

# Factor mobility, trade and 'regional' economic differences: What story should we tell our grandchildren?

A.P. Thirlwall

*University of Kent at Canterbury, Kent, U.K.*

## **Abstract**

Neoclassical economic theory predicts that regional differences in per capita income levels and unemployment may be explained by factor mobility and trade. The paper argues that the predictions of neoclassical equilibrium and growth theory may be seriously misleading. When dynamic feedback mechanisms and increasing returns are considered factor mobility, trade and growth itself may be disequilibrating and lead to divergences between regions and between countries. A model of growth based on the performance of economies related to the structural characteristics of production and the demand characteristics of the goods traded. The paper concludes that the Turkey's economic progress in the future, as it liberalises factor markets and trade, will depend largely on the performance of the tradeable goods sector and the extent to which it can shift resources in to activities with a high income elasticity of demand in world market.

## 1. Introduction

In orthodox neoclassical theory, regional differences in levels of per capita income and unemployment are narrowed by the processes of factor mobility and trade. Conventional neoclassical growth theory also predicts the long run convergence of per capita incomes across regions and countries, with all economies converging on a common long run steady-state growth of labour augmenting technical progress. Technology is treated as a public good. By contrast, there is a large heterodox body of literature which argues that regional economic differences are not necessarily narrowed by factor mobility and trade; and now neoclassical growth theory is challenged by 'new', endogenous growth theory which predicts divergence, or only conditional convergence, by relaxing the (always dubious) assumption of diminishing returns to capital, so that the ratio of saving or investment to GDP also matters for long run growth. Where does the truth lie? What story should we tell our grandchildren? More importantly, what model should policy makers use in developing countries, or in newly industrialising countries such as Turkey, which are contemplating entering into Customs Union agreements with other countries which allow for greater freedom of trade, and for the free movement of the factors of production? Would a country such as Turkey benefit or suffer? What are the primary factors on which a considered judgement depends?

I will argue that whether a region or country gains relative to others with the general freeing of factor mobility and trade will depend first on the nature and strength of factor movements; second, on the structure of production and the demand characteristics of goods, and thirdly on the balance of payments (or monetary) consequences of the freeing of trade.

First of all, however, let us rehearse the neoclassical story. Take two regions (A and B) both at the same level of development, and then assume that one (say A) suffers an adverse shock which raises unemployment and reduces wages. Labour migrates from A to B in response to differences in opportunities which is supposed to lower unemployment and raise wages in A, and to raise unemployment and lower wages in B, leading to equality. Capital, by contrast, is assumed to 'migrate' from B to A in response to a higher rate of return on capital where wages are lower, thus reinforcing the equilibrating tendency. It is immediately obvious that all this is very general and static, and a number of qualifications need to be made. First, migration is usually a very selective process which can have serious detrimental

effects in the region of origin and confer positive externalities in the regions of destination (see Fagerberg, Verspagen and Caniels, 1992). Secondly, migration not only affects supply, it also affects demand. When labour moves into a region it demands goods and services which adds to labour demand, and when labour leaves a region the demand for output falls. The supply and demand for labour are interdependent. Thirdly, and a related point, the (expected) rate of return on capital is affected by demand as well as by the cost of labour. Capital is just as likely to flow to high wage regions to which labour is migrating as to low wage regions where investment opportunities (at least for the provision of local goods and services) are diminishing. In short, factor movements may not be equalising, as Myrdal (1957) and Hirschman (1957) tried to teach us a long time ago. On the contrary, they may be disequilibrating through a process which Myrdal first coined 'circular and cumulative causation', which is nothing more than the idea of virtuous and vicious circles based on positive and negative feedback mechanisms.<sup>1</sup> The proposition applies to both regions within countries and between countries, although there are likely to be differences in the strength of migration and the characteristics of migration in the two sets of economies.

In the static neoclassical equilibrium model, trade is also equilibrating. In the absence of factor mobility, trade acts as a substitute, with poor, low wage regions specialising in relatively labour intensive goods, and rich, high wage regions specialising in relatively capital intensive goods. The returns to factors of production will equalise. All this assumes that labour productivity is the same across regions, and that free trade does not disturb the assumption of full employment. Two major factors of production will equalise. All this assumes that labour productivity is the same across regions, and that free trade does not disturb the assumption of full employment. Two major factors could cause unemployment: firstly, a limit to employment in diminishing returns activities, and secondly balance of payments constraints on demand if the balance of payments consequences of trade are not self-rectifying.

