, the most typical example being Silicon Valley. In fact many of the indices cited above have failed to identify the concentration in Silicon Valley due to the absence of the finely detailed data required to uncover this cluster statistically. Therefore, qualitative evaluations should therefore be used to complement the quantitative measures.

It is possible to group the methods used to define industrial clusters under diffeerent headings. The first group of measures is simple indices. One well-known index is the Gini coefficient, which compares a distribution against a profile. When the profile represents a country the coefficient is called the 'coefficient of localization' (Isard, 1960) The 'location quotient' is another frequently used measure of spatial concentration. The range of the quotients indicates the relative degree of concentration of a certain activity in a certain region. It is possible to adapt the indices to measure industrial concentration, such as Enright (2000) used in his study C4EMP and C8EMP are defined as the shares of employment in the leading four and leading eight provinces in a given industry.

Midelfart-Knarvik et.al. (2000) offer another measure of spatial dispersion that takes into account the relative locations of clusters of industries. In their comprehensive analysis of the location of European industry, they first investigate the degree of specialization in EU countries. For each country they calculate the share of industry k in that country's total manufacturing output. Next they calculate the share of the same industry in the production of all other countries. It is then possible to measure the difference between the industrial structure of a country and all other countries by taking the absolute values of the difference

between these shares, summed over all industries. They call this the Krugman specialization index (following Krugman, 1991a).

Among the many other ways of measuring geographic concentration 'nearest neighbour' analysis measures the average distance from the occurrences to their peak potential. It takes account of the spatial separation of the observed units; general harmonic mean distance variation, which measures the concentration of each sector in respect of the spatial distribution of employment among provinces, calculated as the average distance between the occurrences; and peak potential.

It is also possible to use Moran's I statistic, a well known measure of spatial clustering, which is based on spatial autocorrelation between the spatial units. It uses the spatial weight matrix, which enables to use whether a high or low values of a random variable tend to cluster in space, or whether geographical areas to be surrounded by neighbours with very dissimilar values. This global statistic is quite useful to visualise the cluster of spatial units, however the definition of spatial units is critical in order to get the "industrial clusters" as by the theoretical debates.

Feser and Bergman (2000) have developed a 'spatial-economic test', which uses a case control design to test whether certain types of manufacturing firm are more spatially concentrated than might be expected given the general geographic pattern of all firms in the locale. All plants in a given industry are used as a case, and a matched sample of all other manufacturing firms is used as a control. The difference in concentration between the two, measured by means of standard statistical geography techniques, provides evidence of spatial concentration or dispersion at different spatial scales for the firms in the cluster.

It is obvious from the short review above that there is no consensus in the literature on the best means of measuring geographic concentration. Each method has certain disadvantages and they should be used according to the available data on different spatial units of analysis and the specific conditions of each country.

3. Empirical study

Beginning from the 1980s, in the literature on the industrial geography and regional development it is possible to see different studies that tries to explain the characteristics of certain settlements that are identified as industrial clusters. The case studies defined some regions that have experienced rapid increases in manufacturing activity through the 1970s, 1980s and 1990s, together with the emergence of certain specialised clusters within the metropolitan regions.

As many other countries, it is possible to observe the changing industrial landscape in Turkey, although still four metropolitan regions dominate industrial production[1], there appeared also some places, which achieved high rates of growth with the help of increasing concentration of small and medium enterprises. These newly emerging industrial clusters specialised in different activities take place in different parts of Turkey. They are known for small business and strong network relationships between specialised, small, family enterprises.

In order to define these industrial clusters, we followed the following steps of analysis:

Firstly we have defined the provinces where the shares of SMEs are higher than the national average. The initial analytical work showed that in almost half of the provinces the location quotients related to the share of SMEs in total employment is higher than 1. In fact, a closer look shows that within the group of provinces with higher shares of SMEs, there are both areas of industrial agglomeration as well as the ones with very limited industrial firms. Inthe

latter group since there is very limited number of large enterprises, the shares of employment provided by SMEs reach up to high ratios.

This situation necessitates other techniques to determine the Turkish clusters. In this study we have used the clusters defined by Oz (2004). In her study Oz has used two main variables, namely international competitiveness and level of concentration: Firstly C4EMP ratios are calculated and secondly the competitiveness of spatial units is measured by export figures. Since there is no statistically significant difference between competitive and uncompetitive industries in respect of geographic concentration, it was infeasible to employ conventional statistical methods apart from the simple tests used in this case. A possible solution to this problem is to employ a less conventional technique using fuzzy logic and fuzzy membership scores (Ragin, 2000). Having determined the fuzzy membership scores for both variables, the FS/QCA algorithm (Drass and Ragin, 1999), which was specifically prepared to implement the techniques developed by Ragin (2000), is employed to perform the necessary analyses (Appendix 1). The results indicate that geographic concentration is neither a necessary nor a sufficient condition for competitiveness if 0.80 (a=0.05) is taken as the benchmark proportion. If, however, the benchmark proportion is reduced to 0.60 (a=O.1), we obtain the interesting finding that geographic concentration is usually necessary for international competitiveness. In other words, making full use of the information at hand and fuzzy-set methods provides some evidence (though not particularly strong) of a positive relationship between geographic concentration and international competitiveness since the former has been found to be usually necessary for the latter.

Using this method it is possible to define the industrial clusters that existing in different provinces. Obviously in some of the provinces there are more than one type of a cluster; namely in Istanbul it is possible to mention about textile and apparel, leather/fur, jewellery, glass, financial services and media and entertainment clusters, in Ankara construction and furniture, in Bursa textile and furniture besides some others (see Map 1)

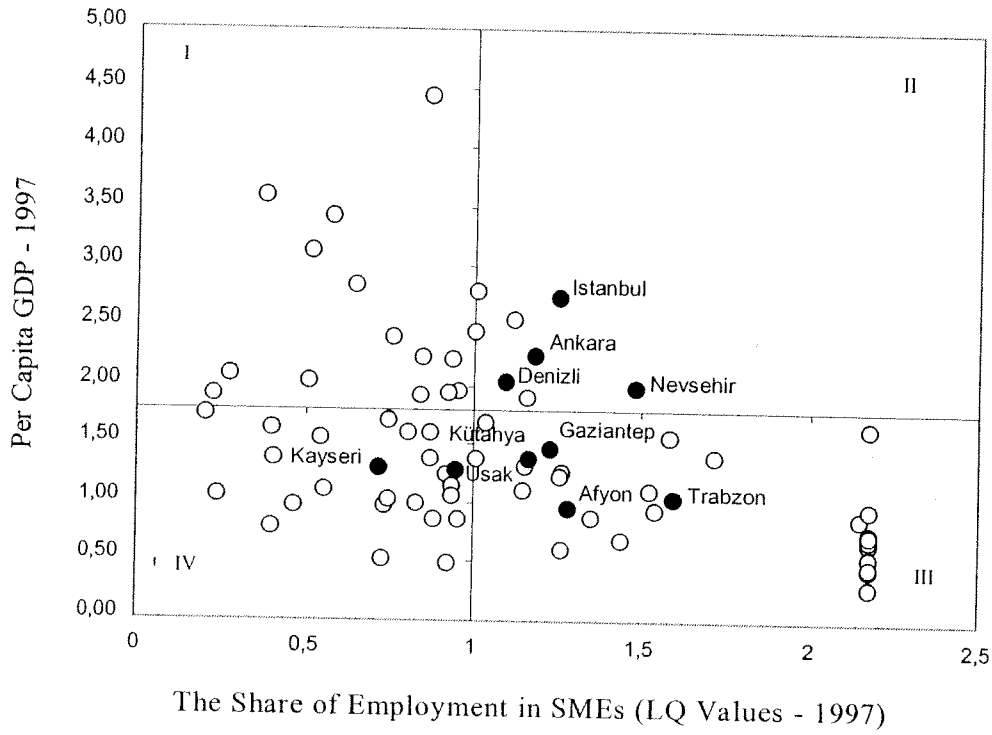
3.1. Differences in the characteristics of clusters and non-clusters

Having defined among the 80 provinces 10 of them have clusters with different industrial specialisation areas, the main question in this section of the paper is whether there are significant differences among the characteristics of clusters and non-clusters.

In Graph 1 the provinces are plotted according to their industrial structure (The share of SMEs) and the income per capita (80 provinces) by using a Cartesian graph. X axis denotes the location quotient figures of the share of employment in SMEs ($LQi = (SME_i/TE_i) / (SME_{Turkey}/TE_{Turkey})$) and Y axis as per capita income figures for 1997. Where clusters stand within the distribution of all provinces? The findings are interesting.

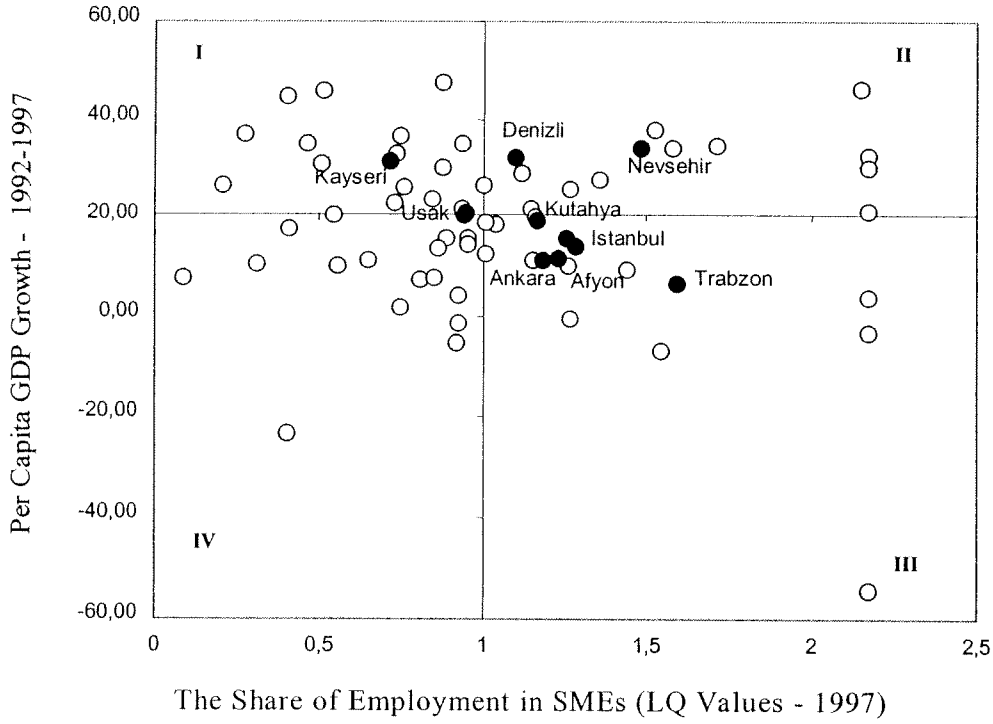
Firstly it is possible to see that in Turkey the share of SMEs in total manufacturing employment is lower than the national average in more than half of the provinces. Interestingly, 2 of the industrial clusters also take place among this group. Secondly, the figure shows that among the 10 industrial clusters defined, the income per capita of the 6 provinces have income per capita lower than the national average. This situation indicates one of the problems related to the methods of defining industrial clusters, that is difficulty to get the statistical data to spot places that are clearly concentrated. Therefore the larger spatial units, provinces in this study, are used for statistical analysis, which can cause misinterpretations. Thirdly, there are 5 provinces, which have relatively higher income per capita and the higher shares of employment created by the SMEs than the national averages. Four of these provinces are the places where several industrial clusters take place.

In fact, this rough analysis do not provide a clear picture about the place of the industrial clusters, but shows that there are considerable differences both in terms of the income per capita of the provinces which they take place as well as industrial the composition of firms with different size.



Graph 1: The provinces categorised according to their income per capita and the share of SMEs in total industrial employees

How is the performance of industrial clusters in the recent years? The Graph 2 presents the performance of growth in different provinces in Turkey. It is interesting to note that the wide range of growth differences between the provinces. Considerable numbers of provinces have negative growth rates and the rate of growth is below than the national rate of growth in many provinces. It is also interesting to see that in many of these clusters have the income per capita growth rate is under the national average. In fact three important metropolitan areas, namely İstanbul, Ankara and Bursa, which are important for many industrial concentrations, attract high amounts of migrants from the other relatively less developed provinces, which reduces the income per capita growth. That is why in many rapidly growing centers in Turkey income per capita growth is still at moderate levels.



Graph 2: The provinces categorised according to their income per capita increase and the share of SMEs in total industrial employees

In order to test the hypotheses "the regions with different patterns of growth and performance have different characteristics that may be defined by clustering effects, human capital and innovative environment, institutional and organisational capacity and the service availabilities" Independent Samples Test (Levene's Test for Equality of Variances and t-test for Equality of Means) is used in order to see the level of significance of each indicator between the groups of clusters already identified in the former sections. Four different groups of indicators are identified in order to define the differences in characteristics of the regions with different patterns of production and performance. The first group of indicators is named as CLUSTERING EFFECTS. These indicators define both the concentrations of production units and manpower, which are the important sources of externalities. The second group is related to HUMAN CAPITAL AND INNOVATION. They define innovative capacity of the regions. The third group defines the INSTITUTIONAL AND ORGANISATIONAL CAPACITY. Thre are also important to generate externalities within the clusters. The fourth group is composed of two types of indicators. The first ones are related to FINANCIAL SERVICES, while others show the SOCIAL AND TECHNICAL SERVICES available within regions (see Appendix 2). The indicators in the last group both define the attractivity of spatial units for firms as well as the workforce.

Levene's Test for Equality of Variances and t-test for equality of means is used in order find out whether there are significant differences between the two groups; clusters and non-clusters in different parameters. Since it is not possible to claim that our cases are normally distributed we have made a square root transformation and used our variables accordingly (Shennan, 1997). The analysis shows that the clusters and non-cluster provinces defined have significant differences in the production structure, such as subcontracting and SME per capita, the level of diversification and there are significant group differences also in terms of marketing opportunities. While most of the variables related to human capital seem not significantly different, as Table 1 indicates three of the variables used are significantly

different; migration, population increase and the number of students in the mid-level education. Interestingly, in terms of quality of life only the difference in car ownership ratios is important. This is also true in terms of organizational capacity and services, where we can find differences in the number of foundations within the province (per capita figures) and credits used (per capita LQ).

Table 1: The variables with significant differences between cluster and non-cluster provinces

		Levene's Test for Equality of Variances		t-test for Equality of Means		
CLUSTERING EFFECTS						
SUBCONTR1	A	19,888	,000	-3,805	69	,000
	B			-2,351	14,038	,034
SMEPERCAPITA	A	5,045	,028	-3,459	69	,001
	B			-2,722	15,971	,015
DIVERSIFIC	A	,604	,440	1,825	69	,072
	B			1,890	20,776	,073
PRODSERVE	A	29,500	,000	-2,759	69	,007
	B			-1,379	13,103	,191
EXPORT	A	,369	,545	-2,539	69	,013
	B			-2,738	21,952	,012
POPULATION AND HUMAN CAPITAL						
MIGRATIO	A	2,093	,152	-2,167	69	,034
	B			-2,569	25,556	,016
POPINCR	A	1,638	,205	-1,707	69	,092
	B			-2,188	29,778	,037
MIDEDU	A	,327	,569	-1,709	68	,092
	B			-1,751	20,639	,095
QUALITY OF LIFE						
CAROWNER	A	,359	,551	-2,794	69	,007
	B			-2,333	16,687	,032
ORGANISATIONAL CAPACITY						
FOUND	A	8,399	,005	-2,520	69	,014
	B			-1,586	14,147	,135
FINANCIAL SERVICES						
CREDITS	A	39,960	,000	-3,045	69	,003
	B			-1,495	13,043	,159

A= Equal variances assumed
B= Equal variances not assumed

What are the main factors that enable clusters to grow?

One of the critical questions in this analytical work is defined as whether there are important differences in the factors that define the growth between industrial clusters and other spatial units (non-clusters). That is why several models are tested for both industrial clusters and non-clusters. For clusters the stepwise regression analysis defines a best fit model accounting for 85,65 % of the relative change of income per capita between the regions during 1992-7 period. The value of $F(3,13)=32,21$ (significant at 0.001 level) provides strong evidence in favour of the hypothesis that this set of variables accounts for statistically significant amount of variability. Interestingly, in the best-fit model there are only two region specific variables, namely the number of migrants per thousand populations (MIGRATIO) and the share of new firms (NEWFIRMS) are statistically significant, migration with negative sign and the share of new firms with the positive sign.

This finding is important since it shows the population dynamics are still important for the growth of regions. In fact, what happens is that when in a certain regions the new

employment is created it attracts important amounts of population, which negatively affects the rate of growth of income per capita.

Table 2: OLS Analysis: Per capita growth 1992-1997 Clusters

	Unstandardized Coefficients B	Std. Error	Standardized Coefficients B	t	Sig.
(Constant)	7,060	,573		12,319	,000
MIGRATIO	-,260	,032	-1,083	-8,044	,000
NEWFIRMS	4,178E-02	,009	,655	4,864	,000
R2	0,856				
Adjusted R2	0,830				
F	32,21	Sig	000	(2,13)	

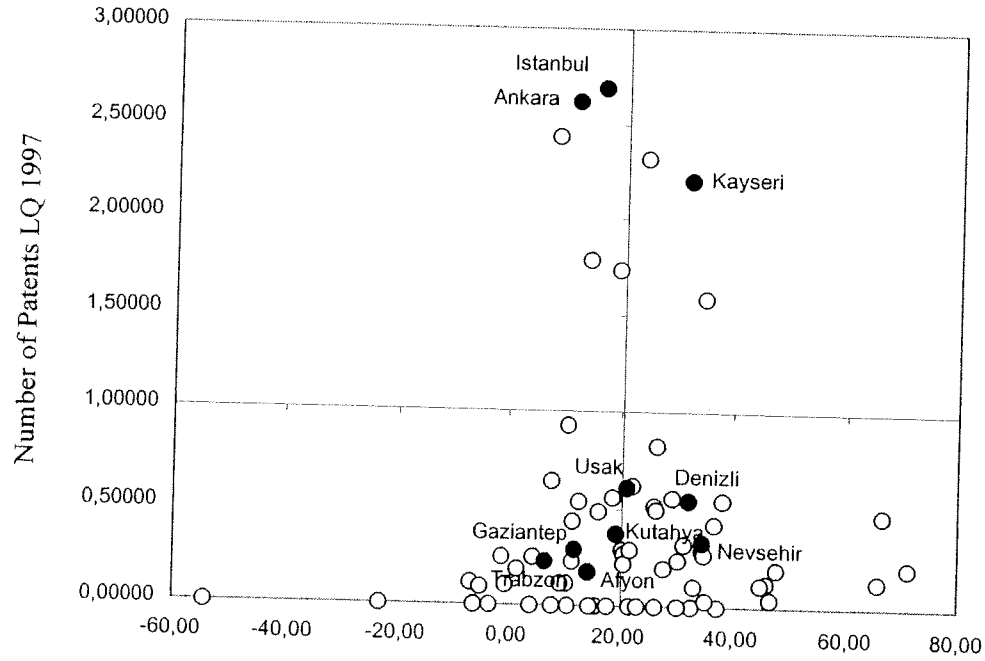
The findings on the explanatory factors of GDP growth capita in non-cluster spatial units are also interesting. In the best fit model of growth there are four variables that explain the changes in income per capita; growth of the share of SMEs (GRSHARESMEMP), the share of NGO's in the province (LQ values) (NGO), the share of public investments in total investment within the province (PUBINVEST) and the share of active population(ACTIVEPOP). As the figures show except the first variable, growth in the share of SMEs, the others have a positive sign. What is important is the share of SMEs in total employment has a positive sign, but the increase in this ratio negatively effects the growth rate of income per capita.

Table 3: OLS Analysis: Per capita growth 1992-1997 Non-clusters

	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	-7,252	2,576		-2,815	,007
GRSHARESMEMP	-2,046E-02	,004	-,493	-4,894	,000
NGO	,252	,078	,337	3,238	,002
PUBINVEST	5,074E-02	,021	,227	2,403	,020
SHARESME	5,036E-02	,022	,225	2,243	,029
ACTIVEPOP	8,158	4,044	,207	2,017	,049
R2	0,583				
Adjusted R2	0,541				
F	13,71	Sig. 000	Df(6,49)		

Which factors define innovativeness of clusters and non-clusters?

In the second step the aim of the analytical studies is defined as to identify the factors of innovativeness of clusters and to compare them with explanatory factors for other sub-regions. In the literature there is an increasing concern on the ***innovativeness of firms*** and regions and one of the influential debates identify small firms as the engines of technological change and innovative activity.



In order to find out the factors that explain the innovativeness of clusters we have tested several different models used to define the best fit. As it is given in Table 2 the model that have been chosen explains 91,8 per cent of the innovativeness of regions measured by the number of patents per capita. The variables in this model are the share of small and medium firms, subcontracting firms, the ratio of exports in total production, the share of new firms, the share of students in technical education in total students and the number firms that used R&D incentives.

Table 4: OLS Analysis: The share of patents per capita

Model		Unstandardized Coefficients B	Std. Error	t	sig	Collinearity Statistics Tolerance	VIF
1	(Constant)	-19,954	252,943	-,079	,940		
	SHAREMPESME	-7,538	3,053	-2,469	,057	,488	2,049
	SUBCONTR1	-69,813	116,278	-,600	,574	,632	1,583
	EXPORT	-9,830E-03	,181	-,054	,959	,180	5,555
	HIGHEDU	12,399	3,928	3,156	,025	,201	4,981
	NEWFIRMS	1520,064	484,745	3,136	,026	,282	3,550
	TECHEDU	-2,781	1,368	-2,033	,098	,265	3,779
	RDINCENT	861,573	304,074	2,833	,037	,190	5,253
	R2	0,918					
	Adjusted R2	0,803					
	F	7,987	Sig	,018	Df(7,12)		

Also we have tested the increase in deviance that results from adding each of the variables to the model, assuming all the others are already present. In order to find the independent information carried by each variable, given that we know all the other variable values. For example, the reduction in deviance as a result of adding the share of students in high education (HIGHEDU) variable is 48, the largest value in the table. This indicates that, given that we know all the other variable values for a firm, if it is then revealed that the ratio of students in the higher education adds most to our knowledge of the number of patents. The

other important variables are the share of new firms (NEWFIRMS) and the numbetr of R&D incentive certificates (RDINCENT). In contrast, the share of firms with subcontracting relations and the share of exports in total production even negatively affects the explanation of the number of patents per capita These effects are also quantified by the R^2 values associated with each model, calculated for when the variable in question is absent from the model.

On the other hand, the variables that explain the number of patents in the non-cluster areas are quite different. The model with two main variables, namely the number of academic personnel per thousand population and the share of students in mid-level educations seem to explain 30,8 of variation and the model is significant at 0,001 level (see Table 5). In this model the sign of the first variable, number of academics is positive, but it is difficult to explain the negative sign of the students in the mid-level education.

Table 5: Non-cluster innovation

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	300,610	73,840		4,071	,000
ACADEMICS	8,547	2,940	,365	2,907	,005
MIDEDU	-4,198	1,670	-,341	-2,513	,015
R2	0,308				
Adjusted R'	0,267				
F	7,558	Sig	000	Df(2,54)	

Conclusive remarks

There are very few attempts to compare the dynamics of clusters/regions by using the quantitative methods (Glaeser et.al, 1992; Henderson, 1995; Paci and Usai, 2000; Akgüngör, Kumral and Lenger, 2003; van Oort, 2004). The data limitations and the quality of the available data discourage to handle comparative analysis based on the theoretical debates. As I have indicated earlier unfortunately in most of the countries the statistical spatial units are mainly based on administrative boundaries and far from to match the areas of concentration of industries. This situation reduces the reliability of the data to be used in order to find the dynamics of clusters. In some of the cases even the methods to be employed has to be changed or to be used in certain reservations due to size of the spatial units that have to be used.

Although there are some limitations that are due to the data base, still the empirical studies have interesting findings, which can stimulate further discussions.

Firstly the rough analysis between the spatial units with clusters and the ones that do not have specific industrial have important differences in industrial structure, but not in terms of growth rates and innovation indicators. Even the differences in many variables of quality of life, organisational capacity and financial services, except car ownership, number of foundations per thousand population and credits used per thousand population, between the two groups of provinces (cluster-non-cluster) both the variances and means are not significantly different (see Appendix 3). On the other hand, what we find is important differences in terms of rates of migration rates population increase.

Having looked at the variables that explained the rate of growth in the cluster type of provinces, it is possible to say that population dynamics are still important in defining the rate of growth in income per capita regions. This situation may be less important for the regions and countries where the mobility of population is less, but it is evident that in Turkey still it is an important factor.

On the other hand, the factors that explain the innovativeness of clusters are supporting the theoretical debates. The variables explain the innovativeness of the clusters (the number of patents measured by LQ values) are the share of small and medium firms, subcontracting firms, the ratio of exports in total production, the share of new firms, the share of students in technical education in total students and the number firms that used R&D incentives. These either the parameters used to define clustering, human capital/learning and innovation.

This is an initial attempt to define the main factors of competitiveness of industrial clusters and the sources of their performance, in comparison to the spatial units with different production structures. However, there is lot to be done both in developing the framework of analysis and review of the findings.

References:

Akgüngör, S, Kumral, N., Lenger, A., (2003) National industry clusters and regional specialisations in Turkey, European Planning Studies, 11,6, 647-672

Amin, A. and Thrift, N. 1994 Living in the global, in Amin, A. and Thrift, N. (eds), *Globalization, Institutions and Regional Development in Europe* (Oxford: Oxford University Press), 1-22.

Angel, D. 1991 High-Technology Agglomeration and the Labour Market: The Case of Silicon Valley, *Environment And Planning A*, 23,10: 1501- 1516.

Asheim, B.T. 1996 Industrial districts as 'learning regions': a condition for prosperity, *European Planning Studies*, 4, 4: 379-397.

Bahrami, H. 1992 The emerging flexible organization: Perspectives from Silicon Valley, *California Management Review*, 34, 4, 33-52.

Becattini, G. 1989 Sectors and/or districts: Some remarks on the conceptual foundations of industrial economics, Goodman, E. and Bamford, J. (eds), *Small Firms and Industrial Districts in Italy* (London: Routledge).

Beccatini, G. 1990 The Marshallian industrial districts as a socio- economic notion in F.Pyke, G.Beccatini and W.Sengerberger (Eds) *Industrial Districts and Inter-firm Cooperation in Italy* (Geneva: International Institute for Labour Studies)

Belussi, F. 1996 Local systems, industrial districts and institutional networks: Towards a new evolutionary paradigm of industrial economics, *European Planning Studies*, 4: 5-26.

Breschi, S, Lissoni, F. 2001 Localised knowledge spillovers vs. innovative milieux: Knowledge "tacitness" reconsidered, *Papers in Regional Science*, 80 255-273.

Britton, J.N.H. 2004 High technology localization and extra-regional networks, *Entrepreneurship &Regional Development*, 16 :369-390.

Brusco, S. 1990 The idea of industrial districts: Its genesis, in Pyke, F., Senberger W. (eds), *Industrial Districts and Local Economic Regeneration* (Geneva: International Institute for Labour Studies).

Camagni, R. 1991 Local milieu, uncertainty and innovation networks: Towards a new dynamic theory of economic space in Camagni, R. (Ed) *Innovation Networks* (Belhaven: London), 121-144.

Drass, K and Ragin C.C (1999) QC/FSA: Qualitative Comparative Fuzzy –Set Analysis (Evanston, III, Institute for Policy Research Northwestern University)

Feser, E.J. and Bergman, E.M. (2000) National industry templates: A framework for applied regional cluster analysis' Regional Studies,34,1-19

Florida, R. 1995 Toward the Learning Region, *Futures*, 27, 5: 525-536.

Glaeser, E.L., Kalla, H.D.Scheinkman, J.A and Schleifer, A (1992) Growth in cities, *Journal of Political Economy*, 100, 1126-1152

Gregersen, B. and Johnson, B. 1997 Learning economies, innovation systems and European integration, *Regional Studies*, 31: 479-490.

Harrison, B. 1992 Competiton, thrust and reciprocity in the development of innovative regional millius, *Papers of Regional Science*, 71: 905.

Henderson, J.V., Kuncaro, A and Turner M. (1995) Industrial development in cities., Journal of Political Economy, 103, 1067-1085

Hill E W and Brennan J F. 2000 A methodology for defining the drivers of industrial Clusters: The foundations of competitive advantage, *Economic Development Quarterly*, 14, 65-96.

Isard, W. (198) Methods of Regional Analysis, MIT press

Keeble D. 2000 Collective Learning Processes in European High-Technology Milieux, *High-Technology Clusters, Networking and Collective Learning in Europe* Eds D Keeble, F Wilkinson (Ashgate, Aldershot), 182–198.

Krugman P. 1991a *Geography and Trade* (MIT Press, Cambridge, Massachusetts)

Krugman P. 1991b Increasing Returns and Economic Geography, *Journal of Political Economy*, 99, 31: 483–499.

Lawson C. 1997 Territorial clustering and high-technology innovation: from industrial districts to innovative milieux, Working Paper 54, ESRC Centre for Business Research, University of Cambridge

Locke, R. 1995 *Remaking The Italian Economy* (Ithaca and London: Cornell University Press).

Longhi, C. 1999 Networks, collective learning and technology development in innovative high-tech regions: The case of Sophia-Antipolis, *Regional Studies*, 33, 4: 333-342.

Malmberg, A. 1996 Industrial geography: Agglomeration and local milieu, *Progress In Human Geography*, 20, 3: 392-403.

Markusen, A. 1996 Sticky places in slippery spaces: a typology of industrial districts, *Economic Geography*, 72, 3 :293-313.

Marshall, A. 1920 *Principles in Economics* (London: Macmillan).

Midelfart-Knarvik,K.H.Overman,H.G, Redding,S.J and Venables, A.J (2000) The location of European industry, Economic Papers.no.142 (Brussels: European Commission, Directorate General for Economic and Financial Affairs)

Oakey, R. 1985 High-Technology industries and agglomeration economies, in Hall, P. and Markusen, A. (eds), *Silicon Landscapes*, (Boston: Allen and Unwin).

Öz, Ö. 2004 *Clusters and Competitive Advantage The Turkish Experience*, Palgrave Macmillan, New York.

Park, S.O. and Markusen, A. 1995 Generalisation new industrial districts - A theoretical agenda and an application from Nonwestern economy, *Environment and Planning A*, 27,1: 81-104.

Piore, M. and Sabel, C.F. 1984 *The Second Industrial Divide* (New York: Basic Books).

Porter M E, 1998, *On Competition* (Harvard Business Review Books, Boston)

Porter, M. 1990 *Competitive Advantages of Nations*, New York; Free Press.

Propris, L.D. 2002 Types of innovation and inter-firm co-operation, *Entrepreneurship & Regional Development*, 14: 337-353.

Pyke, F. and Senberger, W. 1991 *Industrial Districts And Local Economic Regeneration* (Geneva: International Institute For Labour Studies).

Pyke, F., Bacattini, G. and Senberger, W. 1990 *Industrial Districts and Inter-Firm Cooperation in Italy*, Geneva.

Rabelotti, R. 1995 Is there an industrial district model - Footwear districts in Italy and Mexico compared, *World Development*, 23,1: 29-41.

Rabelotti, R. 1997 *External Economies and Cooperation In Industrial Districts: A Comparison Of Italy And Mexico* (Basingstoke: Macmillan).

