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Premature deindustrialisation: the international evidence

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We examine patterns and globalisation-related causes of premature deindustrialisation (PD) in recent decades, using a large panel of advanced, emerging and developing economies (AE, EME and DE). The results verify the existence of PD in EME and DE, except East Asian countries. African countries have been worst affected by PD. Globalisation-related determinants of PD vary across country groups. While trade openness leads to deindustrialisation in DE; it enhances 'dependent' industrialisation in Latin American countries and the 'factory economies' of East Asia, which have stronger linkages to global value chains. Financial openness fosters industrialisation in severely finance-constrained economies, whereas it brings about deindustrialisation in financially stronger ones. It is our contention that development possibilities can be expanded by aiming at more intense linkages to global value chains, but proactive industrial policies at the levels of EME and DE are required to achieve such expansion.

Key words: Developing economies, Emerging market economies, Industrial policy, Premature deindustrialisation, Global value chains
JEL classifications: L60, O10, O14

1. Introduction

The adjectives 'developed' and 'industrialised' were often used synonymously in the early decades of development literature. This prevalent convention was based on the observation that developed countries were generally characterised by more 'advanced' degrees of industrialisation, relative to the 'backward' economies of the less-developed countries. According to Chenery (1960), long-term economic growth is a 'sector-specific' process and the lower share of manufacturing reflects the differences in productivity (and relative prices) between manufactured goods and services. As compared to agriculture and services, manufacturing industry was considered the most dynamic sector in terms of generating new technologies and employment, along with its tradable products that could promote the growth of wider and stronger networks of 'backward and forward linkages'. It was Albert O. Hirschman who first drew attention to the centrality of such industrial linkages in development processes

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(Hirschman, 1958, 1992a, 1992b). In general, 'industrialisation' was understood as one of the most decisive factors of economic development for both the 'advanced' and 'backward' economies. In particular, pro-growth and pro-employment characteristics of especially the manufacturing industry was a hot subject of analysis. For example, in his pioneering contributions, Nicholas Kaldor asserted that the manufacturing industry is the engine of growth in both the developed and less-developed countries (Kaldor, 1966, 1967).

Recent studies, including UNIDO (2013); UNCTAD (2016) and Rodrik (2016), often postulate that there is a 'hump-shaped' (i.e. inverted-U) relationship between 'real GDP per capita' (RGDP_pc, measured on the horizontal axis) and 'manufacturing value-added share in GDP' (MVA, measured on the vertical axis). The share of manufacturing industry in the economy tends to rise at earlier stages of economic development and fall at later stages. In accordance with this hypothesis, the MVA declines steadily in the bulk of advanced economies (AE) during their later stages of development. This stylised fact, which is called 'deindustrialisation', is consistent with the earlier contributions of Kaldor (1963) and Kuznets (1971), who suggested that the largest weights of output and employment in agriculture shifts first to industry, and then to services in the course of economic development. The shift is consistent with Bell (1976), suggesting that consumer demand eventually shifts away from manufacturing towards services. This historical tendency is widely known as 'structural change' in the economy (Fisher, 1935; Clark, 1940; Kuznets, 1971; van Neuss, 2019). In other words, there has been a two-step structural-change tendency in the developmental paths of the AE, which experienced deindustrialisation after a certain period of industrialisation. Such shifts are also verified and analysed by more recent studies on AE (Rowthorn and Coutts, 2004, 2013; Jorgenson and Timmer, 2011).

Findings of recent studies indicate that the same developmental dynamics applies also to developing and emerging market economies[1] (DE and EME), yet with an important difference: deindustrialisation in DE and EME tends to start at much lower levels of real per-capita income than the ones that were previously observed in the AE. Consequently, the cases of DE and EME have been defined as 'premature' deindustrialisation (Palma, 2005; Dasgupta and Singh, 2006), as contrasted to the more 'mature' experiences of the AE, whose deindustrialisation had started after reaching much higher levels of real per-capita income.