Another strand of the neoclassical story which emphasises equilibrium and convergence is neoclassical growth theory, which has recently been challenged by 'new', endogenous growth theory, but had already been challenged by economists in the past, most notably by Kaldor (1957, 1961) in his various growth models which introduced a technical progress function to replace the neoclassical

---

<sup>1</sup> Hirschman used the term 'polarisation effects'.

production function and dropped the assumption of diminishing returns to capital. There are three basic predictions of the conventional (Solow, 1956) neoclassical growth model: a) first, in the steady state the level of per capita income depends positively on the savings/investment ratio, and negatively on the rate of population growth; b) secondly, in the steady state, the long run growth of output is determined by the rate of growth of the labour force in efficiency units (i.e. the rate of growth of the physical labour force plus the rate of labour augmenting technical progress) and is independent of the savings/investment ratio because a higher level of saving and investment is offset by a higher capital-output ratio (or a lower productivity of capital) owing to the assumption of diminishing returns to capital, and c) thirdly, that given the same tastes and technology across regions, and the assumed inverse relation between the level of capital per head and the productivity of capital, poor regions will grow faster than rich regions, thus leading to the convergence of per capita income across regions (unconditional convergence as it is called in the 'new' growth literature).

We see from this brief introduction that orthodox neoclassical theory is obsessed with the notions of equilibrium and convergence; with the presumption that free trade and the free mobility of the factors of production will always benefit poor regions and countries because regional economic disparities will narrow. Three issues then arise. First, how does the neoclassical story stand up to empirical scrutiny? Secondly, if it doesn't, what are the forces that may perpetuate divergence? Thirdly, turning to Turkey, what is likely to happen as trade becomes freer and factor markets are liberalised? The remainder of the paper will address these three issues.

## 2. Convergence or divergence across regions and countries?

First let us consider evidence across regions within countries (including the European Union as a single economy). There are examples where free trade and factor mobility do seem to have narrowed regional differences in economic welfare. The most spectacular case seems to be the United States where Barro and Sala-i-Martin (1992) show that there has been a process of regional per capita income convergence going on over the last hundred years. Taking personal income data, they find an inverse relation across US regions between the average growth of per capita income over the period 1880-1988 and the initial (1880) level of per

capita income, with a correlation coefficient of -0.93. Only two sub-periods, 1920-30 and 1980-88, show evidence of divergence. Using Gross State Product over the period 1963-86 shows a similar inverse relation across 48 States, although the correlation coefficient is smaller and there is more instability between the various sub-periods. This disappears, however, when the sectoral composition of State output is allowed for. Both income and product data suggest convergence at the rate of approximately 2% per annum.

In Europe, the evidence is more mixed. Across the regions of Europe, there is some evidence of per capita income convergence (but often conditional) up to 1980, but not thereafter. Regional unemployment rate differences, however, both within Europe as a whole, and within individual countries, have remained remarkably stubborn. Barro and Sala-i-Martin (1991) take 73 EU regions over the period 1950-85, and find convergence at the rate of 2% per annum. The study has been criticised by Armstrong (1996), however, on the grounds that GDP data are expressed in current prices and exchange rates, and only regions in the seven most prosperous EU countries are taken.<sup>2</sup> Armstrong takes four alternative data sets for regions and income, and finds the rate of convergence to be considerably slower, and to be non-existent in the 1980s. Fagerberg and Verspagen (1996) also come to a similar conclusion, at least for the 1980s. They take 70 regions in six EU countries and show convergence up to 1980, but not since. For the period 1950-70, the rate of catch-up is estimated at 4.3% per annum; for the period 1970-90, 2.4% per annum, but for the period 1980-90 there was no significant catch-up. The authors argue that the scope for convergence is not exhausted, but other factors in the 1980s pushed towards divergence, particularly differences in unemployment and in research and development (R&D) effort between industrial and agricultural regions. Indeed, it appears to be the case from a further study by Fagerberg, Verspagen and Caniels (1996) that regional differences in per capita income are systematically related to differences in unemployment rates. They take 64 regions in Germany, France, Italy and Spain over the period 1980-90, and find that growth in poor regions is hampered by unfavourable industrial structure and weak R&D effort. Employment in poor regions grew faster, but so did labour supply, preventing a reduction in the rate of unemployment. There is evidence of conditional convergence, but only after allowing for differences in industrial

---

<sup>2</sup> Armstrong also points out that the 73 regions do not coincide with any of the standard definitions of regions used by Eurostat - but, of course, any definition of a 'region' is arbitrary.

structure, R&D effort, population density and migration. Interestingly, labour migration is found to have a strong positive impact on per capita income growth, indicating that migration was disequilibrating during this period. The policy implications, which might have some relevance for Turkey, are that the predominance of agriculture is a barrier to growth in poor regions, mainly because the scope for scale economics and R&D is less than in industry. Faster growth requires structural change in favour of industrial activities, but this requires, in turn, the appropriate physical infrastructure and the provision of human capital -the factors now stressed by 'new' growth theory.