Ragin, C.C. (2000)Fuzzy-Set Social Science (Chicago,III, University of Chicago Press)

Romer, P.M. 1986 Increasing returns and long-run growth, *Journal of Political Economy*, 94: 1002-1037.

Rosenfeld, S A. 1995 Does cooperation enhance competitiveness? Assesing the impact of interfirm collaboration, *Research Policy*, 25, 247-263

Saxenian, A.L. 1990 Regional networks and resurgence of Silicon Valley, *California Management Review*, 33, 1: 89-112.

Saxenian, A.L. 1991 The origins and dynamics of production networks in Silicon Valley, *Research Policy*, 20: 423-437.

Schmitz, H. and Musyck, B. 1994 Industrial districts in Europe - policy lessons for developing-countries, *World Development*, 22,6: 889-910.

Shennan, S. (1997). Quantifying Archeology Edinburg University Press: Edinburg)

Storper, M. 1995 The resurgence of the regional economies ten years later: The region as a nexus of untraded interdependencies, *European Urban And Regional Studies*, 2, 3: 191-215.

Tödling, F. 1994 The uneven landscape of innovation poles: Local embeddedness and global networks, in Amin, A. and Thrift, N. (eds), *Globalisation, Institutions And Regional Development In Europe* (Oxford: Oxford University Press), 68-90.

van Dijk, M.P. and Sverrisson, A. (2003) Enterprise Clusters in Developing Countries: Mechanisms of transition and stagnation, *Entrepreneurship & Regional Development,* 15, 183-206.

van Oort, F. 2004 *Urban Growth and Innovation* (Aldershot: Ashgate)

APPENDICES:

Appendix 1:

In the definition of clusters two main variables are used, competitiveness (measued by export shares) and geographic concentration (measured by sum of the share of employment in a certain industry in the four provinces with the highest LQs). If industries that are not covered in the SITC system and suspect cases are eliminated,138 of the 231 industries remain to be analysed by means of fuzzy-set methods. To estimate the degree of membership of these 80 industries in the set of competitive industries, assessments of competitiveness based on world export share are translated into fuzzy membership scores. This is done by taking the cut-off rate as the cross-over point and arraying the remaining cases according to their world export shares, as shown in Table 1. Specifically, cases with the highest world export shares (more than double the cut-off rate) are assigned full membership of the set, while competitive cases with world export shares that are higher than the cut-off rate but lower than double that rate are assigned strong but less than full membership of the set. The same rationale is *used* to assess the fuzzy membership categories of the relatively less competitive cases. In a similar vein, the degree of fuzzy membership of a given industry in the set of geographically concentrated industries is assessed by means of its C4EMP ratio, as shown in Table 2. (See Öz, 2004 for further details)

International competitiveness, fuzzy membership categories

Raw score in (%)	*Membership position*	*Fuzzy membership score (F)*
>2.08	Fully in	$F = 1$
1.05–2.08	Mostly in	$0.751 < F < 0.999$
0.53–1.04	More or less in	$0.501 < F < 0.750$
0.52	Neither in nor out	$F = 0.500$
0.26–0.51	More or less out	$0.251 < F < 0.499$
0.13–0.25	Mostly out	$0.001 < F < 0.250$
<0.13	Fully out	$F = 0$

Table 2 Geographic concentration, fuzzy membership categories

Raw score (%)	*Membership position*	*Fuzzy membership score (F)*
>0.8	Fully in	$F = 1.0$
0.6–0.8	Mostly but not fully in	$0.5 < F < 1.0$
0.6	Neither in nor out	$F = 0.5$
0.4–0.6	Mostly but not fully out	$0 < F < 0.5$
<0.4	Fully out	$F = 0$

List of variables used in the OLS Analysis

CLUSTERING EFFECTS

SMEPERCAPITA: The number of SME firms per 10000 population
SUBCONTR1: Textile Firms with sub-contracting relations % of what
SUBCONTR2: Metal goods firms with subcontracting relations of what
NEWFIRMS: The share of new firms
DIVERSIFIC: Diversification index
PRODSERVE: Producer services
MIGRATIO: The rate of migration during .1990-95 period
TECHEDU: The share of technical school graduates in 10.000 population 1999-2000

ACTIVEPOP: The share of active population in total (%)

HUMAN CAPITAL AND INNOVATIVE ENVIRONMENT

HIGHEDU: The share of university graduates in 10.000 population
SPECEDU: The share of master's and Phd graduates in 10.000 population
ACADEMICS: The number of academic personnel per 10.000 population
R&D: The number of firms with R&D in 1.000 firms
PATENT: The number of patents in 1.000 firms

INSTITUTIONAL AND ORGANISATIONAL CAPACITY

NGO: Number of NGO's per 10000 population 1997
FOUND: Number of foundations per 10000 population 1997
SOCSEC: The share active population under social security (excluding civil servants) 1997
RETIRED: The share of retired person in total population (%) 1997

SERVICES

CREDIT AND FINANCIAL SERVICES
BANKDEPTCRED: The ratio of bank deposits to credits 1993
CREDIT: The share of credits in Turkey 1993
PUBINVEST: Public investments per capita (million TL) 1990-1994

QUALITY OF LIFE, SOCIAL AND CULTURAL SERVICES

THEATER: The number of theater audiences per 10000 population 1998
CINEMA: The number of cinema audiences per 10000 population 1998
LIBRARY: The number of library members per 10000 population 1998
ELECCAP: Electric consumption kwh per capita 1997
CAROWNER: Car ownership per population 1997
TELMEM: Telephone membership per 10000 population 1999HOSPBED: The number of hospital bed per 10000 population 1996

Appendix 3: Independent sample tests : All variables

		Levene's Test for Equality of Variances F	Sig.	t-test for Equality of Means t	df	Sig. (2-tailed)
GDPcap	A	2,529	,116	-1,650	69	,104
	B			-2,040	27,654	,051
GDPGROWTH	A	1,255	,267	,407	69	,685
	B			,469	24,259	,643
sharesme-emp	A	2,212	,142	-,764	68	,448
	B			-1,041	34,901	,305
GRSHARESMEMP	A	,240	,626	-,278	69	,781
	B			-,392	37,165	,697
SUBCONTR1	A	19,888	,000	-3,805	69	,000
	B			-2,351	14,038	,034
SUBCONTR2	A	3,062	,085	-1,127	69	,263
	B			-,887	15,971	,388
SMEPERCAPITA	A	5,045	,028	-3,459	69	,001
	B			-2,722	15,971	,015
NEWFIRMS	A	1,032	,313	,530	69	,598
	B			1,074	56,046	,287
DIVERSIFIC	A	,604	,440	1,825	69	,072
	B			1,890	20,776	,073
PRODSERVE	A	29,500	,000	-2,759	69	,007
	B			-1,379	13,103	,191
MARKET ACCESS	A	19,343	,000	-2,818	69	,006
	B			-1,477	13,271	,163
LNEXPORT	A	,369	,545	-2,539	69	,013
	B			-2,738	21,952	,012
MIGRATIO	A	2,093	,152	-2,167	69	,034
	B			-2,569	25,556	,016
URBANRATIO	A	13,173	,001	-1,732	69	,088
	B			-1,254	15,158	,229

POPINCR	A	1,638	,205	-1,707	69	,092
	B			-2,188	29,778	,037
UNEMPLOY	A	,001	,978	-,225	69	,823
	B			-,257	24,122	,799
WAGES	A	3,218	,077	1,368	69	,176
	B			2,060	44,760	,045
LNWAGES	A	,553	,460	,982	67	,330
	B			1,288	32,349	,207
HIGHEDU	A	,491	,486	,296	69	,768
	B			,571	65,836	,570
SPECEDU	A	1,774	,187	-1,666	69	,100
	B			-1,160	14,836	,265
MIDEDU	A	,327	,569	-1,709	68	,092
	B			-1,751	20,639	,095
TECHEDU	A	,845	,361	-1,190	69	,238
	B			-1,389	24,860	,177
TEACHER	A	,368	,546	-,724	69	,471
	B			-,635	17,380	,534
ACADEMICS	A	,606	,439	-1,600	69	,114
	B			-1,183	15,348	,255
R&D	A	,007	,933	-,693	69	,491
	B			-,905	31,030	,373
PATENT	A	,625	,432	-1,082	69	,283
	B			-,917	16,883	,372
LNPATENT	A	6,339	,014	-1,375	68	,174
	B			-1,712	28,394	,098
RDINCENT	A	1,653	,203	-1,674	69	,099
	B			-1,573	18,561	,133
ELECCAP	A	2,581	,113	-,588	69	,559
	B			-,852	40,157	,399
CAROWNER	A	,359	,551	-2,794	69	,007
	B			-2,333	16,687	,032
TELMEM	A	,362	,549	,254	69	,800
	B			,456	68,229	,650
HOSPBED	A	,519	,474	-,461	69	,646
	B			-,527	23,960	,603
NGO	A	,635	,428	-2,176	69	,033
	B			-2,287	21,185	,033
FOUND	A	8,399	,005	-2,520	69	,014
	B			-1,586	14,147	,135
SOCSEC	A	,072	,789	-1,918	69	,059
	B			-1,949	20,273	,065
RETIRED	A	2,513	,118	-1,028	69	,307
	B			-1,279	27,980	,211
BANKDEPCRED	A	,800	,374	1,266	69	,210
	B			1,471	24,654	,154
CREDITS	A	39,960	,000	-3,045	69	,003
	B			-1,495	13,043	,159
PUBINVEST	A	1,136	,290	,698	69	,488
	B			1,039	43,307	,305
INTERNET	A	,518	,474	-1,559	69	,123
	B			-1,570	20,050	,132
LIBRARY	A	2,378	,128	-,484	69	,630
	B			-,366	15,558	,719
THEATER	A	1,773	,187	1,589	69	,117
	B			2,174	34,622	,037
CINEMA	A	1,019	,316	-,831	69	,409
	B			-,751	17,865	,462

A= Equal variances assumed
B= Equal variances not assumed

NOTES:

[1] They accounted for 67 per cent of total manufacturing employment in 1971, and increased their share to 72.7 per cent in 1995. Regional centres concerned mainly with domestic production have been virtually stagnant since the early 1970s and provide only 7.2 per cent of total manufacturing jobs. Elsewhere, manufacturing has declined. In 1995, these other regions had 59.8 per cent of the population (37.5 million people) but only 17.2 per cent of manufacturing jobs.

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Networks relations and local economic development: some causes of differentiated network structures and intensities among Turkish industrial firms

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Abstract

The regional growth literature emphasises the importance of network externalities as important determinants of the long-run competitiveness of region, highlighting their role in reducing spatial transaction costs and facilitating collective learning and innovation. This paper contributes to this literature by presenting new evidence from a firm-based survey within the three Turkish industrial clusters about the nature and causes of network activity. Using multivariate analysis, the paper shows that locational rather than sectoral differences explain local linkage intensities, but this is not the case for global links. Secondly, there is an important relationship between firm size and local and global linkage densities; the density of local networks decreases with increasing firm size, while the density of global networks increases in firm size. Thirdly, there is a positive relation between global network density and firm productivity. The paper argues that the emphasis on local networking in the literature may be quite misleading for some regions. There is no doubt that proximity matters for firms, but if they want to compete at the international arena then they will also have to strengthen their links with the outside world.

Networks relations and local economic development: some causes of differentiated network structures and intensities among Turkish industrial firms

1. Introduction

Much of recent literature on regional economic growth puts emphasis on networks externalities (Scitovsky, 1954, Katz and Shapiro, 1985,1986, Gordon and McCann, 2000). The basic thesis of this literature is that networks create externalities, which cause firms to behave in ways that they otherwise would not (Freel, 2003; Johannisson, 2000). Participation in a network, it is argued, provides private marginal benefits to network members that exceed the marginal cost of participation (Scitovsky, 1954). Part of the argument is that networks are important because they reduce spatial transaction costs (Camagni and Capello, 2000) and because they reduce uncertainty and adaptation costs by facilitating collective organisation (DeBresson and Amesse, 1991; de la Mothe and Paquet, 1998). Moreover, networks between firms and different supporting institutions are commonly regarded as prerequisites for learning[1] and innovation promoting activities (Camagni, 1991; Tödling and Kaufmann, 1999; De Propris, 2002), which is believed to be a basis for regional growth (Lecher and Dowling, 2000, Keeble, 2000; Maskell at al.,1998; Storper, 1997a; 1997b; Scott, 1998). This is reflected in the work of Asheim and Isaksen, (2002) on knowledge transfer, studies of links with new knowledge bases, access to public and private R&D (Cooke at al., 1998) and university-industry-government relations. Overall these 'collaborative learning networks' (Amin and Cohendet, 1999) are considered to be instrumental in knowledge sharing (Asheim, 1996; Florida, 1995), in inducing external economies of scale (Fariselli, et al., 1999) and in increasing the capabilities of firms via rules that guide the behaviour of interacting entities (Kogut, 2000). Overall the question of what determines regional growth and productivity rates is an increasingly important one for many national governments and regional authorities (and even for international policy makers, as witnessed by the fact that the World Bank alone has funded 266 cluster projects; Lundequist and Power, 2001), since so much else depends on achieving a high growth rate. Even very small differences in growth rates between regions add up, over a long period of time, to very large difference in levels of GDP per capita.

Given the benefits of networking as seen from this theoretical perspective, it is puzzling to find that different levels of network intensity[2] exist across firms, with some firms highly networked and other networked firms[3] relatively isolated (Curran et al., 1993). Perhaps this differentiation reflects the different pattern of marginal costs and benefits associated with networking across firm types and across locations. For instance, spillovers between firms may have a negative as well as a positive impact, for example investments in human capital within

[1] see Gilsing (2003) for an account of the co-evolutionary process involving the institutional environment and networking.

[2] At its simplest the number of local links, and the number of global links for each firm.

[3] We define a networked firm as a firm forming part of a production network (as a subcontractor, supplier, customer, assembler, etc.). Non-networked firms have integrated production systems and limited connections with the other firms.

a firm may be captured by competing firms who attract labour without investing in its initial training. In this paper we attempt to explore this issue focussing on two alternative hypotheses about the causes of network intensity differentials between firms. One hypothesis is that, irrespective of firm characteristics, it is the economic and social matrix in which they are embedded, in short the location, that matters. For instance, location in a big concentration of economic activity, in this case Ankara, may be sufficient to induce more networking that if the firm is located in a smaller centre, regardless of the intrinsic properties of the firm. The mechanism we envisage is that the higher network intensity of a bigger city may produce larger positive externality effects which make production more profitable thus inducing more networked firms, which increases the city's network density, in a cumulative process. A dense network means that there is enhanced diversity and network variety and this provides more finely differentiated networking opportunities for firms, so that network formation, joining and growth has its own inherent dynamic that is place specific. In other words, the attributes of a location/cluster identify the networking intensities and the types of network relations of firms within that cluster. The competing hypothesis is that what is important is the nature of the firm, its sector, size and related characteristics, and these intrinsic attributes will dominate location differences. What matters here is not that the city has few or many diverse networks, but the needs of the firm and the costs entailed by the firm as a result of networking, which will depend on the precise nature of the firm.

Of course the two hypotheses are not mutually exclusive and both sets of effects, place-specific and firm-specific, may be operating. In order to disentangle the relative strength of these two groups of influences, the main vehicle of analysis is a generalised linear model, which is appropriate for the mix of qualitative and quantitative survey data that are available. One of our contributions is to show how econometric methods can be used to complement case-study analysis, therefore bringing together two strands of geographical and economic analysis, which hitherto have been somewhat detached. There is some earlier work using econometric methods (Fingleton, Igliori and Moore, 2003; 2004; 2005), which shows that a location within a 'cluster' does enhance local economic performance, but in this paper, rather than using local area employment statistics, we focus at the company level and draw on a survey of individual enterprises from three areas of Turkey. Using multivariate methods, we show the relative effect of location versus firm-specific attributes on the level of network intensity in different firms. The use of multivariate analysis is important, because the typical firm varies with location, and without controlling for size, sector, workforce qualifications, and so on, location effects may appear to be more significant than they otherwise would be. Without such an approach, we are likely to obtain a somewhat misleading, distorted and unclear picture of the complex causes and effects related to network externalities.

2. Cluster Externalities

A basic idea of the "cluster" literature is that it is the entire productive system rather than the firm itself that should be considered in trying to understand differentiated business performance. This has recently been highlighted by Fujita, Krugman and Venables (1999) who have once again focussed attention on the work of Alfred Marshall (1920). Marshall identified three principal sources of external economies, the existence of thick markets for specialized labour, the occurrence of knowledge and technology spillovers, and the emergence of supplementary trades. Each of these reinforced industrial concentration, with firms benefiting from the spatially concentrated presence of an abundant highly differentiated and hence specialised labour force, and from the diversity of suppliers who provided specialised inputs and added to local demand. Perhaps most significant given the focus of this paper, Marshall acknowledged the importance of significant technological externalities relating to information and knowledge. Workers embodied and transmitted knowledge relating to productive processes between firms, so that for instance training and experience received in one company could be an externality for another company as job migration occurs within a local labour market area. In addition much has been written about networks between

firms, perhaps as part of a common production chain, and between firms and institutions, each of which enhance the flow of information and knowledge. Despite the advent of modern communications technology, there is still much evidence that these knowledge flows are spatially bounded. Much knowledge is said to be tacit rather than formally coded, so that frequent local often-verbal interaction remains an efficient and effective way in which knowledge is communicated between firms and which therefore enhances their productive performance. Of course, this does not mean that external knowledge is not important. On the contrary as Breschi and Lissoni (2001) explains there is need for agents inside the clusters that can translate local tacit knowledge into codified knowledge and to recombine it with the external knowledge.

The importance of technological externalities should be set in the context of the recent formal models of industrial concentration described by Krugman (1991a, 1991b), Fujita and Thisse (1996), and Fujita et al (1999). In these the essential focus is pecuniary rather than technological externalities, which are acknowledged but omitted because they are quite messy creatures and detract from the formal elegance of the theoretical models. Therefore concentration is explained purely as a result of increasing returns in the firm's production function combined the effect of transport costs. When we examine the dynamics of such systems, usually a cumulative process of concentration takes hold by virtue of a particular combination of the market structure assumptions, transport costs and production under internal increasing returns. However the existence and role of technological externalities is ignored in this cumulative process, despite the large volume of quantitative evidence and theorizing which points to the extraordinary significance of information spillovers and flows in the processes leading to and reinforcing agglomeration.

One alternative view is provided by Porter (1990), who explains firm's competitive advantage in certain areas as a result of the interaction of factor conditions; demand conditions; related and supporting industries; and firm strategy, structure and rivalry. This determines the competitive environment of firms. Clusters provide the basic context supporting the firm's performance, it is here that information flows, institutions, infrastructure and competence formation are localized. Porter (1998, p.197) therefore defines clusters as "geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standard agencies, and trade associations) in particular fields that compete but also co-operate."

Another perspective, crucial to our emphasis on networks, is provided by the concept of innovative milieu (Camagni, 1991; Lawson, 1997). An innovative milieu is the outcome of the processes of learning and interaction involving agents connected via various networks. These networks can be very dense and have many aspects, linking firms to each other, and involving different institutions such as government agencies, universities, trade associations and research centres. These networks are formal and informal, and have led to the idea that a process of 'collective learning' may be operating within local areas, as advanced by Keeble, Lawson, Moore and Wilkinson, (1999) for the Cambridge and Oxford high-technology concentrations (see also Keeble and Wilkinson, 2000). Collective learning may be a cause of enhanced innovative behaviour by firms and has been seen as an uncertainty reducing mechanism in a rapidly-changing technology context (Keeble, 2000: p.200; Longhi, 1999).

Networks enable knowledge transfer and facilitate the flows of intellectual resources between institutions. Their existence is undoubted and their function is also now quite well understood, but their typology may provide a clue as to how precisely they effectuate knowledge transfer and consequently how they operate in the broader scheme of understanding regionally differentiated economic performance[4]. One obvious classification

[4] see Kogut (2000: 410-413) for a summary of network structure studies.

which we do employ is between local and non-local networks, including global networks, which follows from the work of Amin and Thrift (1994) and Capello (1996), who argues that local networks involving firms and institutions in close proximity generate dense relations, informality and openness, whereas trans-territorial networks between partners in different places are associated with fewer links, and less open and more formal relationships. We can also identify within the complex web of network that occurs within local economies various sub-networks linking specific actors, so that some networks may link firms to other firms, others link firms to R&D organisations, and other networks may involve global suppliers and customers (value chains), or there may be international R&D or academic excellence networks that also ultimately add to the productive activity of individual firms (Eraydın, 2005). This intricate set of interrelations makes analysis difficult, but it is important to appreciate the complex reality of actual networks by exploring the survey data, before working with a reduced form that brings its own additional insights.

3. Preliminary Analysis of the Three Industrial Areas

The section above relates to cluster externalities as though clusters were always easily defined or identifiable entities. In the context of our survey, we analyse data from three different locations that might be considered by some to be clusters, but because we do not have an agreed or clear definition of this term[5], we choose not to use the cluster concept here but to refer to our three study areas in more neutral terms such as industrial agglomerations, districts or areas. There is no implication in using this terminology that we are not simply referring to identifiable points or areas on the surface of the earth characterized by relatively intense productive activity. The empirical analysis of the paper is divided into two parts. The first part is a general survey that summarises the details of different network relations. This illustrates the complexity and diversity of network relationships and thus contributes to our understanding of how networks are structured. The aim here is to give an account which might provide evidence as to whether it is 'location' or firm-specific attributes, or both, that are important for network intensity. The second element in the empirical analysis strives to quantify the relative importance of various factors that are associated with the intensity of network participation. Therefore in this second part the focus is on the varying strength of local and global network participation in relation to firms' attributes and according to location.

In this section we describe the survey which provides for a sample of 109 firms details of their network relationships and background characteristics relating to size, production, location and so on, which inputs into both parts of the empirical analysis. The three agglomerations are referred to as 'industrial districts' in various studies (Eraydin, 1997,1998, 2002; Erendil, 1998; Pınarcioglu, 1998; Özcan, 1995, Varol, 2002), with emphasis on the following properties: the concentration of SMEs, specific areas of specialisation, vertically disintegrated production, important social networks and trust based relations supporting knowledge spillovers, and joint activities among firms. Denizli, which is a centre of textile production in Turkey, is a good example of a peripherally located production centre trying to integrate with world markets using localised capacities created by a long history of specialisation. The second district is Çorum, which is peripheral even within Turkey. Çorum is striving to diversify its industrial structure by creating new sectors that will be competitive in national and international markets. The third concentration is the capital city of Ankara. In Ankara there is a large and growing number of firms specializing in machinery, electronics (including medical devices) and the military equipment/ defence industry, plus traditional consumer industrial sectors. Since Ankara is the capital and a large city, the diversity and complexity of its economy might lead us to expect that there will be more networking regardless of firm attributes in Ankara.

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[5] See Fingleton B, Igliori D C, Moore B, (2003,2004,2005) for alternative simple definitions of 'horizontal clusters'.

The survey of these firms involved the following stages;

- Stage I: Defining the structure and industrial development pattern of each district using data on firm size, product types, exports, etc. provided by the State Institute of Statistics and Local Chambers of Industry.
- Stage II: Interviewing members of the local Chambers of Industry and other Entrepreneurs Associations. Identifying key personnel and leading industrial entrepreneurs important in the development of the industry and getting their views on networking patterns and different collaborative activities taking place in that area. This provides a general understanding of the existing network patterns.
- Stage III: Defining sub-sectors with network relations and asking them to fill in a short questionnaire identifying the networks they participate in.
- Stage IV: In-depth interviewing a random selection of firms from particular sub-sectors.

Regarding stage IV, in Ankara, after the initial interview stage, which identified 332 firms making up the machinery-electrical machinery-electronics sectors out of 585 total firms, a sample of 82 of the 168 networking firms was the subject of in-depth interviews. In Çorum, 70 networking firms were identified by initial interviews and 12 detailed interviews were carried out. In Denizli, from the initial 358 firms, 270 belonged to networks and from these a sample of 15 provided in-depth interviews.

Table 1 provides data on the total number of firms, number of firms in selected sectors, the number of networking firms within these sectors as well as firms that were subject of in-depth interviews. These interviews provided information about characteristics such as the total number of employees, the qualifications of employees, R&D expenditure, total expenditures and total value added, as well as the number of connections to various local, national and global networks.

TABLE 1: SURVEY FIRMS BY INDUSTRIAL AGGLOMERATIONS

	Total number of firms	Total number of firms in selected sectors*	The number of networked firms **	Number of firms subject to in-depth interviews
Denizli	358	276	270	15
Çorum	217	181	70	12
Ankara	585	332	168	82
Total	1160	789	508	109

Notes: The sectors in this group are as follows:
*Denizli: Textile and textile products
*Çorum: Machinery and industries that depend on local raw material
*Ankara: machinery, electrical machinery and electronics
** The number of firms participating in a production network (as subcontractors, supplier, customer, assembler, etc.)

Denizli specialises in textiles and clothing, notably the production of towels, bathrobes and domestic-textiles for international markets. Although textile production is not a sector in which rapid technological progress is particularly important, nevertheless production, organisation, subcontracting and collaborative networks are very important, both at the different production stages and also when it comes to marketing, where accessing information about the new trends is of vital importance. Among the 358 firms, 276 belong to the textiles and clothing sector, which employs 27426 of the 35192 employees. The firms vary in size (182 firms have 10-49 employees, 67 firms have 50-249, and 27 firms have more than 249 employees), and are either integrated or specialised in different stages of production.

As earlier studies have indicated (Eraydın, 2002) in general Denizli 's firms do actively collaborate. Local linkages mainly involve production activities, with sub-contacting (as a subcontractor or as a parent firm) particularly important, in accordance with the 'interwoven' nature of textile-clothing production. Linkages at the national level are important in raw material supply and services, and for the provision of certain specialised services, especially for central government institutions. In contrast global relations are more marketing-oriented. In terms of knowledge sources, the local level has clear dominance and interestingly locally based competitors and leading firms in the area are important sources of knowledge, possibly because they provide training and are early adopters of any new production techniques or technologies which then become disseminated among the cohort of firms.

Clearly there is a lot of collaboration going on in Denizli, which we might expect to be reflected in the specific survey data which is being analysed in this paper. The question we pose in this paper is, allowing for the effects of the intrinsic industrial structure, here mainly dedicated to textile production which itself would evidently induce collaboration between firms, which, if any, firm characteristics promote or inhibit collaboration, and how strong are these firm-specific effects in relation to the effects caused by (say) a Denzili location?

The second of our three centres is Çorum, which is characterized by diverse production activities based on two main sectors, one devoted to non-metallic products (e.g. bricks, flour milling), and a second more important machinery sector that grew up to serve these industries during the early years of industrial growth. We would expect that a location in Çorum would, controlling for firm-specific characteristics, induce a different degree of collaboration that is apparent for Denizli. This is because Çorum does not have exactly the same interwoven local production system which typifies textile production, and has stronger national and international linkages. Moreover these vary with the specific nature of firms. For instance, while the average share of exports in total sales is about 8 per cent in machinery production, within this sector there are firms that export 95 per cent of their production alongside firms that produce entirely for the domestic market. The same situation is true for firms specialised in non-metallic products and food industry.

The third study area is Ankara, which has been important for nationwide services for a long time. In recent years there have been important attempts to develop technology and knowledge intensive activities in Ankara, the most important sectors being machinery, electronics, the defence industry and software. The firms in these sectors are for the most part interested in adopting new technologies using the support of several central government institutions, and being located in the capital city these firms have easier access to national public institutions as well as semi-public and non-governmental institutions than firms in less central locations. Although the level of innovations is not huge, attempts to form incubator centres and technoparks have been quite successful in generating innovative activities. There is an increasing interest in export activities, although most of production still goes to the national market. This is reflected in the network relations, which in our sample of Ankara firms are mainly at the national level (Table 2).

The data on Ankara firms shows that marketing linkages, especially with customers, are the most important, involving networks of intermediate firms and chain stores. There is only limited subcontracting and few links involving firms and support institutions. For example, the links between firms and the major universities and research institutions, which are located in Ankara, are evidently quite weak.

TABLE 2: LINKAGES FREQUENCIES AND SHARES

LOCATION	TYPE OF INTERACTION	PRODUCTION LINKAGES	SERVICE LINKAGES	MARKETING LINKAGES	KNOWLEDGE LINKAGES	TOTAL
DENİZLİ	LOCAL	322 (% 67,0)	56 (% 11,6)	22 (% 4,6)	81 (% 16,8)	481 (%100.0) (%53,1)
	NATIONAL	52 (% 42,1)	47 (% 37,9)	22 (% 18,0)	3 (% 2,2)	123 (% 100) (%13,6)
	GLOBAL	52 (%17,2)	9 (% 3,0)	228 (% 75,4)	13 (% 4,3)	302 (% 100) (%33.3)
ÇORUM	LOCAL	38 (% 15,2)	16 (% 6,3)	91 (% 36,7)	104 (% 41,8)	248 (% 100) (%32,3)
	NATIONAL	60 (% 19,3)	36 (% 11,5)	176 (% 57,1)	37 (% 12,1)	309 (% 100) (%40,3)
	GLOBAL	36 (% 16,9)	7 (% 3,5)	152 (% 72,1)	16 (% 7,5)	211 (% 100) (%27,4)
ANKARA	LOCAL	2108 (% 25,6)	582 (% 7,1)	5274 (% 64,3)	238 (% 2,9)	8202 (% 100) (%37,3)
	NATIONAL	996 (% 8,1)	86 (% 0,7)	11038 (% 89,8)	172 (% 1,4)	12292 (%100) (%55,9)
	GLOBAL	506 (% 33,8)	48 (% 3,2)	826 (% 55,2)	117 (% 7,8)	1496 (% 100) (%6,8)

Source: The sample firm interviews.

As in other localities, knowledge transfer appears to be most important at the local level, and indeed many firms themselves declare that their main source of knowledge is competitors in close proximity. In contrast, global knowledge linkages are less important, mainly relating to direct sales connections between the technology intensive manufacturing sector and their foreign customers.

Overall therefore the situation in Ankara is very different from that in Denizli and Çorum. From Table 1 it is apparent that, broadly, Denizli has a relative preponderance of local linkages, while Ankara specialises most on national linkages. However, as we mentioned for the Çorum machinery production firms, linkage intensity may depend on the specificities of the firm. How strong is this type of effect compared with the differentiated linkage-inducing effects of the local industrial system within which the firms are embedded[6]? In order to explore this question, we have to appeal to multivariate analysis.

[6] We are not implying functional interrelationships by using this word, simply using embedded as shorthand for located within the matrix of industries that characterize the area..

4. The Multivariate model

In this section we try to disentangle the effects of location and the effects of firm attributes on the differing intensity of both local and international networking, since from our interview data it is a reasonable hypothesis to suppose that the number of local (or global) links jointly depends on these several factors. The dependent variable is therefore the number of links (the frequencies ? given in Table 2), and our independent variables are location, our proxy for the industrial structure differences between our three locations, and some firm-specific variables such as size and production sector. We employ a generalised linear modelling approach in order to quantify the amount of information about linkages frequencies carried by each variable that is additional to that already available from knowledge of the other variables in the model. In this way, we can sort the variables by order of importance, identifying the most important effects, and those that are the spurious by-product of correlations and of no real significance.