This article contributes to the literature by addressing two main research questions. Which country groups exhibit premature deindustrialisation (PD)? And how does economic globalisation affect deindustrialisation across country groups? Therefore, the article has a compact focus on: (i) the inverted-U shaped relationship between real GDP per capita and the share of manufacturing value added in GDP, and (ii) the effects of globalisation-related variables (i.e. trade openness and international financial

[1] Following the bulk of recent studies, emerging market economies (EME) and advanced economies (AE) are categorised based on the classification by Morgan Stanley Capital International (MSCI). According to MSCI (2012, p. 1), the MSCI classification framework is based on economic development measured by Gross National Income per capita, size and liquidity of equity markets and market accessibility for foreign investors. All the other countries are classified as developing economies (DE). An alternative classification (low, lower-middle, upper-middle and high-income) is provided by the World Bank (WB). Both the WB and MSCI approaches have their own merits. Section 3 briefly discusses same aspects of the WB classification. We prefer to use the MSCI categorisation as we consider the impact of not only income but also financial openness. We believe that analysing whether our results are robust to the WB classification provides a potentially important research agenda.

integration) on the manufacturing industry. It may be argued that financial globalisation or international financial integration allows countries to finance domestic investments also by foreign savings and thus higher level of industrialisation. On the other hand, financial openness may be driven by capital outflows and consequently deindustrialisation in countries lacking strong institutional and macroeconomic structures. Trade openness, on the other hand, may lead to deindustrialisation in countries without coherent and integrated trade and industrial policies along with effective government regulation (UNECA, 2015). Trade openness is measured as the sum of exports and imports over GDP whilst financial openness is defined as the sum of gross capital (portfolio, FDI and other investments) inflows and outflows over GDP (Lane and Milesi-Ferretti, 2007).

While other possible determinants of deindustrialisation (such as real exchange rates, lack or inadequacy of industrial policies, natural resources, etc.) are also important, this study concentrates on the above-mentioned two questions in order to avoid mixing up too many literatures in a single article. However, the theme of the article is extended and enriched by discussions on the role of global value chains (GVCs) and the 'financial version' of the Dutch disease.

The sections of the article proceed as follows: the literatures on PD and GVCs are reviewed in Section 2. Some descriptive observations on deindustrialisation for different country groups are provided in Section 3, covering the period from the 1960s to 2010s. Estimates of real GDP per capita (RGDP_pc) at the peak 'manufacturing value-added shares in GDP' (MVA) are also presented in Section 3. The econometric model for the globalisation-related determinants of PD is introduced in Section 4, where estimation results for different country groups are also presented, covering the 1970–2010 period. Policy implications of the findings and connections with the literature are discussed within the context of concluding remarks in Section 5.

2. The literature

The crucial importance of 'industrialisation' and manufacturing industry for growth was convincingly explained in the pioneering studies by Kaldor (1966, 1967). An excellent review of Kaldor's momentous contributions to development economics is provided by Targetti (2005) who draws attention to Kaldor's emphasis on industrialisation and integration with global markets for successful development. More recent studies, such as Szirmai (2012), Storm (2015), Szirmai and Verspagen (2015), Tregenna (2015), Marconi *et al.* (2016), Haraguchi *et al.* (2017) and Hauge and Chang (2019) support the above-mentioned Kaldorian argument, which comprises Kaldor's growth laws. Similarly, Foster-McGregor *et al.* (2015) argue that the capability of countries to sustain high growth depends critically on the share of manufacturing in GDP, along with the sectoral diversification of production. Manufacturing industry has also been analysed as the main 'escalator' for developing economies, as it is a technologically dynamic sector with tradable products that exhibit unconditional labour-productivity convergence (Rodrik, 2013). According to Felipe *et al.* (2019), the unconditional convergence involves both technological changes at the national level and globalisation induced by internationalisation of supply chains. Manufacturing not only remains the driver of innovation, technological development and productivity growth but also the main source of the productivity of many services through imported technology from the manufacturing sector (Hauge and Chang, 2019). Furthermore, development

of the manufacturing industry fosters economic growth along with democratisation (Rodrik, 2016).