Turning to regional unemployment rates across Europe, there is no evidence of 'global' convergence over the last twenty years. A study by Baddeley, Martin and Tyler (1996) shows that the absolute dispersion of ratios tends to follow a procyclical pattern, rising in the recession of the early 1980s, falling in the boom 1986-90, and rising again post-1990.<sup>3</sup> Underlying these cyclical movements, the trend of dispersion has been upwards. Taking 427 regions in the UK, Germany, France, Spain, Belgium and Italy, the standard deviation of unemployment rates rose from 3.2 in 1983 to 4.5 in 1994. Within the six countries themselves, regional unemployment rate differences have either persisted or widened, except in the UK. The authors argue that the persistence should not be interpreted as a prolonged disequilibrium in regional labour markets, but as an equilibrium phenomenon associated with differences in industrial structure and the numbers of long term unemployed. I shall argue later that differences in regional growth rates should also be interpreted as an equilibrium phenomenon associated with differences in industrial composition and in the income elasticity of demand for regional exports and imports.

If we now think of regions as countries, what does the international evidence suggest? Neoclassical growth theory predicts unconditional convergence, but it was clear long before the advent of 'new' growth theory that there had been no narrowing of the international distribution of income, at least in the post-war years. The growth of income per head has been as high (if not higher) in rich countries as in poor countries, leaving the Gini ratio for the world distribution of income virtually unchanged. The assumptions of neoclassical growth theory, however,

---

<sup>3</sup> In an early study of the cyclical sensitivity of unemployment, I found this behaviour for the regions of the UK (Thirlwall, 1966).

were always so unrealistic that there could never be the presumption of unconditional convergence. It is simply not true that preferences and technology are the same across countries, giving the same ratios of saving and investment to GDP and the same production function. On the latter point, it was always foolish to assume, as Kaldor pointed out in several different contexts, that the productivity of capital would be lower in capital-rich countries than in capital-poor countries, therefore giving a faster rate of growth in poor countries for the same ratio of output invested. Outside of the neoclassical paradigm, the amount of investment always mattered for long run growth long before the invention of endogenous growth theory. Two quotes from Kaldor will illustrate:

“As regards the process of economic change and development in capitalist societies, I suggest the following ‘stylised facts’ as a starting point for the construction of theoretical models.... (4) steady capital-output ratios over long periods; at least there are no clear long-term trends, either rising or falling if differences in the degree of capital utilisation are allowed for. This implies, or reflects, the near identity in the percentage rate of growth of production and of the capital stock -i.e. that for the economy as a whole, and over long periods, income and capital tend to grow at the same rate” (Kaldor, 1961).

and

“A lower capital-labour ratio does not necessarily imply a lower capital-output ratio - indeed, the reverse is often the case. The countries with the most highly mechanised industries, such as the United States, do not require a higher ratio of capital to output. The capital-output ratio in the United States has been falling over the past 50 years whilst the capital-labour ratio has been steadily rising; *and it is lower in the United States today than in the manufacturing industries of many underdeveloped countries* (emphasis added). Technological progress in the present century led to a vast increase in the productivity of labour, but this was not accompanied by any associated reduction in the productivity of capital investment” (Kaldor, 1972).

Kaldor is the true progenitor of ‘new’ endogenous growth theory (see, also, Palley, 1996). Given that the capital-output ratio (K/O) may be expressed as the ratio of the capital-labour ratio (K/L) and the productivity of labour (O/L), *anything* which increases the productivity of labour in the same proportion as the capital-labour ratio as countries get richer will keep the productivity of capital unchanged. ‘New’, endogenous growth theory has chosen to concentrate on externalities to R&D expenditure (Romer, 1986) and education (Lucas, 1988), but there are several other

mechanisms that will raise labour productivity in the course of growth and capital deepening, including learning by doing, embodied technical progress, micro and macro increasing returns - all mechanisms that have been discussed in the growth and development literature for centuries, going back at least to Adam Smith in 1776 (see also, Young (1928) and Verdoorn (1949)).