The variables included in the multivariate analysis were obtained from the questionnaire survey of 109 firms, although in fact we eliminate a handful from our analysis since they have a large influence on the results we obtain. It would therefore be a mistake to include these and discuss the significance and direction of causation, which is in fact attributable to the presence of a few outliers in the data. There are two dependent variables in the following analysis, the number of local links, and the number of global links. We estimate separate models for each. The other variables we have data for include dummy location variables. We have three areas, Ankara, Denizli and Çorum, and therefore two dummy variables[7] one indicating whether or not a firm is in Ankara (loca), and the other indicating whether a firm is in Denizli (locdi). The firm-specific variables comprise size, represented by total employment (emp), and sector, comprising two dummy variables[8] according to whether or not firm's produce in the innovative (inno) and technologically intensive (tech) sectors. We also have a measure of firm productivity in the form of the value added per worker (va), and a measure of the human capital assets in the firm measured by the share of the total workforce that has academic, commercial or technical qualifications (qual). Additionally, we know the share of total expenditure that goes on research and development (sharerd), and finally we employ a centrality index[9] (cent) that is calculated as the actual linkages of the firm with the other local firms divided by the total number of firms in related sectors of production (except the firm itself).

Since the dependent variable is a count, it is inappropriate to use standard regression analysis based on a normal distribution. Instead we employ another member of the family of generalized linear models (Nelder and Wedderburn, 1972, McCullagh and Nelder, 1989, Dobson,1990, Upton and Fingleton, 1985, 1989, Fingleton, 1999), namely Poisson regression, in which the mean of the Poisson distribution depends on the set of regressors identified above. With small counts, which is what we have, the dependent variable is discontinuous and heteroscedastic, and thus will be badly approximated by a normal distribution. We therefore model the variation in the mean of the Poisson distribution, namely $E(Y)$. In other words the model specification is

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[7] The third is dummy is not necessary; indeed we would not be able to fit a model with all three, because of the dummy variable trap.

[8] The traditional sector omitted because of the dummy variable trap.

[9] There are different definitions of the degree of centrality. In this study an actor-level centrality index is used, following the example of many researchers.

$C_D(n_i) = d(n_i) / g-1$

g = the number of nodes

d(ni) = the number of total connections of the actor

Wasserman Faust (1994) provide further details and other centrality measures.

$$E(Y) = \exp(Xb) \qquad (1)$$

in which Y is the dependent variable (the number of links) and X is an n x k matrix where n is the number of cases (firms) and k is the number of variables (including the constant term). We opt for the (default) logarithmic link function so as to ensure that the model does not predict what are logically impossible, negative counts. This specification means that as the right hand side approaches minus infinity, the left hand side approaches zero. With this multiplicative model, the effect of a variable will be to produce a proportion increase (decrease) in the expected counts rather than to add (or subtract) a constant amount. The fitted values for firm i deriving from the specification (1) with, say three explanatory variables, is

$$\hat{Y}_i = \exp^{\hat{b}_0}(\exp^{\hat{b}_1})^{X_{1i}}(\exp^{\hat{b}_2})^{X_{2i}}(\exp^{\hat{b}_3})^{X_{3i}} \qquad (3)$$

so if say X_1 is a dummy variable, and assuming for the purposes of illustration that $\hat{b}_1 =$ 0.3248 and holding constant the other variables, we find that a shift from level 0 to level 1 of the dummy increases $\hat{Y}_i$ by a factor of 1.3838. Likewise we can obtain the multiplicative effect of increasing a quantitative variable by one unit. However, since these units will be on different scales, direct comparison between variables will be difficult and we therefore use changes in the statistic known as the deviance to quantify the relative effect of omitting or including different variables in the model.

The deviance which measures the lack of fit of the model, and is given by

$$T = 2\ln(L_U / L_{R(0)})$$

where L_U is the likelihood of an unrestricted model (in other words a model that has a perfect fit to the data) and $L_{R(0)}$ is the likelihood of an alternative model. In this case it is the likelihood for a model in which the fitted values are the same across all firms. In this particular form the resulting quantity is known as the total deviance. Thus the total deviance (T) is a measure of the fit of the simplest possible model in which only the constant term is present, so that there is no predicted variation from firm to firm in the number of links. This is the null model is $\hat{Y}_i = \exp^{b_0}$ and T is the deviance for this model that should be compared with the deviance resulting from more complex models.

Obviously the null model is going to be too simple in the vast majority of cases. An equivalent measure to T for a more complex model (with likelihood $L_{R(1)}$) is $D = 2\ln(L_U / L_{R(1)})$, which we can compare with T to see the improvement in fit by including some explanatory variables. To obtain an analogue to R^2, we calculate $R^2 = \frac{T-D}{T}$. The change in deviance in this case is $2\ln(L_{R(1)} / L_{R(0)}) = T - D$. We can therefore compare the change in deviance for any pair of models to examine the contribution to explanation of the variables that are added to go from the simpler to more complex model, and we use this below to obtain evidence of the relative importance of the different variables identified above.

One other aspect of the methodology we employ is the diagnostic known as Cook's statistic. The modified version of Cook's statistic applied to generalized linear model is given by

$$c_i = abs(d_i)\sqrt{\frac{(n-k)l_i}{k(1-l_i)}}$$

in which d_i are deletion residuals for generalized linear models, and l_i denotes the leverage for case i. This quantifies the sensitivity of the results we obtain to the presence or absence of particular cases/firms in the data set. Clearly if the results we obtain are wholly contingent on the presence of one firm or a handful of firms, and change dramatically according to the

presence or absence of these firms, we should be cautious in inferring some general rule from the model as though it applies to all firms.

5. Factors affecting network intensity

5. 1 The number of local linkages

Fitting the initial model including all firms and all variables results in a value of R^2 equal to 0.24, and although we are able to improve on this significantly by adjusting our model, there is clearly a portion of deviance unaccounted for, so our conclusions should be interpreted cautiously in the absence of more data and a more complete model.

The Cook's statistics for this initial model indicate that there are three firms that have a big influence on the parameter estimates. We choose to treat these as special cases each one with its own dummy variable (which in effect excludes them from the analysis) and analyse the remaining firms, and by doing this we increase the proportion of the deviance to be explained from 0.24 to about 0.37. Table 3 below summarises the resulting estimates.

TABLE 3: FACTORS AFFECTING THE NUMBER OF LOCAL LINKS (treating 3 most influential firms, with Cook's statistic > 50, as special cases)

	estimate	s.e.	t(*)	Multiplicative effect
Constant	2.0421	0.0712	28.69	
Loca	2.1328	0.0697	30.60	8.44
Locdi	0.8831	0.0828	10.66	2.42
Inno	-0.2239	0.0477	-4.69	0.80
Tech	0.0908	0.0334	2.72	1.095
Emp	-0.0013546	0.0000954	-14.20	0.9986
Qual	-0.008385	0.000624	-13.44	0.9917
sharerd	0.00741	0.00219	3.39	1.0074
Va	0.014899	0.000856	17.40	1.0150
Cent	3.6583	0.0865	42.27	38.79

Direct contrasts can be easily made between the dummy variable effects[10], since they have two levels. For example, if a firm is located in Ankara, the number of local links increases by a factor of 8.44 compared with firms that are not located in Ankara. If a firm is located in Denizli the number of local links increases by a factor of 2.42. This is somewhat contrary to what we would anticipate, since we might suppose that a Denizli location, with its specialization in textile production which is characteristically 'interwoven' at a local level, would produce a bigger effect. Note however that the Denizli effect is are greater than the effect of Çorum (which by definition is equal to 1), which is in line with expectations. It is the major boost to local linkages produced by an Ankara location that is surprising. In contrast, whether or not a firm is in the technologically intensive sector makes very little difference to the local linkages, and firms in the innovative sector see a marginal decrease in links. It appears that it is location that dominates, picking up the sectoral composition effects of the different locations, while the firm-specific attributes are of minimal relevance.

[10] In contrast for the continuous variables, the multiplicative effect, obtained by exponentiating the regression coefficient, depends on the units of measurement of the independent variable, and so we are not comparing like with like.

Table 4 gives the increase in deviance that results from adding each of the variables to the model, assuming all the others are already present. It therefore is a quantitative measure of the independent information carried by each variable, given that we know all the other variable values. For example, the reduction in deviance as a result of adding the loca dummy variable is 1522, the largest value in the table. This indicates that, given that we know all the other variable values for a firm, if it is then revealed that the firm is located in Ankara adds most to our knowledge of the number of local links. In contrast, given the other variables, the least amount of information is carried by whether or not a firm is in the technologically intensive sector. These effects are also quantified by the R^2 values associated with each model, calculated for when the variable in question is absent from the model.

TABLE 4: RELATIVE IMPORTANCE OF THE VARIABLES (LOCAL LINKS)

Variable added	Deviance change	R-squared without variable
Loca	1522	0.2789
locdi	120	0.3620
Inno	22	0.3678
Tech	7	0.3687
Emp	257	0.3539
Qual	194	0.3576
Sharerd	11	0.3685
Va	294	0.3517
Cent	1372	0.2878

From this it is apparent that the two most important determinants of the number of local linkages are whether or not a firm is located in Ankara (loca) and the centrality index (cent). If a firm is central to the set of firms as measured by the index of centrality, then this has a large positive impact on the number of linkages. The next most important effect is the firm's productivity level (va), with higher levels associated with more local linkages. Local linkages fall with increasing firm size (emp) and increasing share of qualified people (qual). We have already noted that a location in Denizli (locdi) is also associated with an increase in the number of local linkages, but we now see that it is less important than the other effects mentioned above.

5.2 The number of global linkages

This analysis also takes into account the existence of one highly influential case that is omitted from our data. The effect of this is to increase the R^2 value from 0.18 to 0.37.
Table 5 gives the resulting parameter estimates, from which we can see that a different range of factors comes into play when considering global links.

TABLE 5: FACTORS AFFECTING THE NUMBER OF GLOBAL LINKAGES (excluding one highly influential case)

	estimate	s.e.	t(*)	Multiplicative effect
Constant	1.644	0.114	14.45	
loca	-0.476	0.111	-4.28	0.62
locdi	0.022	0.119	0.19	1.02
inno	1.066	0.126	8.46	2.9037
tech	1.285	0.102	12.55	3.6147
emp	0.0024194	0.0000681	35.53	1.0024

qual	-0.00122	0.00140	-0.87	0.9988
sharerd	-0.02774	0.00628	-4.42	0.9726
va	0.01311	0.00158	8.32	1.0132
cent	-1.000	0.299	-3.34	0.3679

Position with respect to the matrix of firms in the local area, in other words a central position in the production system, does not seem to provide the significant positive boost to global network intensity that was the case for local links. This is shown by the comparative decline and sign reversal of the centrality variable. In addition we see from the easily compared multiplicative effects for the dummy variables, that it is the firm specific variable sector (inno, tech) rather than location which now has the biggest impact, for example controlling for other effects an Ankara location reduces the number of global linkages, while not being located in Ankara increases the number of global links by a factor of 1.61. In contrast if a firm is in the technologically intensive sector, irrespective of location, this increases the number of global linkages by a factor of 3.61. A Denizli location boosts the number of global links, but its effect is not as strong as was its effect on the number of local links. Among the other firm-specific variables, size, as measured by employment, has a very significant positive impact on global linkages compared with its negative impact on local links. However, an increase in the share of research and development in total expenditure is now associated with a fall in the number of links. It appears that firms who carry out R&D internally see less benefit from global links. The effect of value added per worker remains roughly the same as before, multiplying the number of global links by 1.0132 per unit.

TABLE 6: RELATIVE IMPORTANCE OF THE VARIABLES (global links)

Variable added	Deviance change	R-squared without variable
Loca	18	0.3718
Locdi	0.01	0.3760
Inno	72	0.3588
tech	189	0.3310
emp	997	0.1390
qual	1.1	0.3758
sharerd	21	0.3709
Va	67	0.3600
Cent	12	0.3732

Table 6 shows that the most relevant variables for understanding the variation in the number of global links are firm-specific rather than location specific. Most important is the size of the firm, as measured by total employment (emp), with larger firms having more links. Also if firms are in the innovative (inno) or technologically intensive (tech) sectors, and whether they have a high level of productivity (va) also has a significant effect on the number of global links. In contrast, the other effects we have discussed are relatively minor in terms of their contribution to our understanding.

6. Conclusion

This paper has focussed on two competing hypotheses regarding the causes of network intensity differences between firms. One states that firms, irrespective of their intrinsic attributes, will have different levels of network intensity in different areas characterized by different industrial structures in which they are embedded. The second hypothesis is that it is

firm-specific variables such as size and their production sector that are important, and that the local economy in which they happen to be located does not play a major role.

We use a multivariate model to come to some conclusion as to the relative importance of these two sets of influences. We find that location is an important influence on the intensity of local and international networking, although for global linkages what matters much more are the attributes of the specific firms. Global links in particular increase greatly for large firms, and increasing firm size produces a reduction in local links. It appears that as firms get larger the benefits of local networks fall away and/or the costs increase, while the opposite is the case for global networks, which become more beneficial and possibly less costly as firm size increases. This seems to be a natural consequence of firms increasing their turnover and market size, and therefore becoming more international in their outlook, aspirations and orientation.

One reason to focus on network intensity is that as mentioned at the outset, networking is seen as providing externalities to firms that enhance their productive behaviour. While we have not focussed on the effects of networks in this paper, but rather the causes of network variation, it is interesting to observe the positive relation between network density and firm productivity. We envisage a two-way causation process here, so that global network density is both a cause of, and response to, the level of productivity, which is in line with the findings of Camagni and Capello (2000), who found that firms closely connected to supplier and customer firms, other things being equal, have higher levels of productivity than would otherwise be the case.

The results of this study have various implications for further studies on networks. Firstly, it shows that although individual case studies are very useful, there is need for comparative analysis in order to see the different causes and effects associated networking under different structural and growth conditions. Since each has peculiar characteristics, the generalisation of individual case studies may be misleading. Secondly, there is need for more quantitative analysis, although data collection is very difficult, in order to confront theory with actual evidence. Theory building naturally relies on a certain degree of abstraction and may tend to place more emphasis on certain factors than is warranted by empirical reality, and this type of misconception needs to be rectified in order to promote the development of better informed and more realistic theory and policies.

References

Amin A, Cohendet P, 1999, "Learning and adaptation in decentralised business networks" *Environment and Planning D: Society and Space* **17** 87-104

Amin A, Thrift N, 1994'Living in the global' in *Globalization, Institutions and Regional Development in Europe* (Oxfoord University Press,Oxford) 1-22

Asheim B T, 1996 "Industrial Districts as "Learning Regions: a Condition for Prosperity" *European Planning Studies* **4** 4 379-397

Asheim B T, Isaksen A, 2002 "Regional innovation systems: The integration of local 'sticky' and global 'ubiquitous' knowledge", *Journal of Technology Transfer* **27** 77-86.

Breschi S, Lissoni F, 2001, "Localised knowledge spillovers vs. innovative milieux: Knowledge "tacitness" reconsidered" *Papers in Regional Science* **80** 255-273

Camagni R, 1991, "Local Milieu, Uncertainty and Innovation Networks: Towards a New Dynamic Theory of Economic Space" in *Innovation Networks* Ed R Camagni (Belhaven, London) pp 121-144

Camagni R, Capello R, 2000, "The role of SME networking and links in innovative high-technology milieux" in *High-technology clusters, networking and collective learning in Europe* Eds D Keeble, F Wilkinson (Ashgate: Aldershot) pp 118-155

Capello R, 1994, *Spatial Economic Analysis of Telecommunications Network Externalities* (Avebury: Aldershot)

Cooke P, Uranga M G, Etxebarria, G, 1998, "Regional systems of innovation: an evolutionary perspective" *Environment and Planning A* **30** 1563–1584

Curran J, Jarvis R, Blackburn R A, Black S, 1993, "Networks and small firms' constructs, methodological strategies and some findings" *International Small Firms Journal* 11 2 13-25

de la Mothe J, Paquet G, 1998, *Local and Regional System of Innovation* (Kluwer, Boston)

De Propris L, 2002, "Types of innovation and inter-firm co-operation" *Entrepreneurship and Regional Development*, 14 337-353

DeBresson C, Amesse F, 1991, "Networks of innovators: A review and introduction to the issue" *Research Policy* **20** 363-379

Dobson A J, 1990, *An Introduction to Generalised Linear Models* (Chapman and Hall, London)

Eraydın A, 2005, "Global Networks as Open Gates for Regional Innovation Systems" in *Industry in a Networked World* Eds C. Alvstram and E. Schamp (Ashagate: Aldershot) forthcoming

Eraydın A, 2002, "The local embeddedness of firms in social networks in Turkish industrial districts: the changing role of networks in local development" in *Social capital and the Embedded Enterprise: International Perspectives* Eds M Taylor, S Leonard (Ashgate, Aldershot) pp 269-289

Eraydın A, 1998, *From an Underdeveloped Region to a Locality: The Experience Of Çorum,* unpublished paper prepared for the World Bank.

Eraydin A, 1997, "LDC industrial districts: The challenge of the periphery" in *Cross Border Cooperation and Strategies for Development in Peripheral Regions* Ed K I Westeren (Nord-Trondelags, Forskning, Oslo) pp 411-436.

Erendil A, 1998, *Using Critical Realist Approach in Geographical Research: An Attempt to Analyze the Transforming Nature of Production and Reproduction in Denizli,* unpublished PhD thesis, Department of City and Regional Planning, Middle East Technical University, Ankara.

Fariselli P, Oughton C, Picory C, Sugden R, 1999, "Electronic Commerce and the Future for SMEs in a Global Market-Place: Networking and Public Policies" *Small Business Economics* **12** 261-275

Fingleton B, 1999, "Generalised linear models, loglinear models and regional dynamics" in *The Current State of Economic Science* Vol 1 Ed S B Dahiya (Spellbound Publications, Rhotak) pp 285-307

Fingleton B, Igliori D C and Moore B, 2005 "Cluster Dynamics: New Evidence and Projections for Computing Services in Great Britain", forthcoming, *Journal of Regional Science,* May 2005

Fingleton B, Igliori D C and Moore B., 2004 "Employment Growth of Small High-technology Firms and the Role of Horizontal Clusters: Evidence from Computing Services and R&D in Great Britain 1991-2000" *Urban Studies* **41** 4 773-799

Fingleton B, Iglori D C and Moore B, 2003, "Employment Growth of Small Computing Services Firms and the Role of Horizontal Clusters: Evidence from Great Britain 1991-2000", in *European Regional Growth.* Ed B Fingleton (Springer Verlag, Berlin) pp 267–291.

Florida R, 1995, "Towards the Learning Region" *Futures* **27** 527-536.

Freel M S, 2003, "Sectoral patterns of small firm innovation, networking and proximity", *Research Policy* **32** 751-770.

Fujita M, Thisse J F, 1996, "Economics of Agglomeration" *Journal of the Japanese and International Economies* **10** 339–378.

Fujita M, Krugman P, Venables A, 1999, *The Spatial Economy* (MIT Press, Boston).

Gilsing V, 2003, *Exploration, Exploitation and Co-evolution in Innovation Networks* , Erasmus School of Management, ERIM Ph.D. Series Research in Management 32, Rotterdam.

Gordon I R, McCann P, 2000, "Industrial Clusters: complexes, agglomerations and/or social networks" *Urban Studies* **37** 513-32

Johannisson B, 2000, "Networking and entrepreneurial growth" in *The Blackwell Handbook of Entreperneurship,* Eds D L Sexton and H Landström (Blackwell, Oxford) pp 368-386

Katz M L, Shapiro C, 1986, "Technology adoption in the presence of network externalities" *Journal of Political Economy* **94** 822-841

Katz M L, Shapiro C, 1985, "Network externalities, competition and compatibility" *American Economic Review* **75** 424-440

Keeble D, 2000, "Collective Learning Processes in European High-Technology Milieux" in *High-Technology Clusters, Networking and Collective Learning in Europe* Eds D Keeble, F Wilkinson(Ashgate, Aldershot) pp 182–198.

Keeble D, Lawson C, Moore B, Wilkinson F, 1999, "Collective Learning Processes, Networking and Institutional Thickness in the Cambridge Region", *Regional Studies* **33**, 319–32.

Keeble D, Wilkinson F, 2000, *High-technology clusters, networking and collective learning in Europe* (Ashgate, Aldershot)

Kogut B, 2000, "The network as knowledge: generative rules and emergence of structure" *Strategic Management Journal* **21** 405-425

Krugman P, 1991a, *Geography and Trade* (MIT Press, Cambridge, Massachusetts)

Krugman P, 1991b, "Increasing Returns and Economic Geography" *Journal of Political Economy* **99** 31 483–499.

Lawson C, 1997, 'Territorial clustering and high-technology innovation: from industrial districts to innovative milieux', Working Paper 54, ESRC Centre for Business Research, University of Cambridge

Lechner C, Dowling M, 2000, "The evolution of industrial districts and regional networks: the case of biotechnology region Munich/Martinsried" *Journal of Manangemenyt and Governance* **99** 309-338

Longhi C, 1999, "Networks, collective learning and technology development in innovative high-tech regions: The case of Sophia-Antipolis" *Regional Studies* **33** 4 333-342

Lundequist P Power D, 2001, "Putting Porter into Practice? Practices of Regional Cluster Building" *European Planning Studies*, **10** 685-704

Maskell P, Eskelinen H, Hannibalsson I, Malmberg A, Vatne E, 1998, *Competitiveness, Localised Learning and Regional Development* (Routledge, London)

McCullagh P, Nelder J A, 1989, *Generalised Linear Models* 2nd Edition (Chapman and Hall, London)

Nelder J A, Wedderburn R W M, 1972, "Generalised linear models" *Journal of the Royal Statistical Society A*, **135**, 370-384

Özcan G B, 1995, *Small Firms and Local Economic Development (*Avebury, Aldershot)

Pinarcioğlu M, 1998, *Industrial Development and Local Change: The Rise of Textiles and Clothing Since the 1980s and Transformation in The Local Economies Of Bursa and Denizli*, unpublished PhD thesis, University College London.

Porter M E, 1990, *The Competitive Advantage of Nations* (Macmillan Press, London)

Porter M E, 1998, *On Competition* (Harvard Business Review Books, Boston)

Scitovsky T, 1954, "Two concepts of external economies" *Journal of Political Economy* 62 143-51

Scott A, 1998, *Regions in the World Economy: The Coming Shape of Global Production, Competition and Political Order* (Oxford University Press, Oxford)

Storper M, 1997a, "Territories, flows and hierarchies in the global economy" in *Spaces of Globalization: Reasserting the Power of the Local* Ed K Cox (Guildford, New York) 19-44

Storper M, 1997b, *The Regional World: Territorial Development in the World Economy* (Guildford, New York)

Tödling, F, Kaufmann A, 1999, 'Innovation systems in Europe-A Comparative perspective' *European Planning Studies*, **7** 6 699-717

Upton G J G, Fingleton B, 1989, *Spatial Data Analysis by Example*, Volume 2 (Wiley, Chichester)

Upton G J G, Fingleton B, 1985, *Spatial Data Analysis by Example*, Volume 1 (Wiley, Chichester)

Varol Ç, 2002, *Entrepreneurial Networks in Local Industrial Development: A Comparative Analysis of Denizli and Gaziantep Cases*, unpublished PhD thesis, Department of City and Regional Planning, Middle East Technical University, Ankara.

Wasserman S, Faust K, 1994, *Social Network Analysis: Methods and Applications* (Cambridge University Press, New York)

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Innovation, networking and the new industrial clusters: the characteristics of networks and local innovation capabilities in the Turkish industrial clusters

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Elaborating on the literature on industrial districts, this paper suggests that innovation and networking are the two key issues, which provide the new generation industrial clusters' competitive capacity in the globalization process. The paper presents the findings on the innovative and networking capabilities of the three important industrial clusters of Turkey based on the data collected from the sample firms in each of these industrial clusters through in-depth interviews. The findings clearly show the importance of local and national networking as well as global linkages and confirm the positive relation between intensity of local networking and innovativeness. Moreover, the paper provides evidence that firms within global networks have higher numbers of innovations than firms with higher intensity of locally embedded linkages.

Keywords: industrial clusters; innovativeness; local networks; global networks.

1. Introduction

The recent literature on spatial development and industrial geography presents many success stories identified as 'industrial districts', which were peripheral and semi-peripheral regions of earlier decades. While major industrial centres of mass production had been deeply affected by the negative conditions brought by the 1970s crisis, these clusters of small and medium enterprises adapted successfully to the changing economic conditions. This situation has created a wide interest on defining success factors of such districts and describing the way in which they have achieved international competitiveness (Brusco 1982, Piore and Sabel 1984, Amin 1989, Capecchi 1989, Sabel 1989, Pyke, Becattini and Sengenberger 1990, Storper 1990, 1993, Becattini 1991). In the 1980s literature there are various examples of industrial districts from the advanced part of the world, such as Emilia Romagna, Baden Württemberg and Silicon Valley, among many others, as well as examples from peripheral countries.[1]

Following the initial studies that described the factors of economic growth of certain industrial districts, however, some of the new studies on these industrial agglomerations showed that their internal assets have not been enough to protect

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their competitiveness in later years (Bellini 1996, Cooke 1996, Staber 1997), while some others have still been defined as the models of local economic development. In fact the characteristics of 'the model' are not clear,[2] and there is a continuous change in the context and attributes of the terms 'industrial district' and 'industrial cluster', although there are several attempts to define the different types and categories of industrial clusters (Markusen 1996, van Dijk and Sverrisson 2003).

A basic idea of the literature on industrial districts, clusters and agglomerations is that it is the entire productive system rather than the firm itself that should be considered in trying to understand differentiated business performance. Taking external economies due to the agglomeration of firms as the focal point, several studies on different industrial clusters tried to define the context in which firms operate. This interest reflects itself in both formal models of industrial concentration described by Krugman (1991a, b), Fujita and Thisse (1996), and Fujita *et al.* (1999) and also in the new industrial geography literature, which created a wide collection of descriptive studies.

Formal models of industrial concentrations all assume that increasing returns, which has been the key notion for understanding the new growth theory, is the outcome of the dynamic and cumulative advantages of spatial proximity (van Oort 2004). Agglomeration is explained purely as a result of increasing returns in the firm's production function combined the effect of transport costs and it is assumed that certain place-specific circumstances induce higher than proportional growth in productivity with a fixed amount of factor inputs.

The studies of industrial geography, on the other hand, have been concentrated on defining the different sources of externalities defined by Marshall (1920), namely the existence of thick markets for specialized labour, the occurrence of knowledge and technology spillovers, and the emergence of supplementary trades. While labour market conditions (Angel 1991, Oakey 1985, Schmitz and Musyck 1994) received special attention as the source of externalities,[3] various terms such as flexibility through specialization and inter-firm co-operation (Pyke and Sengenberger 1991), collaboration instead of competition (Brusco 1990), co-operation by strong collective networks (Harrison 1992), subcontracting relations among vertically disintegrated firms specialized in different stages of production (Piore and Sabel 1984), interaction between 'moreorless equal small enterprises' (Piore and Sabel 1984), local production networks (Saxenian 1990, 1991, Bahrami 1992) untraded interdependencies (Storper 1995) have been used to define the benefits of inter-firm relations in industrial agglomerations. On the other hand, socially constructed inter-firm relationships employing both tacit and codified knowledge (Camagni 1991, Pyke and Sengenberger 1991, Storper 1995, Belussi 1996, Malmberg 1996), common cultural and social background (Becattini 1989, 1990, Rabelotti 1995) and institutional thickness (Amin and Thrift 1994, Tödtling 1994, Locke 1995, Gregersen and Johnson 1997, Rabelotti 1997) are defined as the factors that facilitate knowledge spillovers and firm-to-firm knowledge transfers.

Porter (1990) using some of the existing work readdressed cluster externalities under a different heading; 'competitive advantage'. He explained firm's competitive advantage in certain areas as a result of the interaction of factor conditions; demand conditions; related and supporting industries; and firm strategy, structure and rivalry. These factors determine the competitive environment of firms. Porter (1998: 197) therefore defines clusters as 'geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in

related industries, and associated institutions in particular fields that compete but also co-operate'.

The new attention on clustering is also to be found in knowledge spillovers and innovation. Human capital and knowledge spillovers, which most naturally will induce innovations, became the core of the new growth theory. However the industrial geographers paid more attention to the spatial diffusion of knowledge and innovation. According to van Oort (2004: 42) two types of approaching can be distinguished in spatial diffusion of knowledge and innovation; those stressing physical proximity and those focusing on functional linkages in hierarchically equivalent but not necessarily nearby locations. In fact, there are some theoretical attempts to connect innovation and networking such as 'learning regions' (Florida 1995) and 'innovative milieu' models (Camagni 1991, Lawson 1997). The learning region model assures that firms' behaviour with respect to innovation and firms' innovation performance are both affected by the environment in which they operate (de Propris 2002). Similarly, according to the innovative milieu model geographical proximity and informal relationships between firms facilitate information and knowledge exchange. Therefore collective learning may be a cause of enhanced innovative behaviour by firms and has been seen as an uncertainty reducing mechanism in a rapidly changing technology context (Longhi 1999, Keeble 2000).

A brief review of the literature on the sources of cluster externalities indicates strong emphasis on the importance of local potential and dynamics. It is stated that 'clusters' provide the basic context supporting the firm's performance; it is here that information flows, institutions, infrastructure and competence formation are localized (Porter 1990). In other words, the sources of externalities and competitiveness are defined by local conditions. The studies on industrial clusters, however, pay less attention to linkages with firms external to an existing cluster (Markusen 1996, Britton 2004).

Today, after two decades of studying and observing the changes in the development experience of several industrial clusters, the emphasis on endogenous dynamics and assets is widely criticized (Staber 1997, Glasmeier 1999, Raco 1999, Lyons 2000, Oinas 2000, Yeung 2000, Tödtling and Kaufmann 2001, Amin 2002). Instead, the role of global co-operation and knowledge transfer via different types of networks and value chains are strongly emphasized (Collinson 2000, Koschatzky and Bross 2001, Asheim and Isaksen 2002, Eraydin 2002c, Freel 2003, Patrucco 2003). Britton (2004: 374) based on his study on Toronto electronics industry claims that the open system version of clustering, where international exports are the feasible activity of firms besides the acquisition of knowledge from extra-regional sources, is the appropriate model and not Porter's version in which demanding local markets are assumed.

This argument is especially true for the industrial districts located in the peripheral countries, due to two main reasons. First, thin local markets and lack of adequate local/domestic demand enforce industrial clusters in these countries to integrate to the global market. Export potential, which is the best indicator of competitiveness, also means capital transfer from the external world and creating multiplier effects on local industries. It is worthwhile to reconsider Romer's remark on trade (1986: 1033); 'growth seems to be correlated with the degree of integration into worldwide markets', which points out that local linkages among firms and institutions are important, but global trade linkages have an even more vital role.

Second, limited endogenous resources and knowledge accumulation encourage the utilization of external resources and, as Breschi and Lissoni (2001) explain, to use agents who can combine local tacit knowledge with the external knowledge. The output of this interaction is the improvement of products and production processes and the enhancement of the technological level of manufacturing firms. Two factors can be defined as prerequisites for competitiveness in the contemporary era, namely innovativeness and networking, including access to global networks. These points of emphasis enable us to define an industrial district in a peripheral country as 'a geographic concentration of specialised firms that form local networks for reducing the cost of production as well as increasing the quality of products in order to reach national and international markets'.