Recent empirical studies demonstrate that the per-capita income levels at the turning point of the manufacturing employment shares (UNIDO, 2013; Rodrik, 2016; Felipe *et al.* 2019), value-added shares (Timmer *et al.*, 2014) or both (Haraguchi *et al.* 2017; van Neus, 2018) are much lower in the case of DE and/or EME, as compared to the earlier experiences of the AE. If the manufacturing industry is the engine of growth *à la* Kaldor, 'premature deindustrialisation' can potentially lead to 'divergence' of incomes between DE/EME and AE, as opposed to the 'convergence' thesis of the conventional growth literature pioneered by Barro and Sala-i-Martin (1992). Indeed, it has been argued that '[i]t would be a fallacy to think that middle-income countries could converge towards the income levels of highly industrialized countries by rapidly moving into services, before achieving industrial maturity' (Akyüz, 2005, p. 33). In the same vein, the results by Hickel (2017) suggest that, instead of convergence, global inequality has tripled since 1960.

The literature on PD in DE and EME has started to grow in recent years; however, studies that focus specifically on the empirical determinants of PD are relatively few. The bulk of the earlier empirical literature including Rodrik (2016), van Neus (2018) and Araujo *et al.* (2021) has considered the rising per-capita real income as the main driver of PD. There are not many econometric studies that empirically examine other important determinants of the process of PD in the case of DE and EME. For example, economic globalisation, as indicated by the increasing degrees of 'trade openness' and 'financial openness', can be a major cause of this process (Rodrik, 2016). Financialisation and real exchange rate appreciation (Tregenna, 2015; Tregenna *et al.*, 2021) can also be considered potentially important determinants. Last but not the least, Palma (2005, 2011, 2014) have consistently argued that a variant of the 'Dutch disease', which arises from higher financial openness and leads to massive foreign capital inflows, has also been influential in the process of PD.[2] The recent results by Benigno *et al.* (2015) and Teimouri and Zietz (2018), suggesting that capital and labour shifts out of the manufacturing sector during episodes of large capital inflows, provide strong support to Palma (2005, 2011, 2014).

Alongside the tendencies for PD in the developing world in recent decades, the world economy has also witnessed increasingly higher degrees of globalisation of production and trade. Production of final products has been sliced up into different stages and productive tasks have been distributed among different countries. This process, which is often called 'global value chains' (GVCs), leads countries to become more dependent on imported inputs for domestic production and exports (Baldwin and Lopez-Gonzalez, 2014; Johnson, 2015). In the context of this process, the international production network has been mainly divided into two: 'Headquarter

[2] Palma argues that the 'Dutch disease' may better be interpreted, not only in the conventional 'resource curse' context, but also in a broader framework that contains the effects of trade liberalisation and financialisation. For example, the radical change from import-substituting industrialisation to neo-liberal policies led Latin American countries to shift from attempting to be trade surplus economies in manufacturing to be quite content to become trade deficit economies in manufacturing as their trade-surplus in primary commodities and services could pay that deficit. This broader interpretation of the 'Dutch disease' by Palma (2005, 2011, 2014) can be considered complementary to Tregenna (2015), who also argues that liberalisation in trade and finance has been a cause of PD. In a similar vein, the 'resource curse' identified by Benigno and Fornaro (2014) does not arise from the discovery of natural resources or due to an exogenous transfer from abroad, but rather because of a period of abundant access to foreign capital.

Economies' and 'Factory Economies' (Baldwin and Lopez-Gonzalez, 2014). Headquarter economies (AE) produce key components, arrange production networks and offshore labour-intensive manufacturing stages to factory economies (EME or DE). Consequently, factory economies (the 'periphery', so to speak) can industrialise by joining the GVCs, but specialise at sectors or production stages determined mainly by the headquarter AE (the 'centre', so to speak).

From the viewpoint of firms based in the EME and DE, entry to the markets of AE has become more and more demanding because of the increasing degree of globalisation of production networks. While AE-based firms have tended to dominate and lead the complicated networks of global production, the firms based in relatively less-developed countries have faced new challenges in terms of adapting to this increasing complexity and dynamism at global scale. In this regard, the GVCs have started to constitute a political-economy reality in the form of a global governance structure that entails a kind of 'coordination problem'. In response to this global reality, firms based in the EME and DE have to deal with transactional complexities, acquire abilities to codify and standardise transactions, and further improve their technological and supply-side capabilities (Gereffi *et al.*, 2005). Such global challenges require the establishment of not only new 'rules of the game' at global level, but also well-designed new policy schemes at local and national levels for improving the skills of domestic industrial units and upgrading domestic industries.