In the tradition of 'new' growth theory, the test of the neoclassical growth model and unconditional convergence is to take a cross section of countries and to regress the growth of per capita incomes over a given period on the initial level of per capita income. A negative sign indicates poor countries growing faster than rich countries (or beta convergence).<sup>4</sup> Taking large samples of rich and poor countries shows no evidence of beta convergence, although there is some evidence of (unconditional) convergence clubs for certain (homogenous) groups of countries over certain time periods. One of the first studies in this field was by Barro (1991) who took 98 countries over the period 1960 to 1985. There is no significant negative relation between the growth of per capita income and the initial level of per capita income, but the model is then augmented to allow for differences in human capital formation proxied by school enrollment rates. With this additional variable in the equation, the sign on the initial per capita income variable turns significantly negative. For Barro, this rehabilitates the neoclassical model i.e. there would be convergence if only countries had the same level of human capital formation.<sup>5</sup> It should be pointed out at this stage, however, (because the interpretation of other studies is also affected) that a negative sign on the per capita income variable indicating conditional convergence is not necessarily support for the neoclassical assumption of diminishing returns to capital. The negative sign could be picking up the effects of 'catch-up', or the effect of resource shifts from low productivity agriculture to higher productivity industry in poor countries, and both phenomena are conceptually distinct from the shape of the production function.<sup>6</sup> Further large sample studies by Mankiw, Romer and Weil (1992);

---

<sup>4</sup> It should be noted that beta convergence does not necessarily imply a narrowing of the dispersion of per capita incomes because dispersion can be affected by the behaviour of outlying observations (i.e. beta convergence does not imply sigma convergence).

<sup>5</sup> It should be mentioned that the Barro study excludes key variables such as the investment ratio and population growth which might have altered the results.

<sup>6</sup> I have more to say on this in Thirlwall and Sanna (1996).

Knight, Loayza and Villanueva (1993), and Barro and Wha-Lee (1993) also show no evidence of unconditional convergence, but evidence of conditional convergence when other factors affecting the growth of output per head are allowed for such as political instability, government activity; market distortions, and trade variables (for a survey of evidence, see Thirlwall and Sanna, 1996). Levine and Renelt (1992) and Levine and Zervos (1993) show, however, that in all these cross section equations estimated, only four variables are really robust in the sense that their significance is not affected when other variables are added to the equations; they are: initial per capita income, the investment ratio, education and population growth. All other variables are 'fragile'. The most recent study I have seen which illustrates well the point made above is shown in Table 1 below.

**Table 1**  
Explaining Growth of Per Capita GDP, 1960-88

Effect of	Unconditional divergence	Conditional convergence	The richer accumulate faster	
	Average growth of GDP per capita	Average growth of GDP per capita	Investment level	Primaryschool enrollment
Initial level of GDP per capita relative to leader	0.40	-0.32	4.43	14.75
Average level of investment	-	0.07	-	-
Average enrollment in primary school	-	0.03	-	-

*Source:* Lant Pritchett. 'Divergence, Big Time', unpublished, World Bank, 1995.

The study takes 117 countries over the period 1960-88. Column 1 shows no evidence of unconditional convergence because the coefficient of 0.40 is positive. Column 2 shows the coefficient turns negative once differences in the level of investment and schooling are allowed for. Columns 3 and 4 show how investment and schooling are positively correlated with the level of per capita income.

### 3. Growth Inequality

Let us now address the question in more depth of what are the major factors that account for the growth inequalities between regions and countries which prevents the convergence of per capita income. Some have been mentioned already such as investment, education and R&D expenditure, but many of these factors are themselves endogenous. I suggest here a rather different perspective. One of the significant facts to remember in discussing regions within countries is that they are very open economies, in many cases exporting and importing 90 percent or more of their regional product. If this is the case, it is impossible to understand the growth performance of regions without reference to the strength of the external demand for their products. When factors of production are freely mobile, growth can never be supply constrained in the neoclassical sense (except for land based activities). Countries are also becoming increasingly open, and one of the major criticisms of 'new' growth theory is that with a few exceptions most of the modelling is done as if economies are closed. There is no recognition of the importance of external demand in driving the growth process, or constraints on demand imposed, for example, by the balance of payments. Where trade is modelled, the measure of trade is the share of exports and/or imports in GDP. This may pick up the static gains from trade, and technological spillovers from trading contacts, but not the dynamic gains from trade or the growth effects of trade that come from the expansion of demand, or from the supply side through the greater ability to import.<sup>7</sup>

It is a fundamental proposition in Keynesian growth economics (Hicks, 1950, Kaldor, 1970) that the rate of growth of output is determined by the dominant component of autonomous demand, to which other components of demand will adapt. In an open economy, the major component of autonomous demand is likely to be export demand. Below, I develop a model of export-led growth which has some interesting properties and can be used to explain growth rate differences between regions or countries either as a cumulative disequilibrium process or as a

---

<sup>7</sup> When export growth is included as an independent variable in a 'macro-determinants of growth' equation of the Barro-type, it is highly significant (See Thirlwall and Sanna 1996).

persistent equilibrium process associated with the demand characteristics of the goods exported and imported.

$$\text{Let } y_t = \gamma(x_t) \quad (1)$$

where  $y$  is the growth of output,  $x$  is the growth of exports and  $t$  is a time subscript.  $\gamma$  is the constant elasticity of output growth with respect to export growth.