The aim of this paper is to discuss the importance of networking and innovation in the peripheral industrial agglomerations by using the evidence from the three new Turkish industrial clusters. Following the discussions on the nature of networking and innovation and the role of localized and global networks on innovativeness of firms, the third section introduces major research concerns and methodology. Section 4 presents the findings of the empirical research and describes the different intensity levels of networking and innovation in different types of peripheral industrial clusters. The empirical findings on the importance of network relations in the innovativeness of firms have been summarized in Section 5. The paper concludes that global networking and innovation are not only peculiar to advanced industrial clusters, but also for the peripheral clusters that are trying to be a member of the global economic system.

2. Networking and innovation as the two distinctive characteristics of industrial clusters

The short summary on the characteristics of industrial clusters above suggests that what really makes us locate 'industrial districts' as the focus of the development discourse recently, are two of their important features: networking and innovativeness.

Industrial clusters can be defined as the context of business and social networks in these areas and their main functions. According to Johannisson *et al.* (1994: 332) in industrial districts there are formal structures, in terms of institutions deliberately created to deal with collective concerns, which are accompanied by social and business networks. While 'talk networks' offer dialogue between business and social life, 'acquaintance networks' enable social control and a safety net of social resources. Among business networks, 'commercial networks' provide local markets for new ventures and established firms and 'professional networks' in the industrial clusters reflect the experimental learning process.

The contextual definition of networks above emphasizes the importance of localized networks and locally embedded collective processes. There are also non-local/global networks that bind firms beyond the boundaries of clusters. Non-local/global networks enable firms to benefit from relations beyond the limits of a cluster. For certain activities, while local networks are indispensable, long distance relations may be even more valuable. For example studies of innovation systems in several metropolitan areas have shown that spatial proximity is more important in horizontal linkages between manufacturing firms, research institutes or competitors,

whereas vertical co-operation is not so reliant on spatial proximity and can be sustained and operationalized over longer distances (Revilla-Diez 2002).

It is possible to define four main reasons why local firm involvement in wider national and global networks is absolutely essential for long-term growth. First, with the help of these networks it is possible to generate new ideas by using not only local knowledge and expertise, but also external expertise to transform them into marketable products (Revilla-Diez 2002). As Camagni (1991) emphasizes in a technologically dynamic and highly uncertain world, the contribution of local milieu has limits and they must be supported by wider inter-firm networks as a way of access to information on rapidly changing technologies and market opportunities. Second, in order to offset any problems due to declining domestic demand there is a need for export-oriented activities, which should be supported by technology transfer networks (Kautonen 1996). Third, non-regional activities can increase the contribution of regionally-oriented measures and therefore provide stronger support for innovation management and the competitiveness of regional firms. It is not possible for firms, especially SMEs, to rely solely upon localized learning and tacit knowledge; at the same time, they must be supplemented with formal R&D competence (Asheim and Isaksen 2002) and access to universal knowledge via different types of non-regional and global networks. Fourth, an actor is a part of a territorial system, but if the actor joins a global system he, she or it will have a chance to benefit from the synergies that this situation offers. Finally, the findings of several studies deliberatelyindicate that external linkages are especially important to prevent technological lock-in (Glasmeier 1991, 1994, Kautonen 1996).

There are different types of global networks, which can initiate joint efforts for innovation and growth; networks formed by global suppliers and customers (value chains), global service networks, international R&D/academic excellence networks and knowledge transfer networks. Participation in a network provides synergic effects in co-operative activities and enables firms to exploit scale economies with the help of complementary relationships. That is why networks provide private marginal benefits to their members more than the marginal cost of participation, a benefit that is often referred to as network externalities (Arndt and Sternberg 2000, Lechner and Dowling 2000).

Obviously, it is very difficult to expect strong global linkages in the early stages of development of industrial clusters. Similarly, industrial agglomerations in peripheral regions may not be capable of forming different types of global linkages, since these clusters with limited learning infrastructure have important handicaps to integrate themselves in the global economy owing to two main reasons. First, competence is very crucial for becoming a partner in global networks; especially international R&D/academic excellence networks and technology transfer networks. Second, although knowledge is increasingly codified, codification is difficult and its use can still entail costs. Only the agents who know the code can use knowledge without paying additional costs, whereas others have to pay to learn the code (Keane and Allison 2000).

The second distinctive characteristic of the new industrial clusters is their innovative nature. There is almost a consensus on the importance of innovative and creative capacity as the essence of these areas. In many studies, innovativeness and creativeness are widely emphasized (Piore and Sabel 1984, Brusco 1990, Garofoli 1991, Bellandi 1994, Asheim 1996).

The meaning of innovation within industrial district literature, however, needs further clarification. What is meant by 'innovation' is not usually the linear model of innovation based on formal knowledge generated by R&D activity (Asheim 1996), but it is defined as the product of collective processes through interregional linkages facilitating firms' access to different localized, innovation capabilities (Camagni 1991). The definition includes product improvement and diversification of an existing product. Most of the existing studies (Keeble *et al.* 1998, Arndt and Sternberg 2000, Lyons 2000) indicate that sector matters in the intensity of innovative activities, emphasizing that high-tech production sectors have higher levels of innovation, compared to traditional production sectors.

Innovation and networking among firms are important since they are the major factors that affect the functioning of diminishing returns. The literature also affirms positive relations between innovativeness and networking. This view is supported by several studies (Arndt and Sternberg 2000, Freel 2000, Keeble 2000). They also claim that innovation is the key to economic development and growth and can be achieved by a learning process that is facilitated by intra-regional or local networks among firms and institutions in close proximity (Maillat 1995, Koschatzky 1999, Collinson 2000, Sternberg 2000, Torre and Gilly 2000). Even as de Propris (2002: 337) quotes from Hakansson (1987) 'innovation should be considered as product of network of actors'. Creativity and innovation capacity enables not only firms, but also industrial clusters, in general, to gain competitive advantage in the world markets. Competitive advantage based on innovativeness and creativity provides a strong competitive position to industrial clusters, whereas competitiveness based upon price/cost advantages provides a weak position always under the attack of new entrants (Storper and Walker 1989).

Obviously, the importance of innovation and different networks vary in the industrial clusters specialized in different types of production sectors. The nature of production is the key to understanding diversities (Kanter 1996). It is expected that industrial clusters specialized in traditional production sectors are less innovative, more reliant on local production (Taplin 1989, Christerson and Appelbaum 1995) and knowledge networks that make it possible to use locally embedded knowledge sources (Schmitz 1995), whereas innovation is essential for the success of new/high-tech production sectors. The high-tech clusters use global knowledge networks in order to reach new knowledge that is crucial for innovation activities (Koschatzky 1999). There is a third group of production activities, which were important production sectors of the mass production era, such as car manufacturing and chemicals. They are still important in the composition of manufacturing industries in many countries and are the core of many industrial clusters. These types of production units, which received less attention in the recent literature, are forced to bring process and product innovations in the increasingly competitive economy. They are usually less dependent on local linkages, but they try to be on the global value chains.

The above discussions provide a general understanding on industrial clusters. However, this paper tries to provide a deeper understanding of the innovative and networking activities of different types of industrial clusters with the help of several questions. What are the differences in networking patterns and the level of innovativeness of firms in peripheral industrial clusters that are specialized in different production sectors? Which networks at different geographical levels are more important in different types of industrial clusters? How do the weight of functional

networks change among different industrial clusters? How far are local and global linkages important in the innovativeness of firms and is there any difference among the clusters specialized in different production sectors in this respect? We believe that the study on the three Turkish industrial clusters provides a new insight into the typology of clusters in developing countries introduced by van Dijk and Sverrisson (2003: 188)[4] and the importance of networking and innovativeness in peripheral clusters.

3. Networking and innovation in the peripheral industrial clusters: major research concerns and methodology

Drawing on the existing literature and the questions raised above, this paper aims to address the importance of networking and innovativeness and their interaction in peripheral industrial clusters with different fields of specialization and at different stages of evolution. In order to reach this aim, the following points are defined as the focus of this study.

1. The importance of R&D and different types of innovations in peripheral industrial clusters.
2. The importance of different types of linkages at different geographical levels.
3. The link between innovativeness of SMEs and their networking at different geographical levels.

As the points above suggest, in addition to identifying the intensity of innovation activities and different types of linkages at different geographical levels, the case study has three main propositions. The *first proposition* is on the differences on the innovativeness and networking patterns of the firms in clusters specialized in different production activities. It is claimed that although the nature of production defines both the level of innovativeness as well as the weight of different networks, the level of integration to the global market makes the main difference. The *second proposition* is related to the importance of local linkages in the innovative activities of manufacturing firms. Given theoretical debates and previous research findings it is hypothesized that SMEs in manufacturing sector with higher numbers of local linkages are more successful in innovative activities than SMEs with fewer numbers of connections. The *third proposition* is on the importance of local and global linkages in innovative activities. As the theoretical and empirical work indicate the main hypothesis here is that SMEs with dense global linkages are more innovative than SMEs, which depend mostly on local networks.

3.1 The case study areas

To answer the questions above a multiple case study is designed in the three Turkish industrial clusters, where the units of analysis are defined as manufacturing firms. As discussed earlier, with the help of this case study research it is expected to compare networking and innovative behaviour of firms in the three clusters specialized in traditional, modern and high-tech production activities. These three clusters are Denizli,[5] Bursa,[6] and Ankara,[7] which represent the different types of industrial

agglomerations of Turkey specialized in three categories of productive activities (table 1).

These industrial agglomerations, which are denoted as 'Turkish industrial clusters' in this study, are the outcome of the economic and spatial transformation that has been taking place in Turkey since the beginning of 1980s. In fact, the 1980s became the turning point of economic policies in Turkey, from protectionist attitudes which dominated Turkish economic policy prior to this period to increasing reliance on market forces. While the new programme greatly freed up foreign trade and exchange, in 1984 major structural changes further liberalized trade by dismantling foreign exchange controls and quotas on imports, and by revising tariffs. The liberalization initiative has continued by export promotion policies, by the depreciation of exchange rates and direct subsidies[8] (Şenses 1989). The efforts of economic transformation are further supported by several private, semi-public and public institutions. Economic transformations, the new competitive environment and the loss of protectionist policies also enforced spatial transformation. While the areas with relatively developed manufacturing capacities became the cores of export activities, the regions with a weak manufacturing basis obviously had difficulties in becoming involved in the newly-emerging trade relations with the external world. What is striking during this spatial economic transformation is the increasing importance of some industrial agglomerations that are located far from the earlier manufacturing cores, in terms of production and exports. Obviously, these new industrial agglomerations are located in the different parts of Turkey (figure 1) and at the different stages of evolution; if we use the terminology of van Dijk and Sverrisson (2003) they range from location clusters to industrial districts.

These areas attracted a wide interest during the last decade and various studies have been prepared especially on Denizli (Eraydin 1998, 2002a, c, Erendil 1998, Özelçi 2002, Armatlı-Köroğlu and Beyhan 2003, Öz 2004), Bursa (Reyhan 1990, Eraydin 1992, 1995, Ersoy 1993, Saraçoğlu 1993) and recently on Ankara (Tekeli 1994, Dede 1999). Ankara is defined as one of the peripheral industrial clusters in this study, since although Ankara is the capital of Turkey and important in terms of its administrative functions, still it is far from the main industrial core, namely the Istanbul metropolitan region. Recently there have been some attempts to specialize in some high-tech sectors, in order to change the earlier industrial basis shaped mainly by local demand. Although these clusters do not represent idealized 'industrial districts' of the 1980s literature, their basic characteristics that are summarized in table 1 show that they have different features, which will help us to discuss how far the areas of specialization and structural differences are important in the innovativeness and networking patterns of SMEs located in these clusters.

3.2 Methodological aspects of the study

Owing to the lack of systematic firm data, a field study became necessary in order to examine the network relations and innovativeness of firms in each industrial cluster. For our purposes an embedded case study design was suitable (Yin 1994), which makes it possible to compare different types of regions and different types of firm groups. The unit of analysis is the SMEs with 10–249 employees, in specialized sectors of Ankara, Bursa and Denizli clusters. In order to define sample firms the following steps were followed.

Table 1. The main characteristics of the clusters studied.

Factors/ Conditions	*Denizli*	*Bursa*	*Ankara*
The type of the manufacturing cluster	Industrial district	Innovative manufacturing cluster	High-tech industrial cluster
Area of specialization	Textiles, especially towels and bathrobes (more than 50% of total production of Turkey in these items)	Textiles for home furnishing Engineering industries (Machinery, including car manufacturing firms and their suppliers)	Machinery, electronics, the defence industry and software
The main character of the cluster	Traditional Small artisanal, and highly specialized family owned firms located in close proximity	Traditional/Modern Small Artisanal, and highly specialized firms as well as large multinational companies co-operating with these small enterprises	Modern/High-tech High-tech firms of different size
Main observed benefit	Co-operation in production and marketing for international markets	Collective competition in specialized fields	Weak collaborative environment Market relations with state institutions
Technical dynamic	Complementarities	Specialization increasing shares of export in engineering industries Adaptation and product development for international markets	Adaptation of new technologies for national market
Social capital	Collaborative action, trust and reciprocity Strong social networks	Competitive collaboration	Access to qualified labour

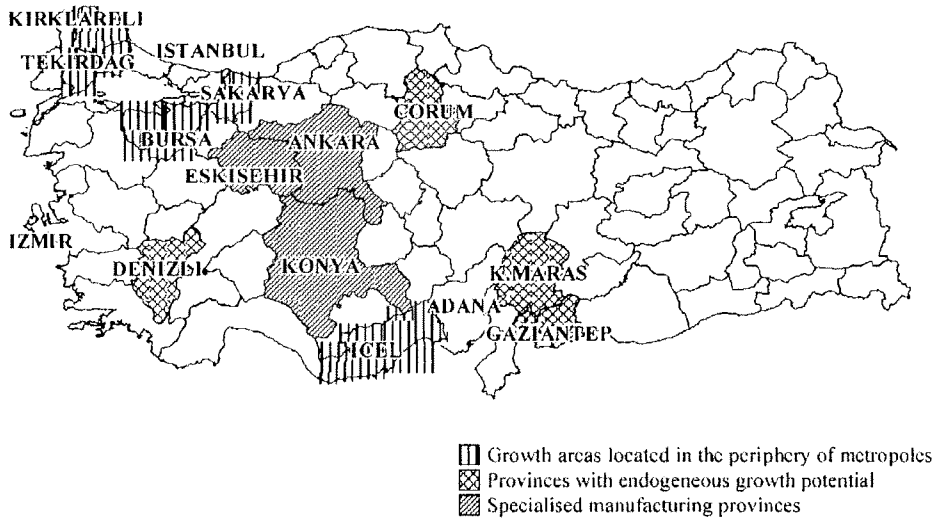

Figure 1. New growth regions located in different parts of Turkey.

- The lists of SMEs in each cluster were provided by the local Chambers of Industry and Commerce in March 2003.
- The areas of specialization in each cluster were identified; namely machinery and electronics in Ankara, textiles in Denizli and machinery and textiles in Bursa. The new lists of SMEs in each area of specialization were formed, which included 332 firms in Ankara, 280 firms in Bursa and 212 firms in Denizli.
- A questionnaire form was mailed to each firm on the list. Before sending the questionnaire forms, the firm managers were called by telephone (it was not possible to reach 190 firms out of 824 by phone) in order to explain the aim of the study and the questions in the form. Only 131 valid forms were received between 23 March 2003 and 15 June 2003, excluding 36 forms with missing answers or inconsistent information. The high number of no-responses is due to the lack of sufficient personnel in these firms for systematic data collection and the unwillingness of small and middle-sized firms to devote time and energy for the paperwork, which has 'no financial return to them' as some of the entrepreneurs indicated. In fact, most of the surveys based on mailed questionnaires in Turkey indicate entrepreneurs' reluctance for written communication.
- The number of interview forms returned with full information reached 72 in Ankara, 32 in Bursa, and 27 in Denizli. The ratio of completed forms in the total is the highest in Ankara (22.3%), 12.7% in Denizli and 11.4% in Bursa (table 2). The validity of the samples has been checked to see whether the firm size distribution in the sample (in terms of employees) is similar to the distribution of all firms in the lists.

The questionnaire form included several questions related to (1) structural characteristics of firms, (2) innovative activities of firms, and (3) different types of local, national and global linkages of firms, besides some questions in order to check its internal validity and for inconsistent information. The evaluation of the validity of data collected needed some benchmark information. First, the information

Table 2. Survey firms by industrial clusters.

	Ankara		*Bursa*		*Denizli*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Completed questionnaires	72	22.3	32	11.4	27	12.7
Firms with no response	103	31.0	58	20.7	39	18.5
Firms with no response after direct contact*	142	42.8	173	61.8	140	66.0
Questionnaires with missing information	8	2.4	11	3.9	4	1.9
Questionnaires with inconsistent information	5	1.5	6	2.2	2	0.9
Total	332	100	280	100	212	100

*Although the managers or entrepreneurs promised to fill and send the form during the telephone call, the completed forms were not received.

gathered from the questionnaires on R&D activities and innovation of firms has been checked by the statistics provided by the State Institute of Statistics at the sectoral level. Second, face-to-face interviews with several members of the local Chambers of Industry and other Entrepreneurs' Associations in each industrial cluster provided both a general understanding of the existing network patterns. They also enabled us to confirm that collected data was consistent with their general descriptions of the networking patterns both in terms of geographical levels and functional groups.

Using collected data it was possible to define the number of innovations and the number of different types of functional linkages of each firm at different geographical levels. The data on firm level is later categorized according to the range of innovations (including improvements and modifications) and the importance of the different types of linkages, in order to produce tables to verify the propositions defined earlier. Moreover, in order to compare the results through case studies, the tables are replicated for each case-study area to see whether specialization in different production sectors matters. The case-study areas, which represent the different areas of production specialization, enable us to generalize the outcomes.

4. Exploring networking and innovation in peripheral industrial clusters specialized on different types of sectors

This section of the paper aims to present the findings on the importance of innovative capacity and linkages of firms at different geographical levels in each industrial cluster.

4.1 Innovative capacities of the Turkish industrial clusters

In the first step of analysis the innovative capacities of firms in the three industrial clusters are identified with the help of several indicators. In this study, innovation is defined in a broad sense, which includes the incremental forms of innovation including modification in products and processes (Freeman 1995), besides introduction to new products or processes. Following the variables used in various

studies (Keeble *et al.* 1998, Larsson and Malmberg 1999, Arndt and Sternberg 2000, Koschatzky 2000, Romijn and Albu 2002) the direct measures of innovation were identified as the number of patents, quality certificates and new and modified products and processes introduced within a firm. Indirect measures of innovative capacity for SMEs, on the other hand, were accepted as the share of R&D personnel in total employment and the percentage of R&D expenditures in total expenditures of a firm. Table 3 presents the values of each indicator for each study area.

Some of the figures presented in table 3 are quite striking. In the three case study areas namely Denizli, Bursa and Ankara the shares of firms that introduced either product or process innovations are 77.8%, 87.5% and 83.3%, respectively. These ratios are above the figures provided by the State Institute of Statistics (2000)[9] indicating that only 29.4% of manufacturing firms have introduced either a product or a process innovation in Turkey. The high numbers of new products and processes introduced by the production units in the three Turkish industrial clusters indicate the deliberate efforts for quick adaptation to changing market conditions as well as the clear choice of protecting their existing competitive advantages. They also imply the dynamic nature of firms in all of these clusters.

Similarly, the values of other indicators related to innovativeness in each industrial cluster are higher than the Turkish average (table 3), namely the share of patentees in total firms, the share of R&D expenditures in total expenditures and the average ratio of R&D personnel to total employees. There are, however, differences among the industrial clusters in terms of direct and indirect measures of innovativeness. The data presented in table 3 show that in almost all indicators of innovativeness Ankara has the highest ranks, which is followed by Bursa. As expected Denizli being a cluster of traditional production sectors, namely textiles and garments, has the lowest values in most of the indicators. In fact, most of the firms engaged in high-tech sectors in Ankara are interested in adopting new technologies using the various support schemes of several central government institutions. Being located in the capital city these firms have easier access to national public institutions as well as semi-public and non-governmental institutions such

Table 3. R&D and innovation indicators, 2001–2003.

	Denizli	*Bursa*	*Ankara*	*Turkey*
The share of R&D personnel in total employees (%)	0.8	3.9	4.7	0.13*
The share of R&D expenditure in total (%)	3.6	1.9	7.5	0.64**
The share patentees in the total firms (%)	25.9	28.9	22.2	5.23***
The share of firms that introduced new products or modified products (%)	77.8	76.9	80.6	16.9***
Average number of new products	3.6	5.9	5.5	n.a.
The share of firms that introduced process or improved existing ones (%)	59.2	64.6	61.1	21.7***
Average number of new process	2.1	2.3	2.4	n.a.
The share of firms either introduced a product or a process innovation (%)	77.8	87.5	83.3	29.4***

Source: Calculated from survey data.

Note: Not all indicators are available for Turkey.

*Share of R&D personnel in total workforce (*OECD, Science and Technology Indicators, 2002*).

**R&D expenditures in GDP% (*R&D Questionnaire Survey of SIS, 1998–2000*).

as the Turkish Scientific Council (TUBITAK), the Small and Medium Enterprise Promotion Agency (KOSGEB) and many others. These features of Ankara create an innovative atmosphere that support R&D in-firm activities and reinforce innovation capacities of firms. On the other hand, SMEs in Bursa use the advantage of applying higher levels of technology as well as accumulated knowledge and experience of this industrial cluster, since this area is one of the earliest centres of machinery and textiles. That is why while the share of R&D expenditure is low, the firms are quite innovative, if we include incremental innovations and modifications of products.

The comparison of indicators shows that although there are differences among industrial clusters, all of them are quite innovative without very strong internal R&D activities. The numbers of product and process innovations including incremental innovations and improvements are high in all clusters. In traditional sectors the number of innovations are slightly lower. Denizli, with being specialized in a traditional sector, textile and clothing products, has lower numbers, while Ankara and Bursa have higher values in product and process innovations. Interestingly, the average number of patents per firm, as one of the main indicators of innovation, is not higher in Ankara compared to the Denizli and Bursa clusters. Innovation in low-technology traditional sectors is not contradictory, as clearly defined by the SMEPOL project (Tödtling and Kaufmann 2001). Owing to rapidly changing customers' needs and fashions in the textile industry, firms are forced to engage in some modification of activities. This explanation is supported by the study of the State Institute of Statistics (2000), which points out that the number of firms that applied for a patent in the clothing sector (20% of firms) is higher than in the machinery sector (16.4% of firms) in Turkey. Besides, the lower numbers of patents in the machinery sector is explained by the owner of an engineering company as, 'receiving a patent in machinery sector is more difficult than taking it in textile production sector'.

4.2 Network patterns in Turkish industrial clusters

The second step of analysis aimed to define the network patterns of firms in all three clusters at three geographical levels, namely local/regional, national and global. Looking at the different levels of network relations we have defined four main types of linkages: production relations, service relations, marketing relations and knowledge relations. These relations both include business-to-business relations as well as relations between firms and social and economic institutions as suggested by Johannisson (2002).

In Denizli both local and global connections are important, while the relations at the national level have only been used to reach specialized services, especially the ones provided by central government institutions. Among the total connections 53.08% are local, 13.62% national and 33.3% are international/global (table 4). These figures clearly show the strong motivation of local firms to form linkages with the different partners of the global market.

Local relations mainly involve production activities, and the share of subcontracting relations (as a subcontractor or a parent firm) accounts for 57.6% of all connections in Denizli, showing the interwoven nature of textile-clothing pro-

Table 4. Networks relations at different levels in Denizli.

Types of linkages		*Geographical levels (%)*		
		Local	*National*	*Global*
Production Relations (P)				
P1	Raw material supplier firms	6.8	38.95	9.05
P2	Subcontactors	27.3	3.2	0.0
P3	Parent firms, which the firm is serving as a subcontractor	30.3	0.0	7.3
P4	Suppliers	2.7	0.0	0.9
	Share of production relations in total	67.0	42.1	17.2
Service Relations (S)				
S1	Consultancy firms	0.8	2.1	0.0
S2	Private banks	4.3	11.6	0.9
S3	Public banks and financial institutions	0.0	16.8	0.0
S4	Technical services and technology transfer firms	1.9	2.1	2.2
S5	Public technical services	1.4	3.2	0.0
S6	Universities	1.4	2.1	0.0
S7	Technical education services–private	0.5	0.0	0.0
S8	Public training services	1.4	0.0	0.0
	Share of service relations in total	11.6	37.9	3.0
Marketing Relations (M)				
M1	Customers	0.5	2.1	59.5
M2	Intermediate firms	0.3	7.4	15.5
M3	Chain stores	0.3	1.1	0.4
M4	Foreign trade companies	0.3	6.3	0.0
M5	Co-operative marketing firms	3.2	1.1	0.0
	Share of marketing relations in total	4.6	18.0	75.4
Knowledge Relations (K)				
K1	Competitors	4.6	1.1	0.0
K2	Leader firms	3.0	1.1	0.0
K3	Customers and machinery suppliers	3.8	0.0	3.9
K4	Trust circles	2.7	0.0	0.4
K5	Institutions, chambers, associations	2.7	0.0	0.0
	Share of knowledge relations in total	16.8	2.2	4.3
Total connections		100.0	100.0	100.0
Share of geographical levels		53.1	13.6	33.3

Source: Eraydın, A. and Fingleton, B (2003).

duction. In production organization, subcontracting is very important at different stages of production, which provides flexibilities in the production process and enables firms to go beyond their capacity (Armatlı-Köroğlu and Beyhan 2003, Öz 2004). On the other hand, linkages at the national level are important in raw material supply and services. A closer look at service linkages, especially central government services, shows that they are still provided at the national level, although recently there is an increasing number of institutions specialized in service provision at the local level. As many studies indicated, global relations are more marketing-oriented (Eraydın 2002a, b, Erendil 1998). The interviews of this study also showed that almost all the firms in this cluster have either direct or indirect links with external markets. There is a considerable number of firms directly producing for exports by using different marketing strategies: they can be grouped into two; those directly connected to their global customers and the firms that use

intermediaries (table 4). It is also interesting to note that global marketing strategies enforce them to use more global raw material supplies. In the integration process to export markets, foreign trade companies and intermediate firms located in Istanbul are quite influential as mediators between local firms and their possible global partners.

In terms of knowledge sources, the local level has a clear dominance and interestingly local competitors and leading firms in these clusters are important sources of knowledge (table 4). Small and medium sized firms follow successful leading firms and imitate them in technological development and innovation. Therefore, the dissemination of knowledge through social networks is important. The success of the Denizli cluster depends on the local collaborative environment, the availability of high quality raw materials, the historical roots of textile production and entrepreneurial capacity. Moreover, the local environment mainly depends on competition that is balanced by co-operation, which is based upon mutual trust (Eraydın 2002a, c). The results of this study also reveal that both local competitors and local trust circles such as family and kinship relations, friendship and compatriot relations, religious communities, relations based on past familiarity (Özelçi 2002) are important as sources of knowledge.

In Bursa local and national relations are important for firms that are specialized in textiles and engineering industries, including car manufacturing firms (table 5). Local linkages in production, services, marketing and knowledge-sharing activities constitute 51.87% of the total linkages, while 36.78% of the total linkages is at the national level and 11.35% at the global level. Local networks are mainly related to marketing and production activities and they constitute 79.14% of all local networks. Among the local production relations subcontracting linkages have relatively small share compared to local subcontracting relations in Denizli. It could be argued that while in Bursa there is hierarchical production environment, in Denizli there are co-operative relations of equals. Service and knowledge networks have relatively less importance at the local level and even less at the national and global levels. On the other hand, in customer relations, relations with chain stores, foreign trade companies and co-operative marketing firms, the share of national linkages is higher than the share of local linkages.

Global linkages are still less important for the firms in Ankara high-tech cluster. Marketing relations have a clear dominance within the total global linkages and relations with customers are the most important linkages with the outside world. However, there is an increasing interest in export activities, although the largest share of products are still marketed at the national market. That situation reflects itself in network relations. The network relations of our sample of Ankara firms are mainly at the national level, whereas local and global linkages make up less of the total (table 6).

The data on Ankara firms shows that marketing relations, especially linkages with customers, are the most important types of networks for these firms. In Ankara many firms have local market relations with state institutions, which are the main customers, providing firms with a guarantee for their production. At the national level firms are integrated within networks formed by intermediate firms and chain stores. The production relations at all levels indicate limited subcontracting relations and limited linkages between firms and support institutions. Interestingly, although the major universities and research institutions are located in Ankara, the net-

Table 5. Networks relations at different levels in Bursa.

Types of linkages		*Geographical levels (%)*		
		Local	*National*	*Global*
Production Relations (P)				
P1	Raw material supplier firms	18.34	18.97	5.45
P2	Subcontactors	5.34	2.48	0.26
P3	Parent firms, which the firm is serving as a subcontractor	1.53	0.67	0
P4	Suppliers	8.29	1.68	0.26
	Share of production relations in total	33.50	23.80	5.97
Service Relations (S)				
S1	Consultancy firms	1.87	0.64	0
S2	Private banks	3.35	0.16	0
S3	Public banks and financial institutions	0.85	0.08	0
S4	Technical services and technology transfer firms	1.13	0.16	0.26
S5	Public technical services	0.68	0	0
S6	Universities	0.17	0	0
S7	Technical Education services–private	0.68	0.24	0
S8	Public training services	0.23	0.08	0
	Share of service relations in total	8.96	1.36	0.26
Marketing Relations (M)				
M1	Customers	38.55	59.56	84.67
M2	Intermediate firms	1.76	1.04	0.52
M3	Chain stores	3.29	5.84	2.08
M4	Foreign trade companies	0.62	0.72	0
M5	Co-operative marketing firms	1.42	2.48	0
	Share of marketing relations in total	45.64	69.64	87.27
Knowledge Relations (K)				
K1	Competitors	6.25	2.48	3.12
K2	Leader firms	1.02	0.56	0.26
K3	Customers and machinery suppliers	0.34	0.08	0.26
K4	Trust circles	2.53	1.60	2.86
K5	Institutions, chambers, associations	1.76	0.48	0
	Share of knowledge relations in total	11.90	5.20	6.50
Total connections		100.0	100.0	100.0
Share of geographical levels		51.9	36.8	11.3

Source: Armatlı-Köroğlu (2004).

works between firms and these institutions are evidently quite weak. This result also shows that firms in Ankara do not utilize the chance of spatial proximity to related institutions perfectly.

As in other clusters, the analysis of knowledge networks shows that linkages for knowledge transfer are the most important at the local level, and indeed the firms themselves declare that their main source of knowledge is competitors in close proximity. Although there is no strong regional collaborative environment, sub-communities are more important even in the formation of entrepreneurial networks. For example, taking place in the same social clubs, being from the same university or college are more important at the constitution of knowledge networks. In contrast, linkages that enable firms to transfer knowledge are less important at the global level. The figures reveal that in the current situation the major con-

Table 6. Networks relations at different levels in Ankara.