The industrialisation and growth consequences of participation to GVCs crucially depend on some important structural domestic factors such as the level of development, the structure of international trade, the degrees of forward and backward participation, geography and market size. For example, in the East Asian countries, increases in productivity along with higher export sophistication and diversification have been shown to be the main benefits of integrating to the GVCs. Trade liberalisation (through lowering import tariffs and regional trading agreements) and inward foreign direct investment openness are also shown to facilitate both backward and forward linkages in the context of GVCs; a larger manufacturing share in GDP enhances backward engagement and lowers forward engagement (Kowalski *et al.*, 2015). Becoming leading exporters of manufactured goods as well as primary goods, EME have exhibited a remarkable performance in terms of participating in the GVCs for the last two decades, and consequently South–South trade has also risen dramatically in the aftermath of the global financial crisis of 2008 (Gereffi, 2015). In the meantime, however, the Washington-Consensus-oriented attitude of multilateral economic organisations towards developmental policy-making has not changed very prominently, as their reports tend to maintain the liberalisation of trade and investment policies as the major priorities, ignoring the needs for institutional governance structures, enhanced state capacity and redesign of industrial policies in accordance with the new challenges generated by the GVCs (Ravenhill, 2014). Indeed, the new global framework structured around the complexity and diversity of the GVCs, where the EME tend to show up as strong participants, indicates a need for relatively more inward-looking attitudes, paving the way for a revival and redesign of domestic industrial policies for development (Gereffi, 2014). The emerging need for a fully-fledged developmentalist approach to industrial policy-making has also been emphasised (Hauge, 2020), in juxtaposition to contributions that underscore the importance and relevance of developing novel ideas on industrial policy so as to replace the apparently obsolete traditional ones (Kaplinsky and Morris, 2016; Lauridsen, 2018). The usefulness of a

new developmental framework that encompasses the GVCs in the context of the Post-Washington Consensus has also been analysed (Werner *et al.*, 2014).

While the case of EME with respect to their participation in the GVCs might have suggested some favourable developmental consequences in recent decades, there seems to be a lack of similar observations for relatively lower-income countries. In contradistinction, less-developed countries are likely to be affected negatively by the prevalence of the GVCs. As noted by UNCTAD (2016, p. 119) 'Much of the Asian region shows a clear and strong positive association between GVC participation and industrialisation, while developing countries in other regions show the opposite relationship'. In the African economies, for instance, the economic development and productivity gains from GVCs appear to be very limited since they linked to GVCs 'mainly as suppliers of raw materials or other low end products' (UNECA 2015, p. 173). Free trade policies advocated by the WB and IMF along with unconditional participation in GVCs, which are often controlled by giant global firms, appear to be amongst the main reasons for the African case (Chang *et al.*, 2016).

The unfavourable implications of the GVCs for most of the DE has been elaborated by drawing attention to two interrelated problems generated by the GVCs (Rodrik, 2018). First, the new technologies associated with the GVCs have a bias towards skill-intensive economic activities, while most of the DE have comparative advantages in labour-intensive manufacturing sectors. Second, the GVCs make it more difficult for the DE to enjoy traditional labour-cost advantages vis-à-vis their technological disadvantages. Consequently, the GVCs reduce the gains from trade and generate adverse employment effects in the case of the DE. The policy implication, in this regard, is that the focus of development strategies should be shifted from 'international economic integration' to 'domestic integration' by constructing a more proactive framework for a 'new industrial policy' (Rodrik, 2018).

3. PD and GVCs: some stylised facts

The average 'manufacturing industry value added share' (MVA, as percentage of GDP) in country groups[3] are plotted in Figure 1 for different time periods.[4] The MVA shows a sharp decline in AE (from 25% in 1960–1979 to 15% in 2000–2013). In contrast to the AE case, MVA[5] increases from around 17% in 1960–1979 to about 25% during the recent decades in the East Asian EME (EME EA).[6] The EME excluding East

[3] Table A1 in the Appendix provides the full list of countries and their groups, along with the levels and years of peak MVA (based on three-year moving averages) and real GDP per capita at the peak for individual countries. Table A1 provides also individual country level data used for computing the figures in Table 1.