Now assume a constant elasticity export demand function which makes exports a function of relative prices (competitiveness) and income outside the 'region', so that:

$$x_t = \eta(p_{dt} - p_{ft}) + \varepsilon(z_t) \quad (2)$$

where  $(p_{dt} - p_{ft})$  is the difference in the rate of growth of domestic and foreign prices (measured in a common currency);  $z_t$  is the growth of income outside the 'region';  $\eta(<0)$  is the price elasticity of demand for exports, and  $\varepsilon(>0)$  is the income elasticity of demand for exports.

Assume that export prices are determined by a percentage mark-up on unit labour costs, so that the growth of domestic prices is given by:

$$p_{dt} = w_t - r_t + \tau_t \quad (3)$$

where  $w_t$  is the rate of growth of wages;  $r_t$  is the rate of growth of labour productivity, and  $\tau_t$  is the growth of 1 + % markup.

Finally, let the rate of growth of labour productivity be partly induced by the growth of output itself (Verdoorn's Law) owing to the existence of static and dynamic returns to scale (particularly in the tradeable goods sector):

$$r_t = r_a + \lambda y_t \quad (4)$$

where  $r_a$  is autonomous productivity growth, and  $\lambda$  is the Verdoorn coefficient.

Combining equations (1) to (4) gives an expression for the equilibrium growth rate of:

$$y_t = \frac{\gamma[\eta(w_t - r_a + \tau_t - p_{ft}) + \varepsilon z_t]}{1 + \gamma\eta\lambda} \quad (5)$$

Remembering that  $\eta < 0$ , the growth rate is shown to vary positively with  $r_a$ ,  $z$ ,  $\varepsilon$ ,  $p_f$  and  $\lambda$ , and negatively with  $w$  and  $\tau$ . The model is circular since fast export growth leads to fast output growth; fast output growth leads to fast productivity growth; fast productivity growth leads to improved competitiveness, and a faster rate of growth of exports. The interesting question then naturally arises, if the equilibrium is disturbed does the growth rate cumulatively diverge or return to equilibrium? This has a bearing on how regional differences in growth rates should be interpreted, and the precise meaning of Myrdal's model of 'circular and cumulative causation'.

In a two region (or country) model, a necessary condition for the divergence of growth rates is that the growth rate of one of the regions diverges from its own equilibrium rate. Whether divergence will take place is essentially an empirical issue depending on the stability conditions of the model in disequilibrium. If for simplicity we confine ourselves to a first-order system, it is clear from the circular nature of the model that a one period lag in any of the equations gives the same stability conditions, namely that convergence to, or divergence from, the equilibrium growth rate depends on whether  $\gamma \eta \lambda = 1$ . If we assume a one period lag in the export demand function, we get the first order difference equation:

$$y_t = \gamma [\eta (w_{t-1} - r_a + \tau_{t-1} - p_{ft-1}) + \varepsilon(z_{t-1})] - \gamma \eta \lambda y_{t-1} \quad (6)$$

the general solution to which is:

$$y_t = A(-\gamma \eta \lambda)^t + \frac{\gamma [\eta (w_{t-1} - r_a + \tau_{t-1} - p_{ft-1}) + \varepsilon(z_{t-1})]}{1 + \gamma \eta \lambda} \quad (7)$$

where A is the initial condition.

The behaviour of  $y$  depends on the value of  $\gamma \eta \lambda$ . Since  $\gamma > 0$ ,  $\lambda > 0$  and  $\eta < 0$ ,  $(-\gamma \eta \lambda) > 0$ . The condition for cumulative divergence from equilibrium is that  $(-\gamma \eta \lambda) > 1$ . This is possible but unlikely since  $0 < \gamma < 1$  if exports grow faster than output;  $\lambda$  (the Verdoorn coefficient) rarely exceeds 0.5, and the price elasticity of demand for exports ( $\eta$ ) rarely exceeds 2. In short, observed growth rate differences are likely to reflect differences in equilibrium growth rates rather than a process of divergence (we don't observe the 'world' exploding!). Differences in equilibrium growth rates, in turn, are likely to reflect structural differences between economies

captured in differences in the income elasticities of demand for exports ( $\varepsilon$ ). There are big differences in the income elasticities of demand of different types of commodities: between primary products and industrial goods, and between different types of commodities. The opening up of trade which forces countries into different patterns of specialisation may produce large disparities in equilibrium growth rates associated with the demand characteristics of goods.