Types of linkages		*Geographical levels (%)*		
		Local	*National*	*Global*
Production Relations (P)				
P1	Raw material supplier firms	12.7	6.79	23.96
P2	Subcontactors	1.7	0.11	0.68
P3	Parent firms, which the firm is serving as a subcontractor	1.1	0.15	0.68
P4	Suppliers	10.2	1.07	8.50
	Share of production relations in total	25.6	8.12	33.81
Service Relations (S)				
S1	Consultancy firms	0.9	0.11	1.19
S2	Private banks	2.9	0.25	1.10
S3	Public banks and financial institutions	0.9	0.08	0.00
S4	Technical services and technology transfer firms	0.8	0.09	0.85
S5	Public technical services	0.9	0.04	0.00
S6	Universities	0.3	0.02	0.00
S7	Technical education services-private	0.2	0.05	0.00
S8	Public training services	0.2	0.01	0.00
	Share of service relations in total	7.1	0.66	3.14
Marketing Relations (M)				
M1	Customers	47.4	78.62	33.31
M2	Intermediate firms	5.6	7.53	8.58
M3	Chain stores	10.6	3.37	8.58
M4	Foreign trade companies	0.1	0.26	4.67
M5	Co-operative marketing firms	0.5	0.05	0.08
	Share of marketing relations in total	64.3	89.83	55.23
Knowledge Relations (K)				
K1	Competitors	0.8	0.67	2.38
K2	Leader firms	0.5	0.13	1.27
K3	Customers and machinery suppliers	0.2	0.08	1.44
K4	Trust circles	0.7	0.24	1.53
K5	Institutions, chambers, associations	0.7	0.25	1.19
	Share of knowledge relations in total	2.9	1.38	7.82
Total connections		100.0	100.0	100.0
Share of geographical levels		37.3	55.9	6.8

Source: Eraydın, A. and Fingleton, B (2003).

nection of the Ankara technology-intensive manufacturing sector to the global world is via direct sales to foreign firms.

5. The main results of the empirical survey: the importance of network relations in the innovativeness of firms located in industrial clusters

The detailed analyses on the network relations of firms that are located in different industrial clusters also indicate the increasing concern of firms to form linkages at different spatial levels. In this section of the paper, first, the findings on the network patterns is evaluated with the help of two main questions and then the remaining part this section is focused on the contribution of local and global linkages on the innovativeness of firms.

5.1 Importance of networks at different spatial levels

The first question is related to the weight of linkages at different geographical levels, which helps us to discuss the importance of proximity and locally-embedded relations versus the benefits of partnerships and knowledge transfer between distant but interacting units.

According to our findings local linkages constitute at least one-third of the total network relations in almost all clusters, but the weight of various local networks differentiates considerably among them. Local production networks are important in Denizli, which are dominated by subcontracting relations and it is not surprising to see intensive subcontracting relations in a place specialized in textiles and clothing production. On the other hand the firms in Bursa and Ankara have limited subcontracting relations except machinery producing firms, due to low subcontracting relations in the other production sectors. Local networks are also important in knowledge transfer as identified in some other studies (Lundvall 1995). For local firms within the same field of production, knowledge-based networking is very important. Both in innovative activities and in product development it is observed that local knowledge networks have a very important contribution. This is also true for Denizli firms, where they use local knowledge networks for marketing, product development and technological updating of their firms (Eraydın 2002c). However, whether knowledge disseminated by networks is strategic or not is another question. There is a growing literature that claims that the effectiveness of localized networks is related to social capital, which covers cultural norms of trust, co-operation and reciprocity (Fukuyama 1995). Likewise, Maskell and Malmberg (1999: 17) define share-trust as a local capability.

National linkages are still important, although the waves of globalization reduced the role of nation states and national boundaries. It is also evident that most of the economic and social relations are still national space bounded. This is especially true in terms of marketing relations of the firms in Bursa and Ankara, which still serve for the national market. In Denizli, on the other hand, since international markets are more important than the national and local markets, services provided at the national level are more important for firms.

As the Denizli case clearly shows, global linkages seem closely related to the existing export capacities of clusters, rather than their level of technological basis or the innovativeness of the existing sectors, since the higher shares of global linkages are related to marketing. In marketing relations firms still prefer firm-to-firm relations even in global marketing. The share of intermediaries is relatively less and the linkages with foreign trade companies are even smaller. There are fewer production relations at the global level except in Ankara, which imports some of the raw materials used in production from abroad and tends to be involved more in global knowledge networks. The share of firms that uses a global service firm or a global institution is very limited and similarly most of the firms do not use available global knowledge networks. The number of firms primarily co-operating with foreign counterparts is quite limited as found also in previous studies (Arndt and Sternberg, 2000). In fact, the figures support the findings of Freel (2003: 754) on Scottish industries that indicated that larger firms are less spatially embedded than smaller firms and exporters are less embedded than non-exporters. Different barriers for global networking can explain the reason why global networking except simple marketing relations is still quite low. The impor-

tant barriers can be given as inadequate competence, problems related to building a common language, lack of complementary activities, distance from the technological frontiers and asymmetrical power relations among firms.

The general outcomes of the analysis on network patterns of firms in all three clusters can be generalized as follows: the figures indicate that local linkages are still very important, but in certain activities the national linkages act as service providers or facilitators in the marketing relations. In terms of global relations it is evident that all of the firms in these clusters are at the stage of building their international relations and marketing networks are the first step to get connected to the global market. However, the findings on three Turkish industrial clusters indicate that the weight of local and global linkages is not similar among these industrial clusters. How can we explain differences in the weight of local, national and global linkages?

One of the reasons for this situation is the sectoral difference in the composition of manufacturing activities. Sectoral differences are important both for local activities and also for local network formation. In various studies it appears that sectoral differences matter. That is why in many studies existing sectors are classified as new-traditional or innovative-non-innovative. Koschatzky (1999), on the other hand, grouped firms according to innovation intensity and found the supporting evidence for stronger emphasis of innovative firms on external (non-local) networks. Kanter (1996) used new-traditional groups in the analysis of the networking behaviour of firms and found a high intensity of local networks in growing sectors and new fields of technology, whereas traditional industries appeared to be independent from strong local network linkages.

Our findings are different. These clearly show that for traditional industries local production and knowledge networks are relatively more important. For example, in Denizli due to the character of production it is possible to see very intense production networking and information sharing. Existing information on linkage patterns also point to the fact that national characteristics and systems still matter. This is especially true in service provision and marketing, due to differences in the availability of facilities. Although in the globalizing world the national differences are believed to decrease, empirical evidence indicates that national institutional differences as well as differences in production culture are important in the explanation of networking patterns (Koschatzky 2000, Braun *et al.* 2002, Sydow and Staber 2002). Also it is possible to see the different networking behaviour between the firms located in central and peripheral regions, since contact patterns and opportunities are widely differentiated among them. However, the review of the studies on networking demonstrates that it is very difficult to bring rough generalizations in such complicated relational environments. That is why most of the studies stay at the descriptive level or they give some general explanations such as the difference may be due to differences in 'the tradition of cooperation' (Cooke and Morgan 1998).

5.2 *The importance of different types of networks*

The second question is on the weight of different linkages between firms and different institutions. The findings related to networking patterns in all three clusters show that firm-to-firm linkages are dominant compared to the linkages between firms

and institutions. Although there are an increasing variety of institutions for technical-support, financial services, R&D, marketing and knowledge dissemination, none the less networks between firms and institutions have secondary importance. This general picture supports the findings of various studies, which emphasize the importance of firm-to-firm relations not only in production, but also in knowledge dissemination (Maskell 1998, Arndt and Sternberg 2000). The findings also support the importance of networking with suppliers, customers (Tödtling and Kaufmann 1999, 2001, Camagni and Capello 2000, Bergman and Feser 2001, Braun *et al.* 2002, Freel 2003) as well as competitors (Arndt and Sternberg 2000).

Production networks form an important part of linkages. However, according to the characteristics of firms the level of interaction varies at different geographical levels. While linkages with raw material supplier firms constitute an important part of production relations, for the firms that are specialized in technology-intensive production, relations with suppliers are even more important. On the other hand, in traditional sectors, such as textiles, subcontracting relations especially at the local level are more significant.

The figures reveal that still most of the firms do not get benefit from the services provided at local, national or global levels. In terms of using service networks there are also differences among the clusters studied. Obviously, the institutional variety and service facilities provided in different clusters are crucial in determining collaborative actions and other forms and linkages (Saxenian 1994). The use of available service networks in three of the clusters studied is also different to that in several European regions. Arndt and Sternberg (2000) give the share of firms that use service networks as 67% and R&D services as 30% for 10 different European regions, whereas the average figure for three Turkish clusters is 90% (financial linkages are included) in total services, but 12% in R&D-based linkages.

Institutional variety accounts for the diversity of co-existing and complementary knowledge basis and facilities in the local industrial structure (Patrucco 2003). It is interesting to note the very low level of networking between firms and R&D institutions and universities, although in both Denizli and Bursa a large local university exists and in Ankara there are numerous universities specializing in technical subjects. These findings are not unique. Many studies, even the ones on advanced regions, indicate weak relations between firms and universities (Collinson 2000, Braun *et al.* 2002). However, it is not certain that intensive links with universities can induce innovations (Freel 2003), although the strong emphasis is on these relations in the literature (Castells 1994).

Marketing relations are completely different compared to service linkages. They constitute most of the global relations. Only in Denizli the ratio of marketing in total local relations are limited, since most of the products are sold to foreign countries, but this ratio is higher in Bursa and Ankara. Interviews with individual firms indicate that still the marketing strategy is to form direct contact with global partners, instead of using global intermediaries. The firms take a huge burden to find many customers, but they claim that this strategy is necessary in order to build long-term relations. Obviously, the use of available services is connected to the relational capacity of firms (Freel 2003).

Local knowledge networks seems to be important for firms in traditional production sectors as we see in Denizli and Bursa, since still 'following the best practice' is the main attitude of many entrepreneurs. However, when there is need for external

knowledge transfer there appears to be new linkages with foreign partners and foreign institutions that serve for the specialized segments of production.

5.3 How far are local and global linkages important in innovative activities?

As discussed earlier theoretical debates on industrial districts affirm positive relations between innovativeness and networking. In this last section of the study we have defined two propositions on the importance of local networking for innovativeness of firms: 'firms in the manufacturing sector with strong intra-regional linkages are more successful in innovative activities than firms with little connection to their regions' and 'global linkages that facilitate knowledge transfer from the external world are more important than the local or national linkages of firms'.

First, in order to analyse the effects of local networks on innovativeness, the firms in the sample have been grouped into two according to their number of local linkages. The dividing point between the two groups is the average number of local linkages per firm. SMEs with lower shares of local linkages than the average are described as 'SMEs with weak local linkages'. Similarly, SMEs with local linkages more than the average are defined as 'SMEs with strong local linkages'. We found that 54 firms had the lower numbers of local linkages, while the remaining 77 firms have relatively higher numbers of local linkages. The firms are also categorized into three groups[10] according to their degree of innovativeness, which is defined by the total numbers of innovations and improvements in products and processes in the last three years. In our sample 67 firms have low numbers (0–5) of innovations, 38 firms are in the medium innovation group (6–10) and 26 firms have high (10+) numbers of innovation. Table 7 presents the cross-tabulation of the two data sets for each cluster, namely firms by the degree of innovativeness and by the intensity of local linkages.

The figures presented in the table show a positive relationship between local embeddedness and innovativeness. The figures indicate that the firms with strong local linkages have higher numbers of innovations, while most of the firms with weak local linkages are less innovative. A total of 70.4% of the firms with weak local linkages have low innovation capacity, while the same ratio is only 37.7% for the firms that are actively connected to other firms in the same cluster. On the other hand among the innovative firms the share of firms with high numbers of local linkages (27.3%) is more than the ones with weak local linkages (11.1%) (table 7). These observations are verified by statistical analysis. The chi-square values indicate that the innovativeness of firms with low numbers of linkages is significantly different than the ones with higher number of linkages, except Denizli. In Bursa and Ankara innovativeness of firms and their number of local linkages are positively related. The difference in innovativeness among firms with different numbers of local linkages is not found to be significant in Denizli. In fact, in this cluster the number of SMEs with low number of local linkages is quite limited due to the very strong collaborative environment of this cluster.

Second, as in many studies (Koschatzky 1999, Arndt and Sternberg 2000) the aim of the analytical work at this stage was to compare the importance of local and global linkages for innovative activities. For this purpose the sample firms are grouped into three according to their dominant types of linkages: (1) firms with a greater number of global linkages, (2) firms that rely on their national linkages in

Table 7. Innovativeness of SMEs by their intensity of local linkages.

		Innovation Capacity of SMEs				
		Low innovation	*Medium innovation*	*High innovation*	*Total* (n)	χ^2
Ankara	SMEs with weak	25	6	3	34	
	local linkages	73.6%	17.6%	8.8%	100.0%	
	SMEs with strong	13	14	11	38	
	local linkages	34.2%	36.8%	29.0%	100.0%	11.37***
	Total (*n*)	52.8	27.8	19.4	72	
Bursa	SMEs with weak	8	3	2	13	
	local linkages	61.5%	23.1%	15.4%	100.0%	
	SMEs with strong	5	8	6	19	
	local linkages	26.3%	42.1%	31.6%	100.0%	3.93*
	Total (*n*)	40.6	34.4	25.0	32	
Denizli	SMEs with weak	5	1	1	7	
	local linkages	71.4%	14.3%	14.3%	100.0%	
	SMEs with strong	11	5	4	20	
	local linkages	55.0%	25.0%	20.0%	100.0%	0.57
	Total (*n*)	59.3	22.2	18.5	27	
Total sample	SMEs with weak	38	10	6	54	
	local linkages	70.4%	18.5%	11.1%	100.0%	
	SMEs with strong	29	27	21	77	13.73***
	local linkages	37.7%	35.5%	27.3%	100.0%	
	Total (*n*)	51.1	29.2	20.0	131	

Degree of Innovative Activities: Low innovation = 0–5, Medium innovation = 6–10, High innovation = 11 + innovation in the last 3 years.

In Bursa and Denizli, for the calculation of χ^2 medium and high innovation categories are merged due to the inadequate frequencies. In Denizli two cells (50%) have an expected count of less than 5.

*Significant at 5% level.

***Significant at 0.5% level.

Source: Calculated from survey data.

their activities, and (3) firms which prefer the use of local linkages. Next, in order to compare the importance of local, national and global linkages for innovative activities, the linkages of firms are tabulated with the level of innovativeness. However, due to statistical reasons, namely in order not to have empty cells of the table, the three innovation categories of table 7 have been reduced into two by merging high and medium innovation groups under the heading 'high'. Still, in this analysis the number of firms (67 firms) in the category 'low innovativeness' is more than the firms in the new category reached by merging earlier categories; high and medium (64 firms) (table 8). In Denizli we defined only two groups of firms according to their types of linkages, namely the firms with greater number of local linkages and the firms with greater number of global linkages, since SMEs with greater national linkages do not exist in this cluster.

The analytical findings show that 68.7% of firms with global networks have a high number of innovations, while only 31.3% of firms with local linkages and 62.9% of firms with strong national linkages are highly innovative. Similarly, in all three clusters it is possible to see higher numbers of innovations by the firms with relatively higher numbers of global linkages. In general the data reveals that firms with global networks have higher numbers of innovations than the firms identified by their dense local networks. This finding confirms the conclusions of several authors, such as Larsson and Malmberg (1999) and Koschatzky (1999), who also emphasized the importance of global networks in innovation processes.

Table 8. Innovativeness of SMEs by their dominant types of linkages.

		*Innovation capacity of SMEs***			
		Low innovation	*High innovation*	*Total* (n)	χ^2
Ankara	SMEs with greater numbers of				
	Local linkages	25	12	37	
		67.6%	34.4%	100.0%	
	National linkages	10	16	26	
		38.5%	61.5%	100.0%	6.75*
	Global linkages	3	6	9	
		33.3%	66.7%	100.0%	
	Total (%)	52.8	47.2	72	
Bursa	SMEs with greater numbers of				
	Local linkages	8	5	13	
		61.5%	38.5%	100.0%	
	National linkages	3	6	9	5.40
		33.3%	66.7%	100.0%	
	Global linkages	2	8	10	
		20.0%	80.0%	100.0%	0.067
	Total (%)	40.6	59.4	32	
Denizli	SMEs with greater numbers of				
	Local linkages	11	3	14	
		78.6%	21.4%	100.0%	4.49*
	Global linkages	5	8	13	
		38.5%	61.5%	100.0%	
	Total (%)	59.3	40.7	27	
Entire sample	SMEs with greater numbers of				
	Local linkages	44	20	64	
		68.7%	31.3%	100.0%	
	National linkages	13	22	35	15.75**
		31.1%	62.9%	100.0%	
	Global linkages	10	22	32	
		31.3%	68.7%	100.0%	
	Total (%)	51.1	48.9	131	

Degree of Innovative Activities: Low innovation = 0–5, High innovation = 6 + innovation in the last 3 years.
In Denizli there are no SMEs with national linkages. In Bursa two cells (33%) have an expected count of less than 5.
*Significant 5% level.
**Significant 2% level.
Source: Calculated from survey data.

The chi-square analysis also shows both in Ankara and Denizli and in the total sample the difference in innovativeness is statistically significant among firms denoted by their dominant type of linkages, namely local, national and global (table 8). In Bursa, on the other hand, the level of innovativeness of firms with different linkage patterns is not statistically significant.

6. Concluding remarks

Since the 1980s every country in the world has experienced spatial transformations due to the changing conditions defined by the world economic crisis and by the efforts for recovery and restructuring in the following years. Turkey is one of the countries that has been deeply affected by the changing economic conditions.

The crisis had long-lasting effects and influenced the economic and regional policies of the earlier period. Less intervention and less protection became the new basis of regional policies in Turkey in this new era that is defined by the waves of liberalization. Most of the regions have been negatively affected by the new circumstances. There are, however, considerably successful ones especially in manufacturing activity in terms of income growth and access to international markets. These clusters are located in different parts of the country; some of which are located in the periphery of the metropolitan areas and others in the inner parts of Anatolia. These industrial clusters changed their earlier positions by using their existing local capacities quite effectively and benefited from the opportunities provided by global relations. In this paper we studied three of these clusters, which grew rapidly in the last decade and integrated to the international economy by their increasing amounts of exports.

The basic features of the new industrial clusters that are used as the case study areas denote that their success is not by coincidence. The relatively high rates of growth are the outcome of their competitiveness and innovativeness as well as the deliberate efforts to get connected to the global market. They have also certain weaknesses, such as inadequate linkages between firms and organizations, which show the lack of institutionalization and their limited success in building co-operative working environments between different economic actors.

Their experience is important, since their path of growth indicated that the industrial clusters located in the periphery could be competitive at the international markets, at least at certain fields of production. The interesting finding is that export-led growth can be achieved by local dynamics, not necessarily by the state support. Obviously there are structural differences between these three industrial clusters and their levels and ways of integration to the global economy. They have, on the other hand, several common characteristics as our survey results have clearly indicated. First, the indicators of innovativeness pointed that all of them are very successful in initiating both new products and processes. Second, it is found that innovativeness is positively related to the intensity of their global and local linkages.

The research findings contribute the literature on industrial clusters in three respects. First, it provides systematic information on the network patterns of manufacturing firms in the different types of industrial clusters, which leads several arguments on the networking patterns of industrial clusters located in peripheral countries. The case study findings provide supporting evidence for the fact that, among industrial districts characterized by traditional mature industries, the national dependency is less compared to the ones that are specialized in relatively new sectors. According to the quantitative evidence high-tech manufacturing firms, which are expected to be more closely linked with the global markets, mostly depend on national and local linkages. We argue that although the recent literature pays less attention to national linkages and national institutions but more to local and global, still national systems and linkages with national institutions are important.

Second, we empirically showed that innovation is important in the successful growth of these clusters and although the linkages with innovation-supporting institutions are weak, the institutional environment still makes a difference. This point also supports the emphasis on externalities in the industrial district literature. The interview studies in this research with leading the members of the entrepreneurs' associations in the case study areas also pointed out the importance of informal knowledge networks especially in incremental innovations. In fact, the numbers

of patents that are often used as the indicator of innovativeness do not give a clear picture of the innovative work achieved in industrial clusters. There is a need to include both improvements and modifications within the definition of 'innovative work', as we have attempted in this research.

Third, the empirical findings clearly show that networks formed with global supplier and customers are the main gateways of industrial clusters. These networks play both a supplementary role to local networks and also act as the transformers of degrading economic structures by making different opportunities possible. It was interesting to see that technology transfer networks and some business services only take place implicitly in value chains and still less important in global economic relations. R&D and excellence networks, however, were less important even in a cluster that is defined as high-tech.

Fourth, we argue that linkages with other firms, institutions and organizations have a positive influence on the innovativeness of firms as the literature suggests. Although the findings did not indicate that local linkages are not important, the quantitative analysis enables us to say that the firms with linkages at different geographical levels have significant differences in terms of the number of innovations. The firms with larger numbers of global linkages are found to be more innovative than the ones with dense local and national linkages. This outcome supports our arguments introduced in earlier sections, which can be summarized as the involvement in global networks is very important in order to gain competitiveness in the globalized economy.

The point above explains that for the competitive industrial clusters global networks have to be the integral parts of the system. We believe that the different types of global networks will add to the competitiveness of clusters, since they act as open gates for local agglomerations in order to get benefit from knowledge spillover effects. The use of national institutions and relations, however are still important for the peripheral industrial clusters and needs attention, as the evidence in this research suggests.

Notes

1. There are examples from Latin America especially from Brazil (Storper 1990, Schmitz 1995), South Korea (Park and Markusen 1995), Mexico (Rabelotti 1995), India (Cawthorne 1995), Pakistan (Nadvi 1992), Cyprus (Murray 1991), Indonesia (Symth 1992), Turkey (Eraydın 1995, Eraydın and Fingleton 2003) and South Africa (Rogerson 1994).
2. Despite the amount of work on industrial districts, this term still needs clarification. Pyke *et al.* (1990: 2) provide the following definition: 'Industrial districts are geographically defined productive systems characterised by a larger number of firms that are involved at various stages, and in various ways, in the production of a homogeneous product' or as Park and Markusen (1995: 83) defines 'they are the sizeable and spatially delimited area of trade-oriented economic activity which has a distinctive economic specialisation'. Both of these definitions and many others on clusters, such as the definition adopted by Rosenfeld (1995: 249) 'a geographically bounded area agglomeration of related firms that together achieve synergy' and Hill and Brennan (2000: 69) 'a geographic concentration of firms and establishments in the same industry that either have close buy-sell relationships with other industries in the region, which use common technologies or share the specialised labour pool', provide only a very generalised view, but not much about what factors distinguish them from the other industrial agglomerations. Asheim (1996) has the answer for making distinction from industrial districts to other industrial agglomerations; 'existence of agglomeration economies'. However, it is still not adequate, since as Markusen (1996) claims that we come across different type of industrial districts; namely Marshallian industrial districts, hub-and-spoke districts, satellite industrial platforms and state-anchored industrial districts.

3. There are some controversial views on the points raised above. For example, according to some studies institutional thickness can act as a barrier as much as a stimulator of change due to several reasons (Glasmeier 1994, Rabelotti 1997, Heidenreich and Krauss 1998, Amin 1999, Raco 1999). Local institutions may be incapable of solving a place's emerging problems (Coriat and Bianchi 1995, Schmitz 1998). Equally, inter-firm relationships need not always be smooth and are just as likely to involve asymmetric power relations, exploitation and competition as trust and reciprocity (Taylor 1999). Indeed it is well documented that when localities face recession it is particularly difficult to sustain collaborative relations and to avoid power struggles (Glasmeier 1991, Cooke and Morgan 1994, Eraydın 2002a). There is also increasing evidence that locally-embedded relationships that might have been very important in the initial phases of growth might be less effective in later stages owing to increasing competition (Amin 1999, Eraydın 2002a).
4. Different cluster types in developing countries: location clusters, local market clusters, local network clusters, innovative clusters, industrial districts (van Dijk and Sverrisson 2003).
5. At the beginning of the 1970s, Denizli was a backward region of Turkey. The unexpected growth of Denizli, which is called 'the textile miracle of Turkey', depends on the integration to the global production networks after the 1980s. The 1990s could be considered to be the export era for Denizli. The share of Denizli in textile export of Turkey was around 1.2% in the first part of the 1980s. However this share reached 1.82% in 1987 and increased to above 2% in the 1997. Today Denizli sold more than 60% of its production to international markets directly or indirectly (Öz 2004).
6. Bursa is the second study area. It is the fifth largest urban centre in Turkey with a population of 1 630 000 according to the population census of 2000. It has been a centre of textile production since the seventeenth century and the centre of machinery industries after the 1960s. The geographical closeness to Istanbul has been an important advantage for industrial development and in fact some of the Istanbul firms used Bursa as the new location for their decentralized activities. Since the early 1970s both the number of firms and the number of employees have been increasing rapidly in Bursa. In 1971, 19 035 people were employed in manufacturing, which is equal to 3.31% of total manufacturing employment of Turkey. This ratio reached to 5.14% in 1983, 6.58% in 1988, 8.16% in 1997 and 10.11% in 2000, which indicated an important rise in the share of manufacturing employment in Bursa relative to the total manufacturing employment in Turkey.
7. Ankara is the third study area. In Ankara there is a considerable and growing number of firms in machinery, electronics (including medical devices) and the military equipment/defence industry besides the traditional consumer industrial sectors. Although the innovative capacity in Ankara is high, the rate of employment growth is low compared to other new growth nodes. It represents a high-tech industrial cluster in its early stage of development.
8. The total direct subsidy to export sectors reached up to 20% of the total cost of production, in the first half of the 1980s.
9. Manufacturing Industry Questionnaire Research for R&D Activities in 1998 and 2000 is realized by the State Institute of Statistics. Manufacturing firms with more than 10 workers are included in the population of the questionnaire survey. Samples are determined according to sector and firm size criteria. Among a total of 11 876 manufacturing firms, 2339 manufacturing firms have answered the questionnaire.
10. Innovation capacity was categorized into three groups: 0–5 innovations (low innovation capacity), 6–10 innovations (medium innovation capacity), and 11 and more (high innovation capacity).

References

Amin, A. 1989 Flexible specialization and small firms in Italy: myths and realities, *Antipode*, 21: 389–405.

Amin, A. 1999 The Emilian model: institutional challenges, *European Planning Studies*, 7: 389–405.

Amin, A. 2002 Spatialities of globalisation, *Environment and Planning A*, 34: 385–399.

Amin, A. and Thrift, N. 1994 Living in the global, in Amin, A. and Thrift, N. (eds), *Globalization, Institutions and Regional Development in Europe* (Oxford: Oxford University Press) pp. 1–22.

Angel, D. 1991 Hightechnology agglomeration and the labour market: the case of Silicon Valley, *Environment and Planning A*, 23: 1501–1516.

Armatli-Köroğlu, B. 2004 SME networks as new engines of economic development and innovativeness. PhD dissertation, Middle East Technical University, Ankara.

Armatli-Köroğlu, B. and Beyhan, B. 2003 The changing role of SMEs in the regional growth process: the case of Denizli, in Fingleton, B., Eraydin, A. and Paci, R. (eds), *Regional Economic Growth, SMEs and the Wider Europe* (London: Ashgate) pp. 229–245.

Arndt, O. and Sternberg, R. 2000 Do manufacturing firms profit from intraregional innovation linkages? An empirical based answer, *European Planning Studies*, 8: 465–486.

Asheim, B. T. 1996 Industrial districts as 'learning regions': a condition for prosperity, *European Planning Studies*, 4: 379–397.

Asheim, B. T. and Isaksen, A. 2002 Regional innovation systems: the integration of local 'sticky' and global 'ubiquitous' knowledge, *Journal of Technology Transfer*, 27: 77–86.

Bahrami, H. 1992 The emerging flexible organization: perspectives from Silicon Valley, *California Management Review*, 34 (4): 33–52.

Becattini, G. 1989 Sectors and/or districts: some remarks on the conceptual foundations of industrial economics, in Goodman, E. and Bamford, J. (eds), *Small Firms and Industrial Districts in Italy* (London: Routledge).

Becattini, G. 1990 The Marshallian industrial districts as a socioeconomic notion, in Pyke, F., Becattini, G. and Sengenberger, W. (eds), *Industrial Districts and Interfirm Cooperation in Italy* (Geneva: International Institute for Labour Studies).

Becattini, G. 1991 The industrial district as a creative milieu, in Benko, G. and Dunford, M. (eds), *Industrial Change and Regional Development* (London: Belhaven) pp. 102–113.

Bellandi, M. 1994 Decentralized creativity in dynamic districts, in *Technological Dynamism in Industrial Districts: An Alternative Approach to Industrialization in Developing Countries* (Geneva: UN) pp. 73–87.

Bellini, N. 1996 Italian industrial districts: evolution and change, *European Planning Studies*, 4(1): 3–25.

Belussi, F. 1996 Local systems, industrial districts and institutional networks: towards a new evolutionary paradigm of industrial economics, *European Planning Studies*, 4: 5–26.

Bergman, E. and Feser, E. J. 2001 Innovation system effects on technological adoption in a regional value chain, *European Planning Studies*, 9: 629–648.

Braun, B., Gaebe, W., Grotz, R., Okamoto, Y. and Yamamoto, K. 2002 Regional networking of small and medium-sized enterprises in Japan and Germany: evidence from a comparative study, *Environment and Planning A*, 34: 81–99.

Breschi, S. and Lissoni, F. 2001 Localised knowledge spillovers vs. innovative milieux: knowledge 'tacitness' reconsidered, *Papers in Regional Science*, 80: 255–273.

Britton, J. N. H. 2004 High technology localization and extra-regional networks, *Entrepreneurship & Regional Development*, 16: 369–390.

Brusco, S. 1982 The Emilian Model: productive decentralisation and social integration, *Cambridge Journal of Economics*, 6: 167–184.

Brusco, S. 1990 The idea of industrial districts: its genesis, in Pyke, F. and Sengenberger, W. (eds), *Industrial Districts and Local Economic Regeneration* (Geneva: International Institute for Labour Studies).

Camagni, R. 1991 Local milieu, uncertainty and innovation networks: towards a new dynamic theory of economic space, in Camagni, R. (ed.), *Innovation Networks* (Belhaven: London) pp. 121–144.

Camagni, R. and Capello, R. 2000 The role of inter-SME networking and links, in Keeble, D. and Wilkinson, F. (eds), *High-Technology Clusters, Networking and Collective Learning in Europe* (Aldershot: Ashgate).

Capecchi, V. 1989 The informal economy and the development of flexible specialisation in Emilia-Romagna, in Portes, A., Castells, M. and Benton, L. A. (eds), *The Informal Economy Studies in Advanced and Less Developed Countries* (Baltimore, MA: Johns Hopkins University Press).

Castells, M. 1994 *Technopoles of the World* (New York: Routledge).

Cawthorne, P. M. 1995 The rise of networks and markets of a south Indian town: the example of Tiruppur's cotton knitwear industry, *World Development*, 23: 43–56.

Christerson, B. and Appelbaum, R. 1995 Global and local subcontracting: space, ethnicity, and the organization of apparel production, *World Development*, 23: 1363–1374.

Collinson, S. 2000 Knowledge networks for innovation in small Scottish software firms, *Entrepreneurship & Regional Development*, 12: 217–244.

Cooke, P. 1996 Building a twentyfirst century regional economy in Emilia-Romagna, *European Planning Studies*, 4 (1): 53–62.

Cooke, P. and Morgan, K. 1994 Growth regions under duress: renewal strategies in Baden-Württemberg and Emilia Romagna, in Amin, A. and Thrift, N. (eds), *Globalisation, Institutions and Regional Development in Europe* (Oxford: Oxford University Press) pp. 91–117.

Cooke, P. and Morgan, K. 1998 *The Associational Economy: Firms, Regions and Innovation* (Oxford: Oxford University Press).