[4] The sub-periods are constructed to reflect roughly the dominant trade and financial policies adopted especially by the less-developed countries in the world economy: import-substituting industrialisation, trade protectionism and significant control of international capital movements (1960s and 1970s); the following post-1980 periods that were more or less characterised by trade liberalisation and financial liberalisation; and the further expansion of international trade and capital movements during the 2000s.

[5] Alternatively, deindustrialisation can also be defined in terms of manufacturing employment shares (UNIDO, 2013; Rodrik, 2016; Felipe *et al.*, 2019; Haraguchi *et al.*, 2017. According to Tregenna (2009), on the other hand, deindustrialisation should better be defined in terms of MVA as the Kaldorian perspective maintains that manufacturing productivity is higher and consequently employment share tends to decline with economic growth. We believe that investigating whether the results of this study are robust to the alternative definitions provide an important and promising research agenda.

[6] As noted by Haraguchi *et al.* (2017), the deindustrialisation and lower peak MVA in many developing countries resulted from a shift of manufacturing activities to a small number of countries, especially to China.

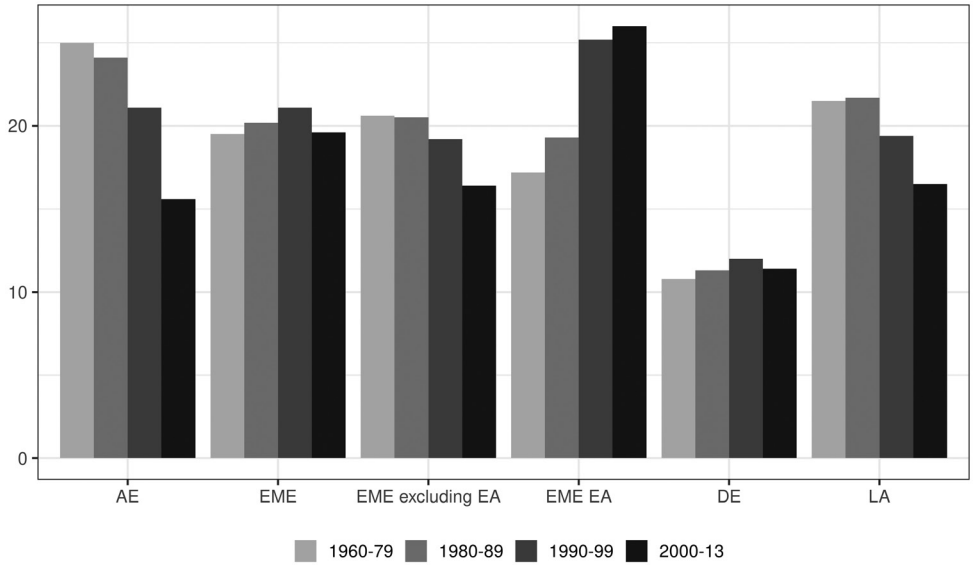

Fig. 1. *Manufacturing value added (% of GDP).*

Data source: World Development Indicators (WDI), the World Bank.
AE: Advanced economies; EME: Emerging market economies; EME EA: Emerging East Asian countries; DE: Developing economies; LA: Latin American countries.

Table 1. *Peak manufacturing value-added shares (MVA) and per capita RGDP*

			Proportion (%) of Peak RGDP to		Peak RGDP in terms of 2014 Values of	
	Peak MVA	RGDP_pc at the peak	RGDP_pc World	RGDP_pc High Income	RGDP_pc World	RGDP_pc High Income
AE (23)	26.9	9015	181.1	50.0	15726	14510
EME or DE (57)	19.3	1225	18.4	4.8	1724	1688
DE (35)	16.3	807	9.0	2.4	1079	1075
DE* (7)	22.8	1534	27.4	7.0	2163	2169
EME (22)	25.0	1890	33.6	8.7	2471	2643
LA (14)	25.3	1708	32.5	8.6	2672	2576
DE Africa (28)	14.5	470	7.9	2.0	627	623

Notes: All Real GDP per capita (RGDP_pc) values are in 2005 constant USD prices. The values in parentheses are the number of countries. DE* excludes African countries. EME: Emerging Economies, DE: Developing Economies.

Data sources: WDI, The World Bank; United Nations Statistics Division (UNSTAT). Authors' own calculations. AE: Advanced economies; EME: Emerging market economies; DE: Developing economies; LA: Latin American countries.