#### 4. Balance of Payments Constrained Growth

The export-led 'cumulative-causation' growth model outlined above lacks a balance of payments constraint. The equilibrium growth of output given by equation (5) or (7) could give a rate of growth of imports which exceeds the growth of exports, leading to an unsustainable balance of payments position. In the long run, no country can grow faster than that rate consistent with balance of payments equilibrium on current account unless it can finance ever-growing deficits which, in general, it cannot. For most countries, the maximum long run sustainable deficit to GDP ratio seems to be of the order of 1-2%.

It is easy to impose a balance of payments constraint into the model and to derive the sustainable growth rate consistent with payments equilibrium. Let the initial balance of payments equilibrium be defined as:

$$P_d X = P_f M E \quad (8)$$

where  $P_d$  is export prices;  $X$  is the volume of exports;  $P_f$  is import prices in foreign currency;  $M$  is the volume of imports, and  $E$  is the exchange rate measured as the domestic price of foreign currency (which converts the value of imports in foreign currency into domestic currency).

The condition for a moving equilibrium through time is:

$$p_d + x = p_f + m + e \quad (9)$$

where lower case letters represent rates of growth of the variables.

The growth of exports containing the idea of a virtuous circle (combining equations (2), (3) and (4)) gives:

$$x = \eta (w - r_a - \lambda y + \tau - p_f - e) + \varepsilon(z) \quad (10)$$

The growth of imports may be written as:

$$m = \psi (p_f - p_d + e) + \pi (y) \quad (11)$$

where  $\psi$  ( $<0$ ) is the price elasticity of demand for imports, and  $\pi$  ( $>0$ ) is the income elasticity of demand for imports. Substituting (10) and (11) into (9), and solving for the growth of income consistent with balance of payments equilibrium ( $y_B$ ) gives:

$$y_B = \frac{(1 + \eta + \psi) [w - r_a + \tau - p_f - e] + \varepsilon(z)}{\pi + \lambda(1 + \eta + \psi)} \quad (12)$$

If we were to assume either that relative prices measured in a common currency do not change very much and there is no Verdoorn effect, or that the Marshall-Lerner condition is just satisfied so that  $\eta + \psi = -1$ , then equation (12) reduces to:

$$y_B = \frac{\varepsilon(z)}{\pi} \quad \text{or} \quad (13)$$

$$\frac{y_B}{z} = \frac{\varepsilon}{\pi} \quad (14)$$

*i.e.* a region's or country's long run growth rate can be approximated by the ratio of the income elasticities of demand for exports to the income elasticity of demand for imports. This is now known in the literature as the dynamic Harrod trade multiplier result (where  $\varepsilon z = x$ ).<sup>8</sup> Equation (14) is the basis of the classic centre-periphery models of Prebisch (1950) and Seers (1962) where growth rate differences between regions are dependent on the income elasticities of demand for exports and imports reflecting the structural characteristics of regions in production and trade.

---

<sup>8</sup> See McCombie and Thirlwall (1994, 1997). For a recent survey, see also the mini-Symposium on Thirlwall's Law in *Journal of Post Keynesian Economics*, Spring 1997.

## 5. Turkey

As it happens, this simple balance of payments constrained growth model above fits the growth experience of Turkey very well over the long period of the 1970s and 1980s and into the 1990s. Bairam and Dempster (1991) apply equation (13) to Turkey over the period 1973-83 when their estimate of the average growth rate of GDP was 4.2% per annum. Using conventional export and import demand functions, they estimate an income elasticity of demand for exports of 6.41 and an income elasticity of demand for imports of 4.06. The weighted average growth rate of Turkey's trading partners ( $z$ ) was 2.8%, giving a predicted growth rate for Turkey of 4.4% per annum. The actual and predicted growth rates are not significantly different from one another. A persistent tendency for the balance of payments to go into deficit, combined with unemployed domestic resources, is *prima facie* evidence that growth is balance of payments constrained.

For the longer period 1971-95, the model also fits reasonably well. Table 2 gives the annual rate of change of GDP and exports in Turkey over this period. There are large annual fluctuations, particularly in export growth, but the average rate of growth of GDP for the whole period is 4.30% per annum, and the average growth of exports is 12.72%. Using an income elasticity of demand for imports of 4 gives a predicted growth rate of 3.18%.

As trade barriers come down, the income elasticity of demand for imports in Turkey is likely to rise. Unless the export elasticity rises in the same proportion, the growth rate consistent with balance of payments equilibrium will fall. This is one of the reasons why the freeing of trade may work to the detriment of some countries that are already weak from a structural point of view in terms of the goods they produce and trade. Standard trade theory, which looks at the gains from trade from the standpoint of real resource augmentation, ignores the balance of payments implications of trade because it assumes that the balance of payments is self-adjusting and full employment is preserved. In practice, the static gains from trade may be offset by the underutilisation of resources if balance of payments deficits impose a constraint on domestic demand.