Coriat, B. and Bianchi, R. 1995 A European response to the Japanese challenge, in Anderson, L. E., Coriat, B., Den, H. F. and Kaplinsky, R. (eds), *Europe's Next Step* (Ilford: Frank Cass) pp. 59–77.

Dede, O. M. 1999 Spatial structure of technology based production in Turkey: the case of professional electronics industry in Ankara. PhD dissertation, METU, Ankara.

de Propris, L. D. 2002 Types of innovation and inter-firm co-operation, *Entrepreneurship & Regional Development*, 14: 337–353.

Eraydin, A. 1992 *Post-Fordizm ve Değişen Mekansal Öncelikler* (Ankara: METU).

Eraydin, A. 1993 The new international relations, restructuring in the economy and the emerging changes in the business behavior, in Rogerson, C., Schamp, E. and Linge, G. J. R. (eds), *Business Behavior, Markets, Finance and Industrial Change* (Berlin: de Gruyter).

Eraydin, A. 1995 Local development under the pressures of restructuring: the case of Bursa, Turkey, in Van der Knaap, B. and Le Heron, R. (eds), *Human Resources and Industrial Spaces: A Perspective on Globalisation and Localisation* (Chichester: John Wiley).

Eraydin, A. 1998 The role of regulation mechanisms and public policies at the emergence of the new industrial districts, paper presented at the Symposium on New Nodes of Growth in Turkey: Gaziantep and Denizli, Ankara.

Eraydin, A. 2002a The local embeddedness of firms in social networks in Turkish industrial districts: the changing role of networks in local development, in Taylor, M. and Leonard, S. (eds), *Social Capital and the Embedded Enterprise: International Perspectives* (Aldershot: Ashgate) pp. 269–289.

Eraydin, A. 2002b The roles of central government policies and the new forms of local governance in the emergence of industrial districts, in Taylor, M. and Felsenstein, D. (eds), *Promoting Local Growth: Process, Practice and Policy* (Aldershot: Ashgate).

Eraydin, A. 2002c *Yeni Sanayi Odaklari: Yerel Gelişmenin Yeniden Kavramsallaştirilmasi* (Ankara: METU).

Eraydin, A. and Fingleton B. 2003 Networks externalities and the performance of firms in innovative industrial clusters, paper presented at COST A17 Prague meeting, September 2003.

Erendil, A. 1998 Using critical realist approach in geographical research: an attempt to analyze the transforming nature of production and reproduction in Denizli. PhD dissertation, METU, Ankara.

Ersoy, M. 1993 *Yeni Liberal Politikalar ve Kentsel Sanayi* (Ankara: METU Faculty of Architecture).

Florida, R. 1995 Toward the learning region, *Futures*, 27: 525–536.

Freel, M. S. 2000 External linkages and product innovation in small manufacturing firms, *Entrepreneurship & Regional Development*, 12: 245–266.

Freel, M. S. 2003 Sectoral patterns of small firm innovation, networking and proximity, *Research Policy*, 32: 751–770.

Freeman, C. 1995 The national system of innovation in historical perspective, *Cambridge Journal of Economics*, 19: 5–24.

Fujita, M. and Thisse, J. F. 1996 Economics of agglomeration, *Journal of the Japanese and International Economies*, 10: 339–378.

Fujita, M., Krugman, P. and Venables, A. 1999 *The Spatial Economy* (Boston, MA: MIT Press).

Fukuyama, F. 1995 *Trust: The Social Virtues and The Creation of Prosperity* (New York: The Free Press).

Garofoli, G. 1991 Italian dynamics from the 1970s to the 1980s, in Benko, G. and Dunford, M. (eds), *Industrial Change and Regional Development: The Transformation of New Industrial Spaces* (London: Belhaven).

Glasmeier, A. 1991 Technological discontinuities and flexible production networks: the case of Switzerland and the world watch industry, *Research Policy*, 20: 469–485.

Glasmeier, A. 1994 Flexible districts, flexible regions? The institutional and cultural limits to districts in an era of globalization and technological paradigm shift, in Amin, A. and Thrift, N. (eds), *Globalisation, Institutions and Regional Development in Europe* (Oxford: Oxford University Press) pp. 118–146.

Glasmeier, A. 1999 Territory based regional development policy and planning in a learning economy: the case of real service centers in industrial districts, *European Urban and Regional Studies*, 6 (1): 73–84.

Gregersen, B. and Johnson, B. 1997 Learning economies, innovation systems and European integration, *Regional Studies*, 31: 479–490.

Harrison, B. 1992 Competition, thrust and reciprocity in the development of innovative regional milieus, *Papers of Regional Science*, 71: 905.

Heidenreich, M. and Krauss, G. 1998 The Baden-Württemberg production and innovation regime: past success and new challenges, in Braczyk, H. J., Cooke, P. and Heidenreich, M. (eds), *Regional Innovation Systems: The Role of Governance in a Globalized World* (London: UCL Press) pp. 214–244.

Hill, E. W. and Brennan, J. F. 2000 A methodology for defining the drivers of industrial clusters: the foundations of competitive advantage, *Economic Development Quarterly*, 14: 65–96.

Johannisson, B. 2002 The institutional embeddedness of local inter-firm networks: leverage for business creation, *Entrepreneurship & Regional Development*, 14: 297–315.

Johannisson, B., Alexanderson, O., Nowicki, K. and Senneseth, K. 1994 Beyond anarchy and organization: entrepreneurs in contextual networks, *Entrepreneurship & Regional Development*, 6: 329–356.

Kanter, R. M. 1996 *Wltklasse: Im globalen Wettbewerb lokal triumphieren* (Wien: Ueberreuter).

Kautonen, M. 1996 Emerging innovative networks and milieux: the case of furniture industry in the Lahti region of Finland, *European Planning Studies*, 6: 439–456.

Keane, J. and Allison, J. 2000 Policy review section: the intersection of the learning region and local and regional economic development: analysing the role of higher education, *Regional Studies*, 34: 896–901.

Keeble, D. 2000 Collective learning processes in European high-technology milieux, in Keeble, D. and Wilkinson, F., *High-Technology Clusters, Networking and Collective Learning in Europe* (Aldershot: Ashgate) pp. 182–198.

Keeble, D., Lawson, C., Smith, H. L., Moore, B. and Wilkinson, F. 1998 Internationalisation process, networking and local embeddedness in technology intensive small firms, *Small Business Economics*, 11: 327–342.

Koschatzky, K. 1999 Innovation networks of industry and business related services–relations between innovation intensity of firms and regional inter-firm cooperation, *European Planning Studies*, 7: 737–757.

Koschatzky, K. 2000 A river is a river–cross-border networking between Baden and Alsace, *European Planning Studies*, 8: 429–450.

Koschatzky, K. and Bross, U. 2001 Innovation networking in a transition economy: experience from Slovenia, in Koschatzky, K., Kulicke, M. and Zenker, A. (eds), *Innovation Networks: Concepts and Challenges in the European Perspective* (Germany: Verlag).

Krugman, P. 1991a *Geography and Trade* (Cambridge, MA: MIT Press).

Krugman, P. 1991b Increasing returns and economic geography, *Journal of Political Economy*, 99: 483–499.

Larsson, S. and Malmberg, A. 1999 Innovations, competitiveness and local embeddedness: a study of machinery producers in Sweden, *Geografiska Annaler*, 81 (1): 1–18.

Lawson, C. 1997 Territorial clustering and high-technology innovation: from industrial districts to innovative milieux, Working Paper 54, ESRC Centre for Business Research, University of Cambridge.

Lechner, C. and Dowling, M. 2000 Firm networks: external relationships as sources for growth and competitiveness of entrepreneurial firms, *Entrepreneurship & Regional Development*, 15: 1–26.

Locke, R. 1995 *Remaking the Italian Economy* (Ithaca & London: Cornell University Press).

Longhi, C. 1999 Networks, collective learning and technology development in innovative high-tech regions: the case of Sophia-Antipolis, *Regional Studies*, 33: 333–342.

Lundvall, B. A. 1995 The learning economy–challenges to economic theory and policy, revised version of a paper presented to the EAEPE Conference, Copenhagen, October.

Lyons, D. 2000 Embeddedness, milieu and innovation among high technology firms: a Richardson, Texas case study, *Environment and Planning A*, 32: 891–908.

Maillat, D. 1995 Territorial dynamic, innovative milieux and regional policy, *Entrepreneurship & Regional Development*, 7: 157–165.

Malmberg, A. 1996 Industrial geography: agglomeration and local milieu, *Progress in Human Geography*, 20: 392–403.

Markusen, A. 1996 Sticky places in slippery spaces: a typology of industrial districts, *Economic Geography*, 72: 293–313.

Marshall, A. 1920 *Principles in Economics* (London: Macmillan).

Maskell, P. 1998 Learning in the village economy of Denmark: the role of institutions and policy in sustaining competitiveness, in Braczyk, H.-J., Cooke, P. and Heidenreich, M. (eds), *Regional Innovation Systems: The Role of Governances in a Globalized World* (London: UCL Press) pp. 190–213.

Maskell, P. and Malmberg, A. 1999 The competitiveness of firms and regions: ubiquitification and the importance of localized learning, *European Urban and Regional Studies*, 1: 9–25.

Murray, R. 1991 Flexible specialisation in small island economies: the case of Cyprus, in Pyke, F. and Sengenberger, W. (eds), *Industrial Districts and Local Economic Regeneration* (Geneva: International Institute for Labour Studies).

Nadvi, K. 1992 Flexible specialization, industrial districts and employment in Pakistan (Geneva: International Labour Office).

Oakey, R. 1985 High-technology industries and agglomeration economies, in Hall, P. and Markusen, A., *Silicon Landscapes* (Boston, MA: Allen & Unwin).

Oinas, P. 2000 Distance and learning: does proximity matter? in Boekema, F., Morgan, K., Bakkers, S. and Rutten, R. (eds), *Knowledge Innovation and Economic Growth: The Theory and Practice of Learning Region* (Cheltenham: Edward Elgar).

Öz, Ö. 2004 *Clusters and Competitive Advantage: The Turkish Experience* (New York: Palgrave Macmillan).

Özelci, T. 2002 Institutional aspects of regional/local development. PhD dissertation, METU, Ankara.

Park, S. O. and Markusen, A. 1995 Generalisation new industrial districts–a theoretical agenda and an application from Nonwestern economy, *Environment and Planning A*, 27 (1): 81–104.

Patrucco, P. P. 2003 Institutional variety, networking and knowledge exchange: communication and innovation in the case of Brinza technological district, *Regional Studies*, 37 (2): 159–172.

Piore, M. and Sabel, C. F. 1984 *The Second Industrial Divide* (New York: Basic Books).

Porter, M. 1990 *Competitive Advantages of Nations* (New York: Free Press).

Porter, M. E. 1998 *On Competition* (Boston, MA: Harvard Business Review Books).

Pyke, F. and Sengenberger, W. 1991 *Industrial Districts and Local Economic Regeneration* (Geneva: International Institute for Labour Studies).

Pyke, F., Becattini, G. and Sengenberger, W. 1990 *Industrial Districts and Inter-Firm Cooperation in Italy* (Geneva: International Institute for Labour Studies).

Rabelotti, R. 1995 Is there an industrial district model?–footwear districts in Italy and Mexico compared, *World Development*, 23 (1): 29–41.

Rabelotti, R. 1997 *External Economies and Cooperation in Industrial Districts: A Comparison of Italy and Mexico* (Basingstoke: Macmillan).

Raco, M. 1999 Competition, collaboration and the new industrial districts: examining the industrial turn in local economic development, *Urban Studies*, 36 (5/6): 951–968.

Revilla-Diez, J. 2002 Metropolitan innovation systems–a comparison between Barcelona, Stockholm and Vienna, *International Regional Science Review*, 25 (1): 63–85.

Reyhan, N. 1990 The spatial implications of restructuring of production organization of Bursa textile industry. MSc dissertation, METU, Ankara.

Rogerson, C. M. 1994 Flexible production in the developing world: the case of South Africa, *Geoforum*, 25 (1): 2–17.

Romer, P. M. 1986 Increasing returns and long-run growth, *Journal of Political Economy*, 94: 1002–1037.
Romijn, H. and Albu, M. 2002 Innovation, networking and proximity: lessons from high-technology firms in the UK, *Regional Studies*, 36 (2): 81–86.
Rosenfeld, S. A. 1995 Does cooperation enhance competitiveness? Assessing the impact of interfirm collaboration, *Research Policy*, 25: 247–263.
Sabel, C. 1989 Flexible specialisation and re-emergence of regional economies, in Hirst, P. and Zeitlin, J. (eds), *Reversing Industrial Decline* (Oxford: Berg).
Saraçoğlu, Y. 1993 *Local Production Networks: An Opportunity for Development*, MSc dissertation, METU, Ankara.
Saxenian, A. L. 1990 Regional networks and resurgence of Silicon Valley, *California Management Review*, 33 (1): 89–112.
Saxenian, A. L. 1991 The origins and dynamics of production networks in Silicon Valley, *Research Policy*, 20: 423–437.
Saxenian, A. L. 1994 *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Cambridge, MA: Harvard University Press).
Schmitz, H. 1995 Small shoemakers and Fordist giants: tale of a supercluster, *World Development*, 23: 9–28.
Schmitz, H. 1998 Responding to global competitive pressure: local co-operation and upgrading in the Sinos Valley, IDS Working Paper 82, Institute of Development Studies, Sussex.
Schmitz, H. and Musyck, B. 1994 Industrial districts in Europe–policy lessons for developing countries, *World Development*, 22: 889–910.
Şenses, F. 1989 *1980 Sonrası Ekonomi Politikalari Isiğinda Türkiye' de Sanayilesme* (Ankara: V Yayınları).
Staber, U. 1996 Accounting for variations in the performance of industrial districts: the case of BadenWürttemberg, *International Journal of Urban and Regional Research*, 20: 299–316.
Staber, U. 1997 Specialisation in a declining industrial district, *Growth and Change*, 28: 475–495.
State Institute of Statistics (ISI) (2000) *Science and Technology Statistics*, http://www.die.gov.tr/konularr/teknollojikyenilik.htm
Storper, M. 1990 Industrialisation and regional question in the Third World: lessons of post-imperialism and prospects of post-Fordism, *International Journal of Urban and Regional Research*, 14: 423–444.
Storper, M. 1993 Regional worlds of production: learning and innovation in the technology districts of France, Italy and USA, *Regional Studies*, 27: 433–455.
Storper, M. 1995 The resurgence of the regional economies ten years later: the region as a nexus of untraded interdependencies, *European Urban and Regional Studies*, 2 (3): 191–215.
Storper, M. and Walker, R. 1989 *The Capitalist Imperative: Territory, Technology and Industrial Growth* (Oxford: Blackwell).
Sternberg, R. 2000 Innovation networks and regional development evidence from the European Regional Innovation Survey (ERIS): theoretical concepts, methodological approach, empirical basis and introduction to the theme issue, *European Planning Studies*, 8: 390–407.
Sydow, J. and Staber, U. 2002 The institutional embeddedness of project networks: the case of content production in German television, *Regional Studies*, 36 (3): 215–227.
Symth, I. 1992 Collective efficiency and selective benefits: the growth of rattan industry of Tegalwangi, *Bulletin Institute of Development Studies*, 23 (3): 51–56.
Taplin, I. 1989 Segmentation and the organisation of work in the Italian apparel industry, *Social Science Quarterly*, 70 (2): 408–424.
Taylor, M. 1999 Enterprise, embeddedness and exclusion: buyer-supplier relations in a small developing country, paper presented at IGU Commission on Industrial Space, the 1999 meeting, Haifa and Beer Sheva.
Tekeli, İ. 1994 Ankara'da tarih icinde sanayinin gelisimi ve mekansal farklilasma, in *Ankara Ankara* (Istanbul: Yapi Kredi Yayinlari) pp. 171–200.
Tödtling, F. 1994 The uneven landscape of innovation poles: local embeddedness and global networks, in Amin, A. and Thrift, N. (eds), *Globalisation, Institutions and Regional Development in Europe* (Oxford: Oxford University Press) pp. 68–90.
Tödtling, F. and Kaufmann, A. 1999 Innovation systems in Europe–A comparative perspective, *European Planning Studies*, 7: 699–717.
Tödtling, F. and Kaufmann, A. 2001 The role of the region for innovation activities in SMEs, *European Urban and Regional Studies*, 8: 203–215.
Torre, A. and Gilly, J. P. 2000 On the analytical dimension of proximity dynamics, *Regional Studies*, 34 (2): 169–180.
van Dijk, M. P. and Sverrisson, A. 2003 Enterprise clusters in developing countries: mechanisms of transition and stagnation, *Entrepreneurship & Regional Development*, 15: 183–206.
van Oort, F. 2004 *Urban Growth and Innovation* (Aldershot: Ashgate).
Yeung, H. W. C. 2000 Organizing 'the firm' in industrial geography; networks, institutions and regional development, *Progress in Human Geography*, 24 (2): 301–315.
Yin, R. K. 1994 *Case Study Research Design and Methods* (Thousand Oaks, CA: Sage Publications).

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Globalisation and diversification of producer services: Increasing role of services in competitive power and innovativeness of firms and industrial clusters

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Abstract

This paper addresses the globalisation of services and the increasing importance of access to globalised services by manufacturing firms. It aims to compare the importance of different types of global services together with local and national services for production firms in terms of their economic competitiveness and innovative performance. The paper is focused on three main questions: *"Which type global services are becoming crucial for manufacturing firms and what type of services that the production firms prefer are still local and national? Is there a significant difference between the characteristics of firms that use same type of services provided at different geographical levels? To what extend to have an access to global services is important in the performance of individual firms and firms located in industrial clusters?* This paper tries to provide answers to these questions based on the findings of the several case studies in the existing literature as well as the case study on manufacturing firms that involve in diverse production activities in three different industrial clusters of Turkey.

Globalisation and diversification of producer services: Increasing role of services in competitive power and innovativeness of firms and industrial clusters

I. Introduction

There is no doubt that the new economic era is defined by the increasing role of services, which led to name the contemporary economic structure as 'the service economy' (Illeris, 1996). Services are undoubtedly the larger provider of jobs and value added in the different countries. The contribution of services to the total value added was 72 per cent in developed countries and 58 per cent in developing economies in 1990 and these figures has been increasing since then (Ghosh, 1997). What is more important is the increasing diversity and tradability of services in the world economy. Although the figures vary by the methods of measurements[1] and various definitions of services[2], they indicate the increase in the ratio of services traded, which rose from 22,4 per cent in 1980 up to 24,0 per cent of the traded goods in the world in 1990. This phenomenon, the increasing share of services in the world economy, has been described as 'service revolution, 'post-industrial economy, 'final frontier' or 'the new economy'.

Among the services that define 'the new economy' producer services have been the most important category, which experienced a very rapid growth in the recent years. As identified by Ghosh (1997:21) there are several reasons of increasing importance of producer services.

Firstly, increasing complexity in production, combined with the externalisation of specialised service firms has expanded the need for the use of producer services in the developed economies (Beyers and Lindhal, 1996; Daniels, 1985; Gillespie and Green, 1987; Marshall, 1982 and 1985; Wood, 1986). Organisational changes in the production process also have given rise to growth in service labour (Bagchi-Sen and Sen, 1997; O'Farrell et al., 1993; Wood, 1991). Especially the sub-contracting of indirect production activities of corporations to independent service firms, instead of relying on in-house service departments, created demand for new types of services (Noyelle and Stanback, 1984). Secondly, service facilities became one of the critical inputs for the increasing efficiency and productivity of local/national economies and enhancing their competitive position in the world market. The development of new producer services, especially services needed by telecommunications activities and information-related services, their externalisation and increasing tradability are the important determinants of the overall economic growth. Thirdly, the growing number of private and public organisations, including governments, in almost all developed countries are now relying on service inputs to enhance their efficiency. Increasing competition forces them to be more efficient and also look for new markets, including the ones abroad. There are several studies that indicate the growth of producer services is highly dependent upon their linkages with other service industries (Goe,

1990). Fourthly, as may be expected the growth in producer services is attributable to the development of basic industries and the growth of export trade.

Although producer services form still a small part of services[3], the rapid absolute growth of the service sector as a whole resulted in producer services accounting for considerable increases in the share of employment and economic activity especially in metropolitan areas (Morshidi, 2000; Bagchi-Sen and Sen, 1997). Noyelle (1987) argued that, until recently, manufacturing has been a principal component of the export base, but increasingly producer services are emerging as a vital sector in the economy of cities. There is a consensus that their importance is increasing in the world economy, since it positively affects the performance of manufacturing firms as well as the competitiveness of industrial clusters.

The provision of most of the services confirms proximity between service producers and users, since they are almost dependent upon the prior existence of a market for their products (Keil and Mack, 1986). However, the two new conditions enforce the increasing use of global services and the trade of services within the global economy. Firstly, the globalisation of manufacturing production and decreasing barriers for manufactured products as a result of deregulatory changes increased the world trade. Obviously, deregulation offers certain opportunities for several local production firms and locally linked production organisations. Several measures that are used for the liberalisation of trade regimes and removing restrictions on capital movements create new market alternatives and access to joint production and marketing schemes. Deregulation means increasing interaction between local production units, firms, institutions and individuals with the rest of the world, and as Glasmeir (1994:139) indicated "regional fortunes are increasingly intertwined with global events that are largely beyond a single community's control". However, being a part of the global markets is quite difficult due to increasing competition and can cause several problems especially for the firms and areas where capacities are inadequate to meet the external pressures successfully. The recent worldwide global economic and political problems show that existing global institutions and regulations are not capable of solving the emerging problems. That is why the individual firms try to form collaborative networks, to be a part of an existing global production network and also to use the global services that will enhance their adaptation capabilities.

Secondly, technological improvements made possible vertically disintegrated production, long distance marketing and the use of long distance services. These services can be grouped into two categories; the first group is the services that can be embodied in a material object and treated as goods, while the second group consists of services that can be transmitted over distance through modern telecommunication and computer systems.

This paper tries to discuss the globalisation of services and the increasing importance of access to globalised services by manufacturing firms. It aims to compare the importance of different types of global services for economic competitiveness and innovative performance of production firms, besides local and national services, depending on several case studies presented in the existing literature, as well as the case study on manufacturing firms in three different industrial clusters of Turkey. The paper is based the three questions. Firstly, it tries to discuss the importance of different types of global services for manufacturing firms and to identify uniformities

and differences at the levels of different types of service networking. Secondly, it aims to identify the characteristics of firms that exhibit higher intensities of use of local, national and global services. Thirdly, the paper addresses another critical question; namely whether a firm's access to global services makes a difference to the innovativeness of firms.

II. Increasing importance of producer services for manufacturing firms

Services are very much interrelated to manufacturing industry. Firstly, they serve as critical inputs to production of goods and many goods have little value without the provision of services. The efficiency and competitiveness of the manufacturing sector strongly depends upon sophisticated inputs and needs strong support by the firms specialised in new producer services. Ghosh (1997:12) estimates that one-fourth of the services sector output serves as input into goods production and more if in-firms services are taken into account. Secondly, services enforce the development of new goods and products, which promote the need for other services. The increase in the quality of services necessitates the growth of manufactured products, as we see in the growth of medical devices industry. Thirdly, services generate new services, which can also be used for industrial production as an input. Training, education, R&D are such services, which can end up with industrial production. In fact, in recent years the borderline between secondary and tertiary activities are getting blurred[4], since many products include both goods and even larger percentages of service components (Illeris, 1996).

The manufacturing firms that are looking for external markets also need for the services provided abroad in order to get information on market conditions, adopt to new circumstances and protect their competitive advantage in the world market. These changing needs support the increasing levels of services that are contacted out, especially due to the need for specialised and sophisticated service inputs. The externalisation process going on supports the increasing use of global services. That is why many producer services in metropolitan areas have grown and become more export-oriented (Daniels and Mouleart, 1991). Moreover, the export capability of service producers has also been widely acknowledged in the recent literature (Keil and Mack, 1986).

The transfer of some in-house activities to external providers plays an important role in the growth of service firms in the developed economies (Bryson and Rusten, 2004). The growth of individual service firms makes possible the transfer of activities, in other words the transfer of risk from manufacturing to service firms. Large amount of producers use external firms in many service activities such as accountancy, banking, legal, advertising, design and consultancy services. The service firms also act as intermediary agents between the different economic units. In the service networking, spatial proximity gains importance. The literature widely emphasises that spatial proximity facilitates contacts, reduces uncertainties, creates trust relations, enables access to both codified and tacit knowledge, accelerates cooperative learning and assists effective knowledge transfer (Grabher, 1993; Granovetter, 1985; Heidenreich, 1996).

The share of service networking, however, is still lower compared to (the?) production and marketing relations of manufacturing firms. Although the

externalisation of services is becoming more important for manufacturing firms production and consumption linkages are still more crucial. Among them the most important relations are the ones with suppliers and customers. Moreover, customers were regarded as the most important sources of knowledge by firms. Some studies provide empirical basis of such observations. In Madrid around 61 per cent of firms are involved in relationships with customers and subcontractors, whereas only 18 per cent of firms co-operate with service firms and 25 per cent with R&D institutions (Rama at al. 2003). Grotz and Braun (1997) found that in Neckar-Alp, Aachen and Luneburg-Celle regions customers are an overwhelmingly important external source of information. In all these regions customer linkages are very strong and the other types of contacts are comparatively minor, such as external contacts and cooperation with universities, research institutes, engineering consultants, advertising agencies, marketing consultants constitute less than 10 per cent of all contacts. Other studies have supporting evidence. The study on Cambridge region shows that the relations with supplier and subcontractor firms (68 %) are higher than relations with firms providing services (53 %) (Keeble, at al., 1999), which is also emphasised by the Larsson and Malmberg (1999) study on Sweden machinery producers.

????Arndt and Sternberg (2000) conducted an empirical study on 10 European regions about innovation networking. They have found that 67 per cent of all business linkages are among firms and service providers, which makes service providers as the most important partner of manufacturing firms.

Increasing use of global services by manufacturing firms

Most of the service networks are still formed at the local level. However, non-local (national and global) services enable firms to benefit from relations beyond the limits of a cluster. For certain activities, while local services are indispensable, long distance service relations may be even more valuable. The empirical studies on the use of services by manufacturing firms indicate that still the use of global service suppliers is quite limited. The findings of the several studies reveal the current level of global service use;

- The study by O'Farrell, Moffat and Hitches (1993: 395) on 864 manufacturing firm in Scotland shows that out of 661 service suppliers used only 15 are from overseas. The share of the use of global suppliers is even smaller by SouthEast manufacturers according to the same study; only 2 out of 582.
- Illeris (1996:103) who summarised 14 different studies on the use and provision of services indicates that the services bought from abroad vary between zero to 13 per cent of the total, while the share of locally provided services ranges between 25-83 per cent.
- The study by Grotz and Braun (1997) indicates that while in Neckar-Alp region, service relations dominantly exist at the national level (83.3 %), while in other regions local level is still dominant (62.5 % in Aachen, 66.7 % in Lüneburg-Celle).

- Larsson and Malmberg (1999) found that in Swedish machinery industry when producers need research support, they use regional and national linkages. This pattern fits well with the general characteristics of service production, where physical proximity is normally assumed to simplify the transfer of knowledge.
- Service producers ++

- According to Morshidi (2000) the geographical location of sales revealed that 39 service firms in Kuala Lumpur (42.3 per cent) sold a substantial proportion of their output to client firms outside Kuala Lumpur but within the contiguous area of Klang Valley. He claims that there is a higher tendency for independently owned establishments to trade over sy assumed to simplify the transfer of knowledge.

- Service producers ++

- According to Morshidi (2000) the geographical location of sales revealed that 39 service firms in Kuala Lumpur (42.3 per cent) sold a substantial proportion of their output to client firms outside Kuala Lumpur but within the contiguous area of Klang Valley. He claims that there is a higher tendency for independently owned establishments to trade over shorter distances than non-independently owned establishments.
- Keil and Mack (1986) found that among the Indianapolis service industry retail is not exported, while commercial research, management services and data processing can be exported to the like-size cities in USA and education is highly exportable[5].

? Illeris

As we see the studies indicate the use of low amounts of non-local services and even smaller shares of services are bought from abroad. However the findings of the studies on service firms are quite different. Illeris (1996: 105) based on different studies claim that;

"Most of the services are sold locally and regionally, less in distant regions. However, considering the fact that only three of the studies include capitals of the countries in question (the England, Ranstad and UK studies) it is unexpected finding that distant sales are quite important: typically, only 40 per cent of the services are sold in the city itself and immediate vicinity (up to 20-30 km). Within a distance of 50-100 km. this share only increases to typically 65 per cent. On the other hand, about 35 per cent are normally sold in remote regions, including often more than 5 per cent exports." Goe (1990), on the other hand in his study on producers firms located in four metropolitan areas in USA (Cleveland, Akron, Canto and Youngstown-Warren) found that the share of firms with international markets range between 11,3 to 20,8 per cent among these metropolitan areas.

The information provided by all the empirical studies summarised above shows that the service networks are still predominantly local. However, they also indicate that this situation varies according the types of services needed and the characteristics of firms that seek for different types of services.

As discussed earlier proximity is very important for certain services, but there are also some services that are also looking for international customers. It is possible to classify international services according to their locational mobility (Bagchi-Sen and Sen, 1997:1157) "foreign tradeable services (services generating a product separable from the production process and can be exported internationally), location bound services (services that have to be tied to the production process) and combination services (a part of these services are tradeable, but another part is location bound, such as remote data processing). As this classification shows the degree of consumer-producer interaction is very critical in the internationalisation potential of service firms. The services that are low both on goods involvement and on the degree of consumer producer interaction possess very limited international potential, while the services that need little interaction with consumers can easily look for global markets.

It is quite remarkable to observe that internationalisation of services are very much related to the internationalisation of manufacturing and also other services. This tendency is defined as client following tendency, and means that the increase in the

globalised production and business will enhance the international expansion of services (Bagchi-Sen and Sen, 1997).

The importance of different types of services at different levels

Which types of services are becoming more important for manufacturing firms? The different theoretical and empirical studies indicate that both the types of services demanded by manufacturing firms and their geographical levels vary considerably. The summary of the findings on the use of financial, consultancy, technical, technology transfer and training services and the relations between universities, research institutions and manufacturing firms show the importance of the types of services varies at different levels.

Obviously different producer services have different geographical markets. There is almost a consensus in the literature that banking and finance are the most internationalised services (Harvey, 1982; Leyshon and Thrift, 1997), which are followed by professional and business services. However, there are many studies that emphasise the weight of local banking and accounting services. Keeble and his colleagues (1999) claim that in Cambridge region, almost all banking and accountancy linkages are constituted at local level (87-97 %) and according to Illeris (1996:107) accountancy and legal services are primarily sold on local and regional markets Bagchi-Sen and Sen (1997), on the other hand, claim that advertising and accounting firms are more international than the other service firms are. The findings of O'Farrell, Moffat and Hitches (1993) also support the importance of external use of advertising and marketing services and the higher shares of firms that use these services in Scotland from the different regions of UK and even abroad.

There is no doubt that financial services have been widely globalised in the recent past. The end of the state dominated financial markets in the 1970s (Hirst and Thompson, 1992; Corden, 1994), voluntary relaxation of the restrictions on competition among the different segments of financial markets (Gerny, 1993) and innovations in financial instruments (Stafford, 1992) made possible the globalisation of services. There are two important features of the new international financial system; firstly the increase in the total amount of capital became not connected to physical assets and secondly the increase in capital circulation (Harvey, 1989; Leyshon and Thrift, 1997). Obviously, the access to global financial services is critical for large entreprises and multi-national companies, but even the smaller firms began to use the facilities provided by the global financial firms and banks in recent years.