Asia, however, has experienced a decline (from around 20% to 16%). Latin American countries (LA) have exhibited a similar pattern. Developing economies (DE), most of which are African countries, have tended to stay at very low levels of industrialisation during the four sub-periods, slightly above 10%.

In Table 1, average peak manufacturing value-added shares (MVA, as percentage of GDP) and per-capita real GDPs (RGDP_pc, constant at 2005 USD)[7] at the time of the peak are presented for the country groups.[8] To reduce the impact of temporary fluctuations, we use three-year moving average values of MVA in computing the peak MVA in the Table. The peak MVA does not substantially differ among AE, EME and LA (around 25%–27%). The average peak MVA is, however, substantially low for developing African economies (14.5%). Moreover, RGDP per capita (RGDP_pc) at the peak MVA differs substantially across country groups. This level is around 9,000 USD for AE and around 1,200 USD for the others (EME or DE). For EME and LA, the income level is around 1,800 USD. The deindustrialisation process for the developing African countries begins at a very low income level (below 500 USD).

The time of the beginning of deindustrialisation substantially differs amongst countries and country groups.[9] Consequently, real income levels, even in constant USD, may not be very informative to assess whether a deindustrialisation process is premature. To obtain more comparable measures, we first compute the proportion of RGDP_pc to the RGDP_pc of world or high-income countries at the year of the threshold MVA. According to Table 1, for the AE, the RGDP_pc is around, respectively, 181.1% and 50% of world and high income RGDP_pc. The deindustrialisation process for EME or DE, on the other hand, occurs only at 18.4% and 4.8% of the world and high income RGDP_pc. The evidence is much more striking for developing African countries such that their deindustrialisation process begins at the RGDP_pc levels which are only 7.9% (2%) of the world (high income) RGDP_pc.[10]

According to Table 1, the peak adjusted per-capita income level is 15,726 USD (2,005 constant prices) for AE. Strongly supporting the PD hypothesis, the peak income level is substantially lower (around only 15% of the AE) for the EME and LA. For the African DE, the PD level is extremely low, around only 600 USD. Following Tregenna (2015), the African case may be characterised as 'pre-industrialisation deindustrialisation'. The LA evidence may be explained as the result of neo-liberal policies[11] (Palma, 2014) that lack a targeted industrial policy and lead to a 'policy-induced uncreative destruction' (Palma, 2011). These neo-liberal policies include radical

[7] Unless stated otherwise, all per-capita real GDP figures are constant at 2,005 USD.

[8] Our sample does not contain Eastern European countries due to the lack of adequate time-series data to investigate deindustrialisation.

[9] For our sample, the average peak MVA dates for AE, EME and DE, respectively, are 1977, 1990 and 1989. Comparing income levels across such distinct time periods ignores economic growth and should thus be interpreted with a caution. It is worth noting that the country classifications by the WB also maintain income thresholds constant in real terms and may be criticised in a similar vein.

[10] As already noted, comparing an RGDP_pc level at the early 1970s, for instance, to the level in 2000s, may be a misleading indicator for assessing 'premature deindustrialisation'. To obtain an alternative measure, we consider adjusted RGDP_pc (RGDP_pc*), which is computed as follows: RGDP_pc* = (RGDP_pc at t^T/World RGDP_pc at t^T)*World $RGDP\_pc_{2014}$, where t^T is the time of the threshold MVA and World $RGDP\_pc_{2014}$ is world RGDP_pc in 2014. This measure is also computed by using the RGDP_pc of high-income countries. It is a better measure in terms of the 2014 RGDP figures. However, this measure maintains that the growth differentials do not change substantially over time. Under the income-convergence hypothesis, it may underestimate the RGDP at the peak for EME or AE.

[11] Storm (2015) convincingly argues that this process is, indeed, the result of neo-liberal policies imposed by the WB and the IMF on EME and DE (periphery) to stay with their static international comparative position and thus not to avoid the rules determined by the centre countries.

policy regime change from import-substituting industrialisation to comphrehensive trade and financial liberalisation. Palma (2014) notes that all these resulted in a real exchange rate overvaluation and a decrease in the relative price of tradables including manufacturing. Consequently, in accordance with the international division of labour based on initial factor endowments, countries implementing neo-liberal policies observed PD. In the same vein, according to UNCTAD (2016, p. 66), 'the policy conditionalities imposed by the International Monetary Fund (IMF) and the World Bank' are the contributing factors to the 'abandonment of long-standing industrialisation strategies' in LA.