**Table 2**  
Rate of Change of GDP and Exports in Turkey 1971-95  
(% per annum)

	GDP Growth	Export Growth
1971	5.57	16.29
1972	7.43	20.74
1973	3.26	13.98
1974	5.59	-16.85
1975	7.17	-8.67
1976	10.46	55.88
1977	3.41	-23.23
1978	1.50	34.26
1979	-0.62	-18.19
1980	-2.45	1.58
1981	4.86	68.76
1982	3.56	35.92
1983	4.97	4.22
1984	6.71	33.66
1985	4.24	17.01
1986	7.01	-3.62
1987	9.49	19.43
1988	2.12	18.47
1989	0.25	-0.63
1990	9.26	1.05
1991	0.93	5.88
1992	5.98	6.84
1993	8.04	7.28
1994	-5.46	22.45
1995	7.34	5.16

*Source:* State Institute of Statistics (1996) *Statistical Indicators (1923-1995)*, Ankara : SIS  
Measured in constant \$ US.

## 6. Conclusion

The conclusion of this paper is that the predictions of neoclassical equilibrium and growth theory may be seriously misleading. When dynamic feedback mechanisms and increasing returns are considered, factor mobility, trade and growth itself may be disequilibrating and lead to divergences between regions and between countries. The empirical evidence for Europe is mixed. In some periods, there seems to have been convergence, and in others divergence. In the world at

large there is no evidence of unconditional convergence. A model of growth based on the performance of the external sector has been outlined which can account for persistent differences in the growth performance of economies related to the structural characteristics of production and the demand characteristics of the goods traded. Turkey's economic progress in the future, as it liberalises factor markets and trade, will depend largely on the performance of the tradeable goods sector and the extent to which it can shift resources into activities with a high income elasticity of demand in world markets. That is the challenge for the next millennium.

### References

- ARMSTRONG, H. W. (1996), "Regional Growth Within the European Union: A Reappraisal of the Cross Sectional Evidence", University of Lancaster, mimeo.
- BADDELEY, M., MARTIN, R. and TYLER, P. (1996), "European Regional Unemployment Disparities: Convergence or Persistence?", Department of Land Economics, University of Cambridge, Discussion Paper 73.
- BAIRAM, E. and DEMPSTER, G. (1991), "The Harrod Foreign Trade Multiplier and Economic Growth in Asian Countries", *Applied Economics*, 23(11), 1719-24.
- BARRO, R.J. (1991), "Economic Growth in a Cross Section of Countries", *Quarterly Journal of Economics*, 106, 407-44.
- BARRO, R. J. and SALA-I-MARTIN, X. (1991), "Convergence Across States and Regions", *Brookings Papers on Economic Activity*, 1, 107-81
- (1992), "Convergence", *Journal of Political Economy*, 100(2), 223-436.
- (1995), *Economic Growth*, New York: McGraw-Hill.
- BARRO, R. J. And WHA LEE, J. (1993), "Losers and Winners in Economic Growth", *Proceedings of the World Bank Annual Conference on Development Economics*, Washington: World Bank.
- DIXON, R. J. And THIRLWALL, A. P. (1975), "A Model of Regional Growth Rate Differences on Kaldorian Lines", *Oxford Economic Papers*, 27(2), 201-14.
- (1979), "A Model of Export-Led Growth with a Balance of Payments Constraint", in J. Bowers (ed.), *Inflation, Development and Integration: Essays in Honour of A. J. Brown*, University of Leeds Press.
- FAGERBERG J. and VERSPAGEN, B. (1996), "Heading for Divergence? Regional Growth in