Similarly, several studies show that technical services and consultancy are becoming more important. In five sample regions (Amsterdam, Paris, London, Milan and Stuttgart) among business services, technical consultancy has the highest score, R&D and design consultancy follow them (Simmie, 2002). Similarly, according to Larsson and Malmberg (1999) study 81 per cent of Swedish machinery firms report that the local suppliers of technical consultancy are important. The localised character of this relationship is further emphasised by the fact that half of the firms who work with technical consultants find them locally, within 100 kilometres radius. Likewise in Cambridge region consultancy linkages have important share, which constitutes 11 per cent of all linkages. 63,6 per cent of these relations are local, 36,4 per cent of them

are national and there are no consultancy relations at international level (Keeble at al., 1999). Wood (2002), based on a survey on consultancy firms also emphasised that producers expect constancy linkages at local level. However, while spatial distance between cooperation partners matters more in technical consultancy services, spatial proximity in the interaction with technical services is not a given precondition for networking (Koschatzky, 1999). A case study on Lower Saxony, Hannover and Baden shows that technical services are generally purchased from firms not located within the same region (Koschatzky, 1999). Spatial proximity does not seem to be an important aspect in this case.

However, the studies indicate that the services provided by "technology transfer agencies" are not used effectively is. While the ones that are available are usually not well known by firms, the lack of appropriate *technology transfer institutions* to link industry and science base may be a problem as indicated by Landabaso, Oughton and Morgan (1999) for West Midlands.

Training for entrepreneurs and workers are also becoming an important service activity. Since they necessitate face to face contacts and training contacts they are generally constituted at local and national levels. It is possible to say that although online training for entrepreneurs makes possible long distance activities, it should be complemented by face to face components (Evans and Volery, 2001).

The networks formed with research institutes and universities have an increasing role. Arndt and Sternberg (2000) showed that in 10 European regions about 30 per cent of firms cooperate with research institutes. The findings of this study also reveal that only 6 per cent of these relations are constituted with firms from foreign countries (Arndt and Sternberg, 2000). In fact, the evidence on networks between firms and research institutes as well as industry-university relations indicate the existence and the usefulness of these networks are quite different by type of firms and in different industrial clusters. On one extreme it is possible to find out the absence of solid relations between industry and university, as in Catalan case (Bacaria and Alomar, 1998) and in Lyons health cluster (van der Berg, 2001), on the other extreme very dense networks as defined in the Cambridge case (Keeble and Lawson, 1999). There are other examples between these two extremes, such as in the Baden- Württemberg case study 32 per cent of the firms declared that universities are the very important source of knowledge and 15 per cent of them expressed the important contribution of technology transfer centers for sustaining their competitiveness (Heinemann and his colleagues, 1995 cited in Heidenreich and Krauss, 1998).

For the networks with research institutes and universities are less important for SMEs. SMEs think that university research puts too little emphasis on applications. Some SMEs consider themselves to be too specialised to benefit from cooperation with universities. According to Grotz and Braun (1997) in Neckar-Alp, Aachen and Luneburg-Celle regions there is a large group of firms (43 %) which has never had any contact with research institutes, technical transfer centers and universities. Difficulties in communication are stated as the most important reason for this reluctance. Weak university-firm interaction is also observed several studies on the Denizli, Çorum and Gaziantep industrial clusters of Turkey (Eraydin, 2002). On the other hand, technical and research centres can be more easily accessible by small

firms, which make them even more reluctant to form joint activities with universities, as observed in the sample SMEs in Hamamatsu and Suwa-Okaya (Braun at al., 2002).

On the other hand, several studies show that most of the university relations are local or national. Cumbers, Mackinnon and Chapman found that in Scotland Aberdeen oil complex 64 per cent of the university and research institute relations are local (Cumbers at al. 2003). Similarly in Japanese regions, Hamamatsu and Suwa-Okaya exchanges of information with universities or R&D institutions are often very local and informal (Braun at al., 2002). In contrast, in German regions Aachen and Heilbronn, in Cambridge region university linkages are generally constituted at national level (Braun at al., 2002, Keeble at al., 1999). Likewise the case study on Sweden machinery producers shows that national university linkages are more important and dominant than local and international university linkages (Larsson and Malmberg 1999).

The importance of the characteristics of firms in the externalisation of services

The literature on spatial development emphasise the importance of small and medium sized firms by their intensity of production relations and their ability to create a production space integrating production units with collaborative networks. These interwoven relations are the basis of externalities of industrial clusters, which are expected to support the mergence of several service firms that will provide service inputs to the emerging vertically disintegrated production system. According to this view, small firms can able to overcome their individual weaknesses through collaborative efforts by creating networks to provide products and services (Bryson and Rusten, 2004), which can not be realised in-house conditions. On the other hand, it is also evident that smaller firms have less financial opportunities in order to get benefit from external services, especially the new generation services on innovative activities. That is why in many regions/countries un-paid or low-cost services are provided by public bodies (Schmitz and Musyck, 1994).

In fact, several studies on manufacturing firms indicate the low levels of service usage of small firms, compared to medium and larger enterprises. The study by O'Farrell, Moffat and Hitches (1993) on 864 manufacturing firm in Scotland found a significant and positive relation between establishment size and the number of services used. As expected larger plants use more services. Similarly Rama, Ferguson and Melero (2003) found although smaller establishments in Madrid (with less than 100 employees) tend to form a web of customers and subcontractors, medium and large establishments (with more than 100 employees) are involved more often than smaller producers in service relations and R&D cooperation. While 16.1 per cent of small producers are involved in after sale service relations, this share increased to 27.3 per cent for medium sized firms (100-500 employees). Similar result is also true for R&D linkages, 20 per cent of small firms and 45.5 per cent of medium sized firms cooperate with R&D institutions (Rama at al. 2003). Likewise, in Japanese regions Hamamatsu and Suwa-Okaya 20 per cent of SMEs have relations with universities and research institutes, this share increases to 60 per cent for large firms (Braun at al., 2002).

In terms of the use of global services the picture is clearer. Among the characteristics of firms that use global services and also the service firms that look for export markets firm size is accepted as one of the most important determinants. The study on Swedish machinery firms indicates that large firms display internationalised technological relations with service firms (Larsson and Malmberg, 1999). One general hypothesis is that the larger producer services firms, the larger their export potential. This hypothesis is verified by several studies (Porterfield and Cox, 1991; Porterfield and Pulver, 1991). There is also some contradictory evidence. As Porterfield and Cox (1991:691) quotes "Beyers and Alvine (1985) found no significant relationship between the level of exports and establishment size in their study of service producing industries in the Seattle metropolitan area".

How far the age of firms is important in the level of intensity of service linkages? There are also contradictory views and findings on this issue. The first view is that older firms use less amounts of services, since during the course of evolution firms can find the possibility of internalising some of the services externally used before. The second view accepts that the firms, which try to enter into more sophisticated production processes, can enforce themselves to externalise some specific service needs. In fact, there are very few studies that provide empirical evidence on this issue and the findings are not very clear. For example, O'Farrell, Moffat and Hitches (1993) found no significant relation between age of firms and the number of services used, although they discovered that the service use is negatively associated with the age of firms. In fact, it seems that the degree of sophistication is more important than age of firms. As Illeris has summarised (1990) in many studies it is found that more sophisticated user firms utilise more services than less sophisticated firms. Obviously, the definition of "sophistication" is quite vague and in certain studies it is defined as the technological level of firms.

The role of knowledge-intensive services for innovative firms

More than the size and age of firms, the innovativeness of firms is believed to determine the intensity of use of producer services. There are increasing amount of services provided in this respect, which are summarised under the heading of knowledge-intensive business services (KIBS).

To what extend KIBS are useful to increase the innovativeness of firms? The study on New York State Manufacturing Firms (Mc Pherson, 1997) shows that there is a positive relationship between external service linkages and industrial innovation activities. In the case of New York City 62 per cent of service-linked firms introduced more innovation, compared to 38 per cent non-linked firms. Likewise the study of Muller and Zenker (2001) found a positive relation between business services and the innovativeness of manufacturing firms. Results of this study show that innovative activities of SMEs are higher in the firms maintaining cooperation with KIBS than the non-interacting SMEs. 76.7 per cent of SMEs that interacted with KIBS introduced innovations, whereas the share of innovators was 60.6 per cent among the non-interacting SMEs. Moreover, 78.4 per cent of sample SMEs interacted with business services, which 73.2 per cent of them reported a product or process innovation (Muller and Zenker, 2001).

Even the classical services can be crucial to support innovative activities. Empirical analysis on UK electronic and software firms reveals that there is the positive link between frequency of contacts with service providers, such as business consultants, advertising agencies, printing facilities, repair services etc. and innovativeness of firms (Romijn and Albu, 2002). In the economic success of some regions, such as Cambridge, local linkages with business consultancy services are defined essential in innovative processes than the services provided at national and global levels (Keeble and Lawson, 1999; Tödling and Kaufmann, 1999). The findings of Koschatzky (1999) are somewhat similar. In his study covering several regions[6], he found that for advisory services spatial proximity is quite important. Similarly, in Baden-Württemberg intensive and sustained technical consultancy has been found to be successful in supporting innovation of manufacturing SMEs (Strambach, 2002, 141-143, quoted by Wood, 2002).

Simmie and his colleagues (2002) examined the reasons for concentration of innovative SMEs in five different regions; Amsterdam, Milan, Stuttgart and London. Results of this study reveal that existence of business services and proximity to business services are the most important factors in setting up a new firm and initiating innovation activities in the region. In most of the regions among the overall positive importance to innovation within firms business services scored highly (Simmie, 2002). However, Amsterdam firms are the exception since most local business services were not rated highly as knowledge providers to innovation. The study by Koschanzky (1999) on Lower Saxony, Hannover and Baden regions also showed that manufacturing firms do not make use of the specific knowledge offered by business services for supporting innovation in an excessive way. Evidently, not all the networks can play a positive role on innovative activities. In many British regions there has been a proliferation of top-down and short-term networks which have had little or no positive impact on long-term regional industrial development (Leigh, 1995). Similarly among Baden-Württemberg metal industry firms although the vertical cooperation facilitates the information dissemination, these firms were not successful enough to increase innovativeness of in this mature manufacturing industry (Heidenreich and Krauss, 1998).

The links between universities and their importance in the innovative activities is a lively debate in the literature. Theoretically, services provided by the knowledge generation organisations, such as universities, are very important inputs for innovative activities. It is expected that innovative firms would be more likely to form links with universities and R&D institutions. Some of the empirical studies support this belief, but there are also many studies that indicate weak linkages between business and universities. (Cooke, 1998; Roper, 2000). Similarly, in New York State medical devices production sector 61 per cent of all firms and 65 per cent of innovative firms have linkages with universities (McPherson, 2002). In Scotland Aberdeen oil complex 26.2 per cent of firms reported that universities and research institutions are important sources of innovation (Cumbers at al., 2003). However the impressions gained from interviews with UK small electronic and software firms do not provide much support for positive contribution of university linkages to the innovativeness of firms (Romijn and Albu, 2002).

Another wide belief is the crucial importance of linkages with research institutes for the innovativeness of small enterprises. According to Morgan (1996) and Leigh

(1995) in successful regions, formal strategising by regional agencies and support of local research institutes can give an impetus in the initial phases of development. Later innovative-research activities are likely to be sustained mainly by voluntary and informal activities on various networks. The existing evidence also suggests that the quality of these linkages is the most important determinant of a SMEs' innovative performance. Being small is not necessarily a major barrier if SMEs are able to match their limited internal resources with complementary resources from other firms, business associations, technical institutes or whatever (Morgan, 1996; 62).

The differences in the intensity of service relations between clusters specialised in different types of production sectors

Both the theoretical and empirical studies show that still in the use of services proximity is important and most of the services are bought locally. Therefore, characteristics of the local production systems and specificities of industrial clusters make a big difference in the intensity of use of services. One of the main reasons for this situation is the sectoral difference in the composition of manufacturing activities. The sectoral differences are important both for local activities and also for local service network formation. In general, it is expected to have a big difference in the service use of firms in clusters specialised in traditional manufacturing activities and the ones that take place in high-tech clusters. The studies show that for traditional industries local service networks as well as local production and knowledge networks are relatively more important, while global linkages seem closely related to the existing export capacities of clusters, rather then their level of technological basis or the innovativeness of the existing sectors.

On the other hand, especially for the firms in the peripheral regions still services provided by national firms and institutions are important (Eraydin and Fingleton, 2004). The most important service linkages for these type of regions seem to be on financial matters and provided at the national level. Obviously, the institutional variety and service facilities provided in different clusters are crucial in determining collaborative actions and other forms and linkages (Saxenian, 1994). Institutional variety accounts for the diversity of co-existing and complementary knowledge basis and facilities in the local industrial structure (Patrucco, 2002). However, as in the case of knowledge networks, the use of available services is connected to the relational capacity of firms (Freel, 2003) and institutional and cultural distance (Lecher and Dowling, 2003).

As indicated by Braun and his colleagues (2002: 90) national differences are also important. This is especially true in service provision and marketing, due to the existence of facilities as well as using these facilities. Although in the globalising world the national difference are believed to decreasing empirical evidences indicate that national institutional differences as well as differences in production culture are important in explanation of networking patterns (Braun, et a., 2002; Koschanzky, 2000; Sydow and Staber, 2002). Also it is possible to see the different networking behaviour between the firms located in central and peripheral regions, since the contact patterns and opportunities are widely differentiated among them. However, the review of the studies on networking demonstrates that it is very difficult to bring rough generalisations in such complicated relational environments. That is why most

of the studies stay at the descriptive level or they give some general explanations such as the difference may be due to differences "tradition of cooperation" (Cooke and Morgan, 1998)

III. The case study

As the brief summary of the existing empirical studies show, the increasing emphasis on globalisation and diversification of services in the theoretical discussions is not widely supported by the empirical findings yet. That is why in this empirical part of the paper presents a detailed analysis on the different service linkages of manufacturing firms that take place in three different types of clusters. The aim is to gain precise insights as to the levels of service networks existing in these clusters and how these networks function by type and by cluster. In order to reach this aim the following points are defined as the focus in this study.

Depending on the theoretical debates and empirical findings of different studies, four main research areas and hypotheses are formulated in the study. The first research area is to verify the importance and level of service networks for manufacturing firms. It is hypothesised that the weight of service networking is still lower compared to production and marketing relations and the service linkages are still predominantly local. The second research area is to examine the relative importance of different types of producer services. The hypothesis here is that while knowledge based service linkages constituted at local level, technical services at the global level are becoming more important. The third one is related to the weight of different service linkages by different types of firms. We expect a positive relation between firm age, firm size and service linkages, besides existing studies suggest the firms with higher numbers of service linkages are more innovative. Lastly, the research is focused on the changing intensity of service relations between clusters specialised in different sectors.

The survey

To analyse the above hypotheses three new industrial clusters in Turkey are defined as the case study areas. These three areas are Denizli, Bursa and Ankara, which represent the different types of industrial agglomerations specialised in different types of productive activities. The first industrial cluster is Denizli, which is one of the centres of textile production in Turkey. It is good example of a cluster located in the periphery that tries to integrate with world markets with the help of its localised capacities created by the long history of specialisation. In Denizli 226 of the 358 firms (1999) are specialised in textile and textile related fields.. The rapid growth in employment and exports enabled Denizli to become the fastest growing region during the 1990s. The second cluster Bursa has been an important centre for textile and automotive manufacturing industry. In Bursa there are 326 textile and clothing firms and 129 machinery and related firms out of 763 total manufacturing firms (2000). This cluster is now trying to upgrade its manufacturing basis, to shift to higher value added products and increase its innovative capacity. The third cluster is Ankara. In Ankara there is a considerable and growing numbers of firms in machinery, electronics (including medical devices) and the military equipment/ defence industry besides the traditional consumer industrial sectors. In Ankara the number of firms in recently growing sectors related to machinery and electronics is 585 (2001). Although

the innovative capacity in Ankara is high, the rate of employment growth is low compared to other clusters. It represents mainly a high-tech industrial cluster in its early stage of development.

The survey method is based on having in-depth interviews with the sample firms. In order to define the sample firms, firstly the lists of SMEs in each cluster, which covered firms with 10 to 249 employees are collected from Chambers of Industry of Commerce in March 2003. Later, the areas of specialisation in each cluster and the lists of SMEs in each area of specialisation are identified; namely machinery and electronics in Ankara, textiles in Denizli and machinery and textiles in Bursa. The new list of firms in these sectors included 332 firms in Ankara, 280 firms in Bursa and 212 firms in Denizli. A questionnaire form is sent to each of the firm that take place in the list. Before sending, managers of the firm are called by telephone (it was not possible to reach 190 firms out of 824 by phone) in order to explain aim of the study and the questions in the form. Only 131 valid forms were received between 23 March 2003 and 15 June 2003, excluding the forms with missing questions or with inconsistent information. The numbers interview forms returned back with full information reached up to 72 in Ankara, 32 in Bursa, and 27 in Denizli.

The interview forms included several questions related to the characteristics of firms, their innovative activities and also their linkages with different types of local, national and global service firms/institutions for different purposes. Therefore they included three sets of questions: (1) structural characteristics of firms, (2) indicators of innovativeness and innovative activities of firms, (3) different types of local, national and global service linkages.

IV. Major findings

Most of the findings of the interview study conducted in the three different types of industrial clusters in Turkey, which covered 131 firms with different size and character provides supporting evidence of the hypotheses formulated in theoretical debates and the findings of existing studies. In some points, however, the figures reveal more interesting features of service linkages than the earlier studies.

The importance of different types of service networks provided at different geographical levels

The findings of the survey clearly show that, as expected, the weight of service networking is still lower compared to production and marketing relations. According to the data delivered by the sample firms it is possible to say that number of linkages with service firms constitute only 3.44 per cent of all their linkages (Table 1). Interestingly the findings reveal that the majority of the linkages of firms are related to marketing activities. Most of the firms do not use intermediary firms/agents for marketing and do not use marketing, market analysis and related service facilities, but prefer to have linkages directly to the buyer and supplier firms. These findings are consistent with the findings of the various studies (Rama at al. 2003; Grotz and Braun, 1997; Keeble, at al., 1999; Larsson and Malmberg, 1999) and also explain that why the industrial geography literature is still less focused on service relations.

The findings of the study also point out that service networks are still predominantly local. Among the services linkages 88,59 per cent is local, whereas 10,50 per cent of service linkages are formed at the national level and interestingly only 0,91 per cent of the linkages with other service firms are at the global level. The share of global linkages in production, marketing and even in knowledge transfer activities are higher than the service linkages. This situation supports the discussion on the difficulties of using global services or the provision of services at the global level by specialised firms. Obviously, using global service firms have advantages, especially if a firm tries to be integrated in the global markets, but for firms in a newly developing industrial cluster in a peripheral country to afford the cost of such a service may be quite difficult.

Is there any difference among the weight of different types of services externalised? The results of the study reveals that for the Turkish firms located in different clusters financial services are the most important one, which followed by consultancy services. The share of the linkages formed with private financial institutions constitute almost 38 per cent of total services externally used and as defined in various studies these linkages are mainly local (Table 1).

Table 1: The use of different types of producer services at different geographical levels by manufacturing firms

	Local	National	Global	Total
Consultancy	**128**	**31**	**2**	**161**
	16.47	33.69	25.00	18.36
	79.50	19.25	1.25	100.00
Private bank	**316**	**16**	**1**	**333**
	40.67	17.39	12.50	37.97
	94.89	4.80	0.31	100.00
Public bank and financial institutions	**90**	**0**	**0**	**90**
	11.58	0	0	10.26
	100.00	0	0	100.00
Technical services and technology transfer firms	**71**	**18**	**5**	**94**
	9.14	19.56	62.50	10.71
	75.53	19.15	5.32	100.00
Public technical services	**57**	**7**	**0**	**64**
	7.33	7.61	0	7.30
	89.06	10.94	0	100.00
Universities	**30**	**5**	**0**	**35**
	3.86	5.43	0	3.99
	85.71	14.29	0	100.00
Private technical education services	**52**	**11**	**0**	**63**
	6.69	11.96	0	7.18
	82.54	17.46	0	100.00
Public training	**33**	**4**	**0**	**37**
	4.25	4.35	0	4.22
	89.20	10.80	0	100.00
Total	**777**	**92**	**8**	**877**
	88.59	10.50	0.91	100.00

	Local	National	Global	Total
Production relations	**2846**	**1483**	**344**	**4673**
	22.95	12.45	30.47	18.36
	60.90	31.73	7.37	100.00
Service relations	*777*	*92*	*8*	*877*
	6.26	***0.77***	***0.70***	***3.44***
	88.59	10.50	0.91	100.00
Marketing relations	**8072**	**10084**	**700**	**18856**
	65.02	84.65	62.00	74.07

	42.81	53.48	3.71	100.00
Knowledge relations	**719**	**254**	**76**	**1050**
	5.77	2.13	6.73	4.13
	68.48	24.19	7.23	100.00
Total	**12414**	**11913**	**1129**	**25456**
	48.77	46.80	4.43	100.00

Consultancy services, which constitute 18,36 per cent of total service linkages show the increasing importance of knowledge and information in the contemporary world, although still they have a local character. Another type of services that has been increasing rapidly in all these clusters are the firms specialised in technical services and technology transfer firms. Compared to other services that are locally provided, manufacturing firms tend to use more both national and global linkages. This finding needs further emphasis. It shows that even industrial clusters in Turkey, firms in general accepted the importance of externalisation of these types of services (see Table 6).

In our survey we have tried to find out whether training services are externalised or not. The figures show that firms try to get benefit from training services provided both by public institutions and private firms. However, still the university linkages are quite limited, since most of the firms have limited financial resources to allocate for research and innovation activities.

The intensity of use of services by size and age of firms

Similar to the findings of the previous studies, the findings of the survey show that there is a significant difference in the number of service linkages between small and medium firms (Table 2). While 44,1 per cent of small enterprises have high numbers of service relations, for medium sized enterprises this ratio reaches up to 70,3 per cent. For individual clusters the results are different. The chi-square analysis shows that in Ankara and Denizli there are significant differences in the use of services between small and larger enterprises, whereas this difference is not significant in Bursa. It is difficult to explain these differences by the level of sophistication of production activities, since Ankara is a place where relatively hi-tech firms are located, whereas Denizli is an important industrial cluster where export oriented textile firms are concentrated.

Table 2: Service relations of small and medium sized firms

		Firms with low service relations		Firms with high service relations		Total	Chi_Squ
		n	%	n	%		
Ankara	Small firms	28	50.9	27	49.1	55	3.94
	Medium firms	4	23.5	13	76.5	17	0.047**
	Total	32		40		72	
Bursa	Small firms	13	59.1	9	40.9	22	0.55
	Medium firms	4	44.4	5	55.6	9	0.457
	Total	17		14		31	
Denizli	Small firms	11	68.8	5	31.3	16	4.49
	Medium firms	3	27.3	8	72.7	11	0.034**
	Total	14		13		27	
Entire sample	Small firms	52	55.9	41	44.1	93	7.266
	Medium firms	11	29.7	26	70.3	37	0.007***

Total	63	48.5	67	51.5	130	

Note: 50 per cent of cells less than expected value in Bursa.

Small Firms: 0-49 employees Medium firms : 50-249 employees
Firms with low service relations: 0-5 relations with service firms
Firms with high service relations: 5+ relations with service firms

Contrary to the findings on size of firms, our analytical studies did not confirm any significant difference in the intensity of use of services by old and young firms (Table 3). In general the older firms seem to have higher number of service linkages, but the shares of firms with low and high number of service linkages are not significantly different among old and young firms. These findings indicate age is not a determinant is the externalisation of services, but there are more important factors.

Table 3: Service relations of young and old firms

		Firms with low service relations		Firms with high service relations		Total	Chi_Squ
		n	%	n	%		
Ankara	Young firms	11	50.0	11	50.0	22	0.40
	Old firms	21	42.0	29	58.0	50	0.52
	Total	32		40		72	
Bursa	Young firms	3	60.0	2	40.0	5	0.034
	Old firms	15	55.6	12	44.4	27	0.85
	Total	18		14		32	
Denizli	Young firms	5	45.5	6	54.5	11	0.304
	Old firms	9	56.3	7	43.8	16	0.58
	Total	14		13		27	
Entire sample	Young firms	19	50	19	50	38	0.028 0.867
	Old firms	45	48.4	48	51.6	93	
	Total	64	48.9	67	51.1	131	

Note: 50 per cent of cells less than expected value in Bursa.

Young firms: 0-9 years Old firms: 10+ years
Firms with low service relations: 0-5 relations with service firms
Firms with high service relations: 5+ relations with service firms

The importance of technological level and innovativeness of firms in setting up linkages with service firms

Many empirical studies suggest that industrial sectors can be grouped in terms of their technological level and innovative capacity (Arndt and Sternberg, 2000, Romijn and Albu, 2002, Freel, 2003). In these empirical studies machinery, electronics, computer, communication, software etc. sectors are classified as high-tech and innovative production activities, while traditional production sectors such as textiles, furniture, food are defined as less innovative and low-technology activities. What is also important is the general consensus of these studies on the importance of technological level and innovativeness in the network relations of manufacturing firms especially medium and large firms (Romijn and Albaladejo, 2002; Rama, at al. 2003).

At this stage of the research the analytical work aimed to analyse whether there is a major difference in the intensity of service relations between high-tech and low-tech production sectors. For this purpose, a new data set is formed by re-grouping sample firms as low-tech and high-tech[7]. The analysis of the new data set indicated that 59.5 per cent of firms with high service relations take place in the high-tech production

sectors, whereas 61.5 per cent of firms with low service relations belongs to low-tech group (Table 4). The data presented in table 4 indicate a positive relation between technological level and the intensity of service linkages.
This observation is supported by the findings of the chi-square analysis, which shows both in Ankara and in total sample the difference in the intensity of service linkages is statistically significant among high-tech and low-tech firms (Table 4). In Bursa and Denizli, however, the probability that service relations of firms diversify with respect to the level of sophistication of the production sectors is not significant. In Denizli due to very limited number of sample high-tech firms (only 4 firms), 50 per cent of cells are less than expected value, and also the difference is not found statistically significant.

Table 4: Service relations of firms from high-tech and low-tech sectors

		Firms with low service relations		Firms with high service relations		Total	Chi_Squ
		n	%	n	%		
Ankara	High-tech sectors	21	37.5	35	62.5	56	4.92
	Low-tech sectors	11	68.8	5	31.3	16	0.027**
	Total	32		40		72	
Bursa	High-tech sectors	9	47.4	10	52.6	19	1.50
	Low-tech sectors	6	69.2	4	30.8	13	0.22
	Total	18		14		32	
Denizli	High-tech sectors	2	50.0	2	50.0	4	0.06
	Low-tech sectors	12	52.2	11	47.8	23	0.93
	Total	14		13		27	
Entire Sample	High-tech sectors	32	40.5	47	59.5	79	5.55
	Low-tech sectors	32	61.5	20	38.5	52	0.018**
	Total	64		67		131	

Note: 50 per cent of cells have actual values less than the expected values in Denizli.
Firms with low service relations: 0-5 relations with service firms
Firms with high service relations: 5+ relations with service firms

The broad perspective on innovation has pointed to the need for drawing new boundaries between services and manufacturing (Drejer, 2004). Dissolution of boundaries between manufacturing and services makes network relations easier and support the synergy in innovation processes. As discussed earlier, the theoretical debates on producer services and innovativeness affirm positive relations between service linkages and innovativeness. Additionally, several studies claim the importance of contacts with service firms in order to enhance their innovative activities (Wood, 2002, Sundbo, at al. 2001, Koschatzky, 1999, MacPherson, 1997). Muller and Zenker (2001), for example, found that 'innovation activities of SMEs is higher in the firms maintaining cooperation with service providers than in the case of non-interacting SMEs'. In the light of these studies, we tried to test the hypothesis: 'the firms with higher numbers of service linkages are more innovative'.

The firms in our sample have been re-grouped according to their service linkages and innovation activities[8] in order to find out how far service linkages are important for the innovativeness of firms. In the total sample, 64 firms have limited number of service contacts, while 67 firms have relatively higher number of service linkages. In table 5, the results show a positive relationship between service linkages and innovativeness. Moreover, they illustrate that firms with the high numbers of service contacts have higher innovation capacity, whereas firms with the low numbers of

service contacts have lower innovative capacities. Only 32.0 per cent of firms with high service linkages have low number of innovations, while 31.0 per cent of firms with the low numbers of service linkages have the high numbers of innovations (Table 5). Obviously, relation with service firms is not the only critical factor for the innovativeness of firms. The figures indicate that 76.1 per cent of SMEs that interacted with service firms introduced innovation activities, while 46.9 per cent of non-interacting firms have also been involved in innovation activities. The similar result exist in the study of Muller and Zenker (2001) in German and French regions. According to the findings of this case study, 76.7 per cent of firms with service linkages introduced innovation, whereas 60.6 per cent of non-interacting SMEs had innovation activities.

Table 5: Relation between innovation activities and service relations of firms

		Firms with low service relations		Firms with high service relations		Total	Chi_Squ
		n	%	n	%		
Ankara	Low innovation	19	61.3	12	38.7	31	6.97
	Medium innovation	8	38.1	13	61.9	21	0.031**
	High innovation	5	25.0	15	75.0	20	
	Total	32		40		72	
Bursa	Low innovation	8	88.9	1	11.1	9	6.18
	Medium innovation	4	57.1	3	42.9	7	0.043**
	High innovation	6	37.5	10	62.5	16	
	Total	18		14		32	
Denizli	Low innovation	7	70.0	3	30.0	10	2.32
	Medium innovation	5	45.5	6	54.5	11	0.310
	High innovation	2	33.3	4	66.7	6	
	Total	14		13		27	
Entire sample	Low innovation	34	68.0	16	32.0	50	13.154
	Medium innovation	17	43.6	22	56.4	39	0.001***
	High innovation	13	31.0	29	69.0	42	
	Total	64	48.9	67	51.1	131	

Low innovation: firms with 0-3 innovation activities in the last three years
Medium innovation: firms with 4-8 innovation activities in the last three years
High innovation: firms with 9+ innovation activities in the last three years

The results of analysis on the total firms are also true for the firms in different clusters studied. In Bursa and Ankara, also innovation activities and service contacts are positively related. The chi-square values indicate that the innovative capacities of firms with low service relations are significantly different than the ones with higher number of linkages in Ankara, Bursa and the firms in the total sample (Table 5). On the other hand, in Denizli the level of innovativeness of firms with different intensity of service linkages is not significantly different. In Denizli limited number of firms in the sample bring difficulties in the evaluation of the findings.

The intensity of service relations according to different clusters: The new forms of service provision

The emphasis on the locally embedded characteristics and dynamics of endogenous growth has been the core of the debates of spatial development in the recent years.

This type of approach overemphasise the different characteristics of clusters, even address each cluster as a unique entity. As discussed earlier this literature also puts special importance to the networks with service firms, since it is believed that networking with local and global service firms and organisations support the performance of these clusters. The success factors are defined as innovativeness, networking and learning capacity, which will provide firms and clusters competitive power in the world markets. Obviously one of the theoretical outcomes of this approach is the idea that "space matters".

In our survey we have worked on three industrial clusters specialised in the production sectors with the different levels of sophistication. Their levels of access to international markets are different and they have different background conditions. The aim is to find out whether the use of services by manufacturing firms in these different types of clusters is different or not.