- Europe Reconsidered", *Journal of Common Market Studies*, 34(3), 431-48.
- FAGERBERG, J. VERSPAGEN, B and CANIELS, M. (1996), "Technology, Growth and Unemployment Across European Regions", Norwegian Institute of International Affairs Working Paper No. 565, December.
- HICKS, J. (1950), *The Trade Cycle*, Oxford: Clarendon Press.
- HIRSCHMAN, A. (1957), "A Model of Economic Growth", *Economic Journal*, December.
- KALDOR, N. (1961), "Capital Accumulation and Economic Growth", in F. Lutz (ed.), *The Theory of Capital*, London: Macmillan.
- KALDOR, N. (1970), "The Case for Regional Policy", *Scottish Journal of Political Economy*, 17(3), 337-48.
- (1972), "Advanced Technology in a Strategy for Development: Some Lessons from Britain's Experience", in *Automation and Developing Countries*, Geneva: International Labour Organisation.
- KNIGHT, M, LOAYZA, N. And VILLANUEVA, D. (1993), "Testing the Neoclassical Theory of Economic Growth", *IMF Staff Papers*, September.
- LUCAS, R. (1988), "On the Mechanics of Economic Development", *Journal of Monetary Economics*, 22(1), 3-42.
- MANKIW, N. G., ROMER, D. and WEIL, D. N. (1992), "A Contribution to the Empirics of Economic Growth", *Quarterly Journal of Economics*, 107, 407-37.
- MCCOMBIE, L. S. L. and THIRLWALL, A. P. (1994), *Economic Growth and the Balance of Payments Constraint*, London: Macmillan.
- (1997), "The Dynamic Harrod Foreign Trade Multiplier and the Demand-Orientated Approach to Economic Growth: An Evaluation", *International Review of Applied Economics*, 11(1), 5-26.
- MYRDAL, G. (1957), *Economic Theory and Underdeveloped Regions*, Duckworth.
- NEVEN, D. and GOUYETTE, C. (1995), "Regional Convergence in the European Community", *Journal of Common Market Studies*, 33(1), 67-89.
- PALLEY, T. (1996), "Growth Theory in a Keynesian Mode: Some Keynesian Foundations for New Endogenous Growth Theory", *Journal of Post Keynesian Economics*, Fall.
- PREBISCH, R. (1950), *The Economic Development of Latin America and its Principal Problems*, New York: ECLA, United Nations.
- ROMER, P. (1986), "Increasing Returns and Long Run Growth", *Journal of Political Economy*, 94(5), 1002-37.
- SALA-I-MARTIN, X. (1994), "Cross Sectional Regressions and the Empirics of Economic Growth", *European Economic Review*, 38(3-4), 739-41.

- SEERS, D. (1962), "A Model of Comparative Rates of Growth of the World Economy", *Economic Journal*, March.
- SOLOW, R. (1956), "A Contribution to the Theory of Economic Growth", *Quarterly Journal of Economics*, 70, 65-94.
- THIRLWALL, A. P. (1966), "Regional Unemployment as a Cyclical Phenomenon", *Scottish Journal of Political Economy*, June.
- (1974), "Regional Economic Disparities and Regional Policy in the Common Market", *Urban Studies*, 11(1), 1-12.
- (1979), "The Balance of Payments Constraint as an Explanation of International Growth Rate Differences", *Banca Nazionale del Lavoro Quarterly Review*, 128(791), 45-53.
- (1980), Regional Problems are Balance of Payments Problems, *Regional Studies*, No.5.
- THIRLWALL, A. P. and SANNA, G. (1996), "The Macrodeterminants of Growth and 'New' Growth Theory: An Evaluation and Further Evidence", in P. Arestis (ed.), *Employment, Economic Growth and the Tyranny of the Market: Essays in Honour of Paul Davidson*, Vol. 2, 131-56 Edward Elgar.
- VERDOORN, P. J. (1949), "Fattori che Regolano lo Sviluppo della Produttività del Lavoro", *L'Industria*.
- YOUNG, A. (1928), "Increasing Returns and Economic Progress", *Economic Journal*, December.

### Özet

Faktör, hareketliliği, ticaret, ve 'bölgesel' iktisadi farklılıklar:  
Torunlarımıza ne anlatabiliriz?

Neoklasik iktisat teorisi, işsizlik ve kişi başına gelir seviyelerindeki bölgesel farklılıkları sermaye ve işgücü hareketliliğine ve ticari faaliyetlere bağlar. Bu makalede neoklasik teoriden doğan tahminlerin ciddi bir şekilde yanıtıcı olabileceği savunulmaktadır. Artan getiri ve dinamik karşılıklı etki mekanizmalarını göz önüne aldığımız da, faktör hareketliliğinin, ticaret ve hatta büyümenin, dengeden uzaklaştırıcı etkilerinin olduğunu, bölgeler ve ülkeler arasındaki farklılıkları artırdığını görebiliriz. Üretimin yapısal özellikleri ve ticari ürünlerin talep özelliklerinden kaynaklanan ekonomiler arası iktisadi büyüme farklılıklarının devamlılığı, makalede özetlenen dış sektörün başarısına bağlı olan bir büyüme modeliyle açıklanmaktadır. Faktör piyasalarının ve ticaretin açılmasıyla, Türkiye'nin gelecekteki büyüme başarısı büyük bir ölçüde ticari ürünler sektörünün başarısına ve kaynakların dünya piyasalarındaki talebin gelir esnekliğinin yüksek olduğu faaliyetlere kaydırılmasına bağlıdır.