The findings on the service linkages of firms in the three different clusters (Table 6) shows that the weight of different types of service linkages follow almost the same pattern in all of the clusters. On the other hand, the distribution of service linkages as local, national and global by these three industrial clusters are not parallel to the main stream of discussion, that is the positive relations between the level of sophistication of production activity and the intensity of non-local linkages. The number of local service and non-local service linkages per firm in each of these clusters are, in Denizli 5,9 and 1,4, in Ankara 6,3 and 0,6 and in Bursa 4,9 and 0,6 respectively. The figures are not very different from each other and they do not confirm the importance of sectoral sophistication in the intensity of service relations. Denizli being the less sophisticated industrial district specialised in textiles has even relatively higher shares of non-local linkages than Ankara cluster being specialised in new production sectors and Bursa with an important production background in automotive manufacturing industry in addition to some high-value added production activities.

These findings reveal that there is almost a similar pattern of the externalisation of services and structural characteristics of these clusters do not change the service networking patterns. The figures, however, indicate the importance of private technical services and also private training organisations. Thinking about that these services were mainly delivered by public institutions at the earlier years, it is possible to say that the new attempts to open up clusters into world markets increased the need for the new types of services. It seems that several local service firms used this opportunity. However, in a less sophisticated economy the services provided by private firms are usually limited and existing demand for different services are not strong enough to induce the diversified type of services. The well known vicious circle situation has been observed in each of the clusters studied. This gap between needed and supplied has necessitated some temporal and intermediary institutions and mechanisms.

Recently, it is observed that both the number of public institutions increase and also the services they provide to the manufacturing firms have been diversified in Turkey similar to many regions of Europe (Schmitz and Musyck, ...). However, it is always a question whether services provided do fit exactly the needs of firms. Also there are difficulties in overcoming bureaucratic barriers to use public services. Therefore firms try to find other means. One of the ways of getting some services without paying any

cost is using collaborative relations formed with the other firms. Also, technical information, new designs and technologies can be provided from customers in addition to information on market conditions. As one of the entrepreneurs spelled out, "a design can be developed by the customer or can be taken from abroad and imitated by local firms at a lower cost". Additionally, *"imitation"* or *"practicing ideas developed by leading firms"*, which have been useful for all firms to sustain their existence in the market. Obviously, all these relations mean the importance of informalities and non-market relations.

During the survey it also became evident that to increase the competitive power of these areas in national and international markets several non-governmental non-profit organisations emerged recently, as already defined by other studies (Eraydın, 2002; Özelçi, 2002). Some of these new organisations have undertaken the responsibility of the provision of services. They function as important agents especially in difficult economic periods. There are different examples indicating possible different forms of non-market service support.

- *Coordinating and service units formed by the producers themselves:* In Denizli small enterprises with competitive power formed several institutions on cooperative basis in order to reorganise their relations with each other and to enable the small firms to get benefit more from specialised services. They formed the Aegean Ready-Garment Producers Association (EGS). EGS was initiated in 1993 by the cooperative effort of 464 small producers, 60 per cent of which was from Denizli. While the member firms stayed autonomous, they formed several companies in different fields. The first firm that was specialised in exports was followed by a service firm that provided inputs, namely EGESER, a transportation firm, EGSNAK and insurance company, EGS Sigorta. In 1995 they also founded a bank, EGS Bank. The services provided by the firms in the EGS Group had been very influential in promoting their export capacities and in 1996 and 1997 EGS Foreign Trade company became the leading export firm in Turkey. EGS Group also began to open retail stores abroad, especially in Europe, in order to sell the products of their members under an original brand name. The success of EGS mainly originated from supplying major service needs of small producers. However, when the market conditions have changed the EGS had to stop its activities.

- *Enterprenueurs' associations as intermediary agents for provision of services*: During the economic crisis period of 1990s there appeared several new enterprenueurs' associations which try to reconcile the individual enterpreneurship culture and the traditional values of entrepeneurs based on their cultural identity. These associations, therefore, are not only classical clubs of entrepreneurs, but at the same time became the organisation that provide services and other means of support to their members (Keyman ve Özbudun, 2001). They have been increasingly acted as mediators to help firms to reach the firms financial services, marketing services as well as services on technical issues. A study on one of the clusters, Denizli, indicated that in the decade more than 11 different enterprenuers' associations have been formed, which aimed to enhance collaborative work and joint actions as well as suppling services to their member firms (see Annex). After the improvement of the economic conditions, however,

both the importance of their activities and the number of active group dissolved considerably.

- *Professional local intermediary firms.* What is also found that the need for specialised services stimulated the emergence of some local firms acting as intermediary agents. Their activity areas varies considerably, but their main responsibility remaining to facilitate the relations between local and non-local firms and institutions.

- *Local voluntary organisations:* Although still in limited number what is observed in all clusters is to form some voluntary organisation with the idea of supporting local development, some of which of these services are closely related to the needs of the production activities. The most important ones are related to training.

Table 6: The share of different service networks in three industrial clsuters of Turkey

	BURSA				ANKARA				DENIZLI			
	Local	National	Global	Total	Local	National	Global	Total	Local	National	Global	Total
Consultancy	**32**	**11**	**0**	**43**	**71**	**5**	**2**	**78**	**25**	**15**	**0**	**40**
	20,51	57,89	0	24,4	15,43	14,29	33,33	15,57	15,53	39,47	0	20
	74,42	25,58	0	100	91,03	6,41	2,56	100	62,5	37,5	0	100
Private bank	**59**	**0**	**0**	**59**	**188**	**13**	**1**	**202**	**69**	**3**	**0**	**72**
	37,82	0	0	33,5	40,87	37,14	16,67	40,32	42,86	7,89	0	36
	100	0	0	100	93,07	6,44	0,5	100	95,83	4,17	0	100
Public bank and financial institutions	**15**	**0**	**0**	**15**	**49**	**0**	**0**	**49**	**26**	**0**	**0**	**26**
	9,61	0	0	8,52	10,65	0	0	9,78	16,15	0	0	13
	100	0	0	100	100	0	0	100	100	0	0	100
Technical services and technology transfer firms	**19**	**2**	**1**	**22**	**33**	**6**	**3**	**42**	**19**	**10**	**1**	**30**
	12,18	10,52	100	12,5	7,17	17,14	50	8,38	11,8	26,32	100	15
	86,36	9,09	4,54	100	80,49	14,63	7,31	100	63,33	33,33	3,33	100
Public technical services	**11**	**1**	**0**	**12**	**40**	**5**	**0**	**45**	**6**	**1**	**0**	**7**
	7,05	5,26	0	6,82	8,7	14,29	0	8,98	3,73	2,63	0	3,5
	91,67	8,33	0	100	86,96	10,87	0	100	85,71	14,29	0	100
Universities	**3**	**0**	**0**	**3**	**21**	**3**	**0**	**24**	**6**	**2**	**0**	**8**
	1,92	0	0	1,7	4,57	8,57	0	4,79	3,73	5,26	0	4
	100	0	0	100	87,5	12,5	0	100	75	25	0	100
Private technical education services	**13**	**3**	**0**	**16**	**29**	**3**	**0**	**32**	**10**	**5**	**0**	**15**
	8,33	15,79	0	9,09	6,3	8,57	0	6,39	6,21	13,16	0	7,5
	81,25	18,75	0	100	90,63	9,38	0	100	66,67	33,33	0	100
Public training	**4**	**2**	**0**	**6**	**29**	**0**	**0**	**29**	**0**	**2**	**0**	**2**
	2,56	10,53	0	3,41	6,3	0	0	5,79	0	5,26	0	1
	66,67	33,33	0	100	100	0	0	100	0	100	0	100
Total	**156**	**19**	**1**	**176**	**460**	**35**	**6**	**501**	**161**	**38**	**1**	**200**
	88,64	10,79	0,57	100	91,82	6,99	1,2	100	80,5	19	0,5	100

V. Conclusive remarks

This paper has focussed on three main questions regarding the role of services in the competitive power and innovativeness of firms.

The first question was on the weight of different types of services for manufacturing firms and uniformities and differences at the levels of different types of service networking. Theoretically, in the globalised economy services are becoming more important for manufacturing firms. Firstly, the firms and clusters that want to integrate with world markets try to use services provided at the global level. This tendency accelerates the emergence of new global service firms. Secondly, they want to get more service support by local firms in order to increase their competitive power. The demand for local services stimulates the development of local service firms and local organisations. However, as the findings of this paper clearly indicate still the relations of firms are dominated by the marketing activities, production relations has the secondary importance and service linkages remain to have smaller shares similar to knowledge relations. In the three industrial clusters it is evident that still the firms have difficulties to externalise some of the services they have needed. It is not difficult to understand this situation. As the entrepreneurs clearly stated during the interview studies local services are not diversified enough to meet the needs of firms and secondly firms are not financially strong to purchase the services provided globally. Taking place in a peripheral economy obviously bring certain disadvantages to the manufacturing firms as well as the newly emerging service firms. That is why some temporal mechanisms and intensities also emerge in the places where the firms are agglomerated.

Secondly, it aims to identify the characteristics of firms that exhibit higher intensities of use of services. Obviously the term "characteristics" includes the different properties of firms. Parallel to the previous studies, two properties of firms are taken account in this paper; size and age of firms. The findings on the importance of size and age in the intensity of use of services are contradictory. While the size of firms are important in establishing service relations, our analytical studies did not confirm any significant difference in the intensity of use of services by old and young firms. In general the older firms seem to have higher number of service linkages, but the shares of firms with low and high number of service linkages are not significantly different among old and young firms. Interestingly the differences in network relations in clusters specialised in different activities also were not significant.

The third question was whether a firm's access to global services makes a difference to the innovativeness of firms. In the literature many studies support the thesis that "innovations" and "technical improvements" stem from local dissemination networks with suppliers, customers (Bergman and Feser, 2001; Braun, et.al, 2002; Camagni and Capello, 2000; Freel, 2003; Tödling and Kaufmann, 1999 and 2001) and competitors (Arndt and Strenberg, 2000). What is the contribution of service firms to the innovativeness of manufacturing firms? As discussed earlier there are increasing number of studies indicating the importance of relations with the service providers in the innovativeness of firms (Wood, 2002, Sundbo, at al. 2001, Koschatzky, 1999, MacPherson, 1997;. Muller and Zenker, 2001). In our study the findings are supports the same hypothesis. We found that positive and significant relations between service

linkages and the innovativeness of firms. If we repeat that innovativeness is the key issue for future success of firms and industrial clusters, then the importance and the contribution of services to the growth of firms and clusters become more evident. Although the supporting empirical evidence was not many, this idea became the basis of regional innovation strategies practiced in many parts of the world.

Although most of the findings summarised above parallel to the expectations, one of the points raised above deserves further discussion. That is the emergence of several different organisations and institutions that tries to compensate the inadequacy of service facilities in these three clusters. As identified above they are informal and formal mechanisms and temporary organisations for service support. The existence of such organisations and units shows that especially in certain periods, the importance of non-market relations and services provided via these relations can act as buffer mecanisms.

The results of this study have various implications for further studies on service networks. Firstly, it shows that although individual case studies are very useful, there is need for comparative analysis in order to see the different causes and effects associated networking under different structural and growth conditions. Since each has peculiar characteristics, the generalisation of individual case studies may be misleading. Secondly, there is need for more quantitative analysis, although data collection is very difficult, in order to confront theory with actual evidence. Especially the changing nature of collaboration between manufacturing firms, service firms and institutions beyond the capitalistic relations deserves further attention.

References

Amin, A. and Cohendet, P., 1999, 'Learning and adaptation in decentralised business networks', *Environment and Planning : Society and Space*, pp. 87-104

Arndt, O. and Strenberg, R. (2000) "Do Manufacturing Firms Profit from Intraregional Innovation Linkages? An Empirical Based Answer", *European Planning Studies*, 8(4), p.465-486.

Asheim, B.T. (1996), 'Industrial Districts as "Learning Regions": a Condition for Prosperity', *European Planning Studies*, vol. 4 (4), pp. 379-397.

Bacaria, J and Alomar, S. B. (1998), 'The Catalan innovation system: governing rapid changes', Braczyk, H-J., Cooke, P. and Heidenreich, M. (eds) *Regional Innovation Systems: The Role of Governances in a Globalized World.* London, UCL Press, pp. 72-98

Bagchi-Sen S, Sen .J (1997) The current state of knowledge in international business in producer services. *Environment and Planning A*, 29, pp. 1153–1174.

Becattini G. (1991), 'The Industrial District As A Creative Milieu', in Benko,G and Dunford, M. (eds) *Industrial Change And Regional Development,* Belhaven, London, pp. 102-113.

Beyers W B, Alvine M J (1985) Export services in post-industrial society, *Papers of the Regional Science Association*, 57, pp. 33– 45.

Beyers W B, Lindahl D P (1996) Explaining the demand for producer services: is cost-driven externalization the major factor?, *Papers in Regional Science*, 75, pp. 351–374.

Braun, B., Gaebe, W., Grotz, R., Okamoto, Y. and Yamamoto, K. (2002) "Regional Networking of Small and Medium - Sized Enterprises in Japan and Germany: Evidence from a Comparative Study", *Environment and Planning A*, 34, pp.81-99.

Brusco, S. (1990), "The Idea of Industrial Districts: Its Genesis", F. Pyke, W. Senberger (eds), *Industrial Districts and Local Economic Regeneration*, Geneva, International Institute for Labour Studies.

Bryson, J.R. and Rusten, G. (2004) Virtual firms and the rise of project-based-organisational forms for the supply of business service expertise: Informational communication technologies and the stretching of social relationships across space, IGU Commission on the Dynamics of Economic Change, Service Worlds: Employment, Organisation and Technologies, Birmingham, UK, 9-13 August.

Buckley M J, Casson, M (1976) The Future of Multinational Enterprise, Macmillan, London

Caves, R E (1971) "International corporations: the industrial economies of foreign investment" *Economica,* 38, 1-27

Collinson, S. (2000), "Knowledge Networks for Innovation in Small Scottish Software Firms", *Entrepreneurship & Regional Development,* 12, p.217-244.

Cooke, P, Uranga, M. G. and Etxebarria, G. (1998), 'Regional Systems Of Innovation: An Evolutionary Perspective', *Environment And Planning A,* vol. 30, pp. 1563-1584.

Cooke, P. (1998) 'Global clustering and regional innovation: systemic integration in Wales, in H.-J. Braczyk, P. Cooke and M. Heidenreich (Eds) *Regional Innovation Systems: The Role of Governances in a Globalized World,* London, UCL, 245-262

Cumbers, A., Mackinnon, D. and Chapman, K. (2003) "Innovation, Collaboration and Learning in Regional Clusters: A Study of SMEs in the Aberdeen Oil Complex", *Environment and Planning A,* 35, pp.1689-1706.

Daniels P W (1985) *Service industries: A geographic appraisal* (Methuen: London)

Daniels P. W. and Moleart F(1991) *The Changing Geography of Advanced Producer Services—Theoretical and Empirical Perspectives.* London: Belhaven Press

Daniels, P.W. and Bryson, J.R. (2002) "Manufacturing services and servicing manufacturing: knowledge based cities and changing forms of production", *Urban Studies,* 39, 5-6, pp.977-991.

Drejer, I. (2004) "Identifying innovation in surveys of services: a Schumpeterian perspective", *Research Policy,* 33, pp.551-562.

Dunning, J. H. (1993) The Globalization of Business: The Challenge of the 1990s. New York: Routledge.

Eraydın, A. (2002), The local embeddedness of firms in social networks in Turkish industrial districts: the changing role of networks in local development (Eds M. Taylor and S. Leonard) *Social capital and the Embedded Enterprise: International Perspectives,* Ashgate, Aldershot, pp. 269-289

Evans, D. and Volery, T. (2001) "Online business development services for entrepreneurs: an exploratory study", *Entrepreneurship & Regional Development,* 13, pp.333-350.

Freel, M.S. (2003) "Sectoral patterns of small firm innovation, networking and proximity", Research Policy, 32, pp.751-770.

Garafoli, G. (1991), "Italian Dynamics from the 1970s to the 1980s", G. Benko, M. Dunford (eds), *Industrial Change and Regional Development: The Transformation of New Industrial Spaces,* Belhaven, London.

Ghosh, B. (1997) *Gains from global linkages: Trade in services and movements of persons* (St. Martin's Press: New York)

Gillespie A E, Green A E (1987) The changing geography of producer services employment in Britain, *Regional Studies,* 21, 397-411

Glasmeir, A. (1994), 'Flexible Districts, Flexible Regions? The Institutional And Cultural Limits To Districts In An Era Of Globalization And Technological Paradigm Shift' in A. Amin, and N. Thrift (eds) *Globalisation, Institutions And Regional Development In Europe,* Oxford University Press, Oxford, pp. 118-146.

Goe W R (1990) Producer services, trade and the social division of labour, *Regional Studies,* 4, pp. 327–342.

Grabher, G. (1993), 'Rediscovering the social in the economics of interfirm relations', in G. Grabher (ed.), *The Embedded Firm. On Socioeconomics of Industrial Networks,* Routledge, London, pp. 1-33.

Granovetter, M. (1985), 'Economic action and social structure: the problem of embeddedness', *American Journal of Sociology,* vol. 19, pp. 418-510

Grotz, R. and Braun, B. (1997) "Territorial or Trans-territorial Networking: Spatial Aspects of Technology Oriented Co-operation within the German Mechanical Engineering Industry", *Regional Studies*, 31(6), p.545-557.

Harvey D, 1989, *The Condition of Postmodernity: An enquiry into the origins of cultural change,* Basil Blackwell, Cambridge

Heidenreich, M and Krauss, G. (1998), 'The Baden-Württemberg production and innovation regime: past successes and new challenges', Braczyk, H.J., Cooke, P. and Heidenreich, M. (Eds) *Regional Innovation Systems: The Role of Governances in a Globalized World,* London, UCL Press, 214-244.

Heidenreich, M. (1996), 'Beyond Flexible Specialization: The Rearrangement of Regional Production Orders in Emilia Romagna and Baden-Württemberg' *European Planning Studies*, vol.4, pp. 401-417

Illeris, S (1990) "Local and distant service provision" in S. Illeris and L.Jacobsen (Eds) *Networks and Regional Development,* NordREFO, Copenhagen, pp. 127-152

Illeris, S. (1996) *The Service Economy—A Geographical Approach.* Chichester: John Wiley & Sons.

Kautonen, M (1996), 'Emerging innovative networks and milieux: the Case of furniture industry in the Lahti region of Finland', *European Planning Studies*, vol.6, no. 4, pp. 439-456

Keeble, D and Lawson, C. (1999), 'Collective Learning Processes, Networking and 'Institutional Thickness' in the Cambridge Region', *Regional Studies,* vol. 33, no.4, pp. 319-

Keeble, D., Lawson, C., Moore, B. and Wilkinson, F. (1999) "Collective Learning Process, Networking and 'Institutional Thickness' in the Cambridge Region", *Regional Studies*, 33(4), pp. 95-104.

Keeble, D., Lawson, C., Smith, H.L., Moore, B. and Wilkinson, F. (1998) "Internationalisation Process, Networking and Local Embeddedness in Technology Intensive Small Firms", *Small Business Economics*, 11, pp.327-342.

Keil, S. and Mack R. (1986) Identifying export potentials in the service sector, *Growth and Change*, 17, pp. 1– 7.

Koschatzky, K. (1999) "Innovation Networks of Industry and Business-Related Services-Relations between Innovation Intensity of Firms and Regional Inter-Firm Cooperation", *European Planning Studies*, 7(6), p.737-758.

Koschatzky, K. (2000) "A River is a River-Cross- Border Networking Between Baden and Alsace", *European Planning Studies*, 8(4), p.429-450.

Landabaso, M. Oughton, C. and Morgan, K. (1999*), Learning regions in Europe: Theory, policy and practice through the RIS experience*" paper presented 3rd International Conference on Technology and Innovation Policy: Assessment commercialisation and application of science and technology and the management of knowledge Austin USA August 30-September 2

Larsson, S. and Malmberg, A. (1999) "Innovations, Competitiveness and Local Embeddedness a Study of Machinery Producers in Sweden", *Geografiska Annaler*, 81B (1), p.1-18.

Leigh, C.M. (ed.) (1995), *A Regional Innovation Strategy: towards a blueprint for Yorkshire and Humberside*, Yorkshire and Humberside Regional Research Observatory

Leyson A, Thrift, N (1997*) Money/ Space: Geographies of monetary transformation*, Routledge, London and New York

MacPherson, A. (1997) The role of producer service outsourcing in the innovation performance of New York State manufacturing firms, *Annals of the Association of American Geographers*, 87(1), 52-71.

Malmberg, A. and Maskell, P. (1997), 'Towards an Explanation of Regional Specialisation and Industry Agglomeration', *European Planning Studies*, vol. 5, pp. 1997.

Marshall J N (1982) Linkages between manufacturing industry and business services, *Environment and Planning A,* 14 523-540

Marshall J N (1985) Business services, the regions and regional policy, *Regional Studies*, 353-364

Mc Pherson, A. (2002), 'The contribution of academic-industry interaction to product innovation: The case of New York State's medical devices sector', *Papers of Regional Science,* vol. 81, pp.121–129

Morgan, K. (1996), 'Learning-by interacting: Inter-firm networks and enterprises support', *Networks Of Enterprises And Local Development: Competing And Cooperating In Local Systems,* OECD:Paris, 53-66

Morshidi, S (2000) Globalising Kuala Lumpur and the Strategic Role of the Producer Services Sector, *Urban Studies*, Vol. 37, No. 12, 2217– 2240

Muller, E. and Zenker, A. (2001) "Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems", *Research Policy*, 30, pp.1501-1516.

Noyelle T J, Stanback T M (1984) *The Economic Transformation of American Cities,* Rowman and Allanheld, Totowa, NJ

Noyelle, T. J. (1987) *Beyond Industrial Dualism: Market and Job Segmentation in the New Economy.* Boulder, CO: Westview Press.

O'Farrell P N., Moffat L, Hitchens D. (1993) Manufacturing demand for business services in a core and peripheral region: does flexible production imply vertical disintegration of business service?, *Regional Studies*, 27, pp. 385– 400.

Özelçi, T (2002) Institutional aspects of regional/local economic development, Ph.D. Thesis, Middle East Technivcal University, department of Urbana and Regional Planning, Ankara

Piore, M. and Sabel, C.F. (1984), *The Second Industrial Divide*, Basic Books, New York.

Porterfield S L, Pulver G C (1991) Exports, impacts and locations of service producers, *International Regional Science Review*, 14, pp. 41–59.

Porterfield S L, Cox T L (1991) The export decision of selected services-producing and manufacturing industries, *Growth and Change,* 22, 66-85

Rama, R., Ferguson, D. and Melero, A. (2003) "Subcontracting Networks in Industrial districts: The electronic Industry of Madrid", *Regional Studies*, 37(1), p. 71-88.

Revilla-Diez, J. (2001), 'Metropolitan innovation systems- a comparison between Barcelona', Stockholm and Vienna, *International Regional Science Review,*

Romijn, H. and Albu, M. (2002) "Innovation, Networking and Proximity: Lessons from high-technology firms in the UK", *Regional Studies*, 36(2), p. 81-86.

Roper, S. (2000), *Benchmarking Regional Innovation: A Comparison Of Baden-Württemberg, Bavaria, Northern Ireland And The Republic Of Ireland,* Northern Ireland Economic Research Centre, Working Paper Series No. 56

Rugman A M (1981) Inside the multinational: The Economşcs of Internal Markets, Colombia University Press, New York

Schmitz, H. and Musyck, B. (1994), "Industrial Districts in Europe - Policy Lessons for Developing-Countries", *World Development*, 22, 6, 889-910.

Simmie, J. (2002) "Knowledge Spillovers and Reasons for the Concentration of Innovative SMEs", Urban Studies, 39, pp.885-902.

Simmie, J., Sennett, J., Wood, P. and Hart, D. (2002) "Innovation in Europe: The Tale of Networks, Knowledge and Trade in Five Cities", *Regional Studies*, 36(1), p. 47-64.

Staber, U. (1996), 'Accounting for Variations in the Performance of Industrial Districts: The Case of Baden-Württemberg', *International Journal of Urban and Regional Research*, vol. 20, pp. 299-316

Stein, R. (2002) Producer Services, Transaction Activities, and Cities: Rethinking Occupational categories in Economic Geography, *European Planning Studies, Vol. 10, No. 6, 2002*

Sundbo, J., Lhonston, R., Mattsson, J., Millett, B. (2001) "Innovation in service internationalisation: the crucial role of the frantrepreneur", *Entrepreneurship & Regional Development*, 13, pp.247-267.

Tödling, F. and Kaufmann, A. (1999), 'Innovation systems in Europe-A comparative perspective', *European Planning Studies*, vol.7, no.6, pp. 699-717

van den Berg, L., Braun, E and van Winden, W. (2001), 'Growth clusters in European Cities: An integral approach', *Urban Studies*, vol. 38, no. 1, pp. 185-205

Wernerheim, M. and Sharpe, C.A. (2003) "High order producer services in metropolitan Canada: How footloose are they?", *Regional Studies*, 37, 5, pp.469-490.

Wood P E (1986) The anatomy of job loss and job creation: some speculations on the role of the producer service sector, *Regional Studies*, 20, 37-46

Wood P E (1991) Flexible accumulation and the rise of business services, *Transactions Institute of British Geographers*, 16, 160-172

Wood, P. (2002) "Knowledge intensive services and urban innovativeness", *Urban Studies*, 39, 5-7, pp.993-1002.

END NOTES

[1] The figures provided by Illeris (1996:173)is in 1980 244 billion US$ of services and 1085 US$ of goods, while the figures in 1990 is 769 US$ for services and 3265 for goods US$.
Ghosh (1996: 34) on the other han gives 751,6 US$ of commercial services are exported and 771,2 US$ of commercial services are imported by different countries in year 1990.

[2] According to Stein (2002), in the literature on services, the complaint that the category services is extremely heterogeneous is endemic. Therefore, general conclusionson the distribution of services can only be drawn for certain subgroups. A recent of. cial publication of the European Commission (EC, 1999a) based on this taxonomy classifies services into the main groups:consumer and producer services, each of those again into several subgroups (e.g. business services), which consist of a number subsectors (e.g. computer and related services) that are in turn composed of a number of activities.

[3] The share of producer (business services) services in total employment raised considerably betwwen 1960 and 1987 in developed economies; The shere of empoloynet iin business services rose from 1,9 per cent to 5,5 per cent in France, from 2,2 per cent to 5,8 per cent in UK, from 1,5 per cent to 6,2 per cent in Japan and from 2,1 per cent to 7,5 per cent in USA.

[4] Numerous subdivisions of services have been proposed from a macro-economic perspective.But as Marshall and Wood (1995, p. 35), quoting their earlier work, state that "questions of classification and definition remain as problematic as ever".

[5] The service sectors with export potential is defined by suing location quoteient method.

[6] The study covers following regions; Hannover-Nord, Hannover-Central, Hannover-South, Braunschweig, Goettingen, Leipzig, Oberlausitz, Dresden, Chemnitz, Zwickau-Plauen, Karlsruhe, Freiburg, Schwarzwald-Baar-Heuberg.

[7] High-technology sectors: Machinery, equipment, appliances, apparatus and associated products. Motor vehicles, trailers and vehicle parts. Office and computing machinery, equipment and supplies. Electrical machinery, apparatus, equipment and consumables. Radio, television, communication, telecommunication and related equipment and apparatus. Medical and laboratory devices, optical and precision devices, watches and clocks, pharmaceuticals and related medical consumables. Low-technology sectors: Food products and beverages. Textiles and textile articles, clothing and footwear.

[8] SMEs, which are blow the number of average service contacts, have been described as firms with low service relations. SMEs, which are above this average number, have been named as firms with high service relations. On the other hand, innovation capacities of firms are handled in three categories. 0-3 innovation activities in the last three years are described as low innovation capacity, 4-8 innovation activities as medium innovation capacity, 9+ innovation activities as high innovation capacity.

PROJE ÖZET BİLGİ FORMU

Proje Kodu: **SSB-COST-4001**

Proje Başlığı: **SANAYİ ODAKLARINA DENEYİMİNE DAYALI OLARAK BÖLGESEL GELİŞME KURAM VE POLİTİKALARININ YENİDEN TANIMLANMASI**

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Destekleyen Kuruluş(ların) Adı ve Adresi:
TÜBİTAK
ODTÜ -AFP
AB-COST

Projenin Başlangıç ve Bitiş Tarihleri: 1.11.2000- 1.5.2005

Öz: (en çok 70 kelime)
Projenin amacı sanayi odakları olarak tanımlanan merkezlerinin incelenerek bölgesel gelişme konusundaki kuramsal çalışmalara katkı sağlanmasıdır. Bu amaçla Türkiye'deki üç sanayi odağında (Denizli, Çorum, Ankara) ayrıntılı araştırmalar, ayrıca Avrupa Birliği bölgeleri ve Türkiye'deki diğer sanayi odaklarını içeren kantitatif analizler yapılmıştır. Sonuç olarak, sanayi odaklarının bölgesel gelişme için bir model olarak kullanılabileceği, ancak bu modelin sanayi yığılmalarının olduğu yörelerde kümeden-sanayi odağına geçiş için stratejik plan ve bölgesel yenilikçilik stratejileri ile desteklenmesi gerektiği belirlenmiştir.

Anahtar Kelimeler:

Bölgesel gelişme, sanayi odakları, küçük ve orta ölçekli sanayiler, üretim ağları, yenilikçilik

Projeden Kaynaklanan Yayınlar

- Fingleton, B., Eraydın, A ve Paci, R.,. 2003, "Introduction" *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128
- Eraydın, A., 2003, "Dynamics and Agents of Regional Growth: The Performance of SME Clusters in Europe" *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128
- Armatlı-Köroğlu, B. ve Beyhan,B."The Changing Role of SMEs in the Regional Growth Process: The Case of Denizli" " *Regional Economic Growth, SMEs and Wider Europe* (2003) editörler Bernard Fingleton, Ayda Eraydın and Rafaele Paci, Asgate: Aldershot, pp.103-128
- Eraydın, A., 2001, "Regional labor markets, growth and SMEs" "Regional Economies in Transition" Uddevalla Symposium 2001, Research Reports: University of Trolhattan:Uddevalla, s. 201-216

- Eraydın, A., 2005, "The role of SME clusters on Regional Economic Growth and Innovation" Paper presented "Knowledge and Regional Economic Development" Open Conference 2005, June 9-11 Barcelona Spain (yayına hazırlanma aşamasında)
- Eraydın, A. ve Fingleton, B., 2005, Networks relations and local economic development: some causes of differentiated network structures and intensities among Turkish industrial firms ***Environment and Planning A*** *yayınlanıyor*
- Eraydın, A. Armatlı-Köroğlu, B., 2005, Innovation, Networking and the New Industrial Clusters: the Characteristics of Networks and Local Innovation Capabilities in the Turkish Industrial Clusters, ***Entrepreneurship and Regional Development,*** 17, Temmuz, s. 237-266
- Eraydın, A. Armatlı-Köroğlu, B., 2005, Globalisation and diversification of producer services: Increasing role of services in competitive power and innovativeness of firms and industrial clusters, ***European Planning Studies***, değerlendiriliyor

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Projenizin Kesin Raporunun ulaştırılmasını istediğiniz kurum ve kuruluşları ayrıca belirtiniz.