Figures 2 and 3 plot the peak MVA (based on three-year moving averages) and the adjusted RGDP_pc (RGDP_pc*) for the samples of AE, DE and EME. Consistent with the recent findings including Rodrik (2016) and Tregenna (2021) and also supporting the PD hypothesis, the figures clearly show that per-capita RGDP is much higher in all of the AE than the EME or DE at the peak MVA. Furthermore, on average, peak MVA is substantially higher in AE. For the AE, consistent with their 'servisification' (i.e. increasing value-added shares of services in manufacturing and aggregate real output) after mature deindustrialisation, manufacturing appears to be no longer the engine of growth (Figure 3). In Figure 2, per-capita RGDP at the peak MVA appears to be generally lower in DE than EME. According to the simple regression presented by Figure 2, there is a positive (and non-linear) relationship between the MVA share and RGDP. Consistent with the inverted-U hypothesis, this relationship is more prominent at lower-income levels and for DE. This relationship, however, appears to be statistically insignificant for the AE sample.

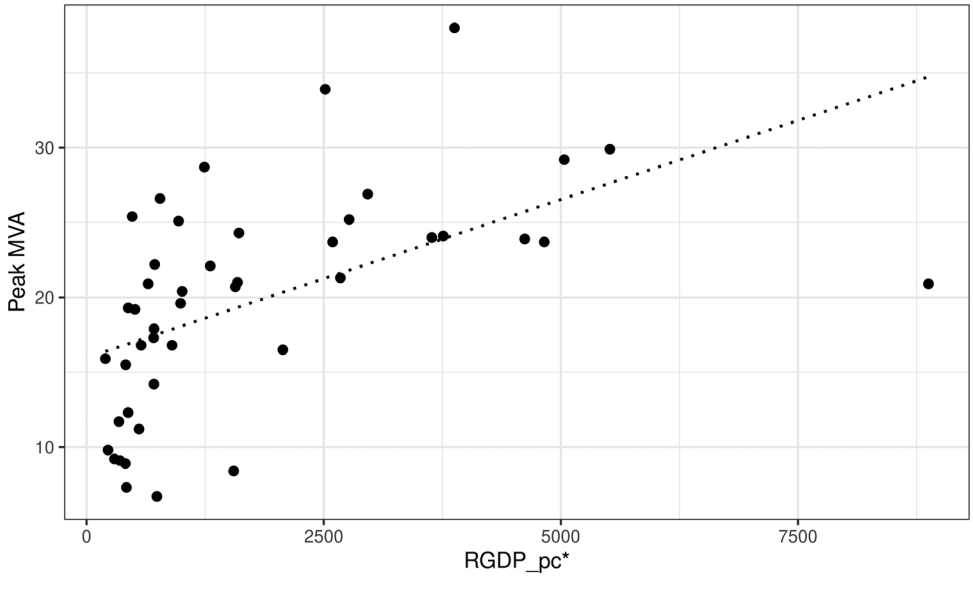

Fig. 2. *Peak MVA and adjusted RGDP: developing (D) and emerging economies (E).*

Data source: World Development Indicators (WDI) and authors' own calculations.

Foreign value added (FVA) share of gross exports reported in the recent trade-in–value-added (TIVA) statistics[12] provides important information about participation in GVCs. Figure 4 plots the FVA share of gross exports (%) of manufacturing industry for different country groups in 1995, 2005 and 2011. The FVA shares in exports tend to increase in all country groups except DE[13] during the recent decade. The increase in AE is consistent with the argument that these countries have increasingly transferred some production stages in their manufacturing industries to EME or DE. East Asian EME (EA) have consistently the highest FVA share in their exports. EME excluding E. Asia (EME_EA) and L. American (LA) countries have relatively lower FVA in their exports. The lowest FVA shares are observed in the case of DE. From Figure 4, it may be inferred that the E. Asian industrialisation is consistent with their higher integration to the GVCs. They seem to have adjusted to the new international division of labour as 'factory economies', under the rules of participation basically set by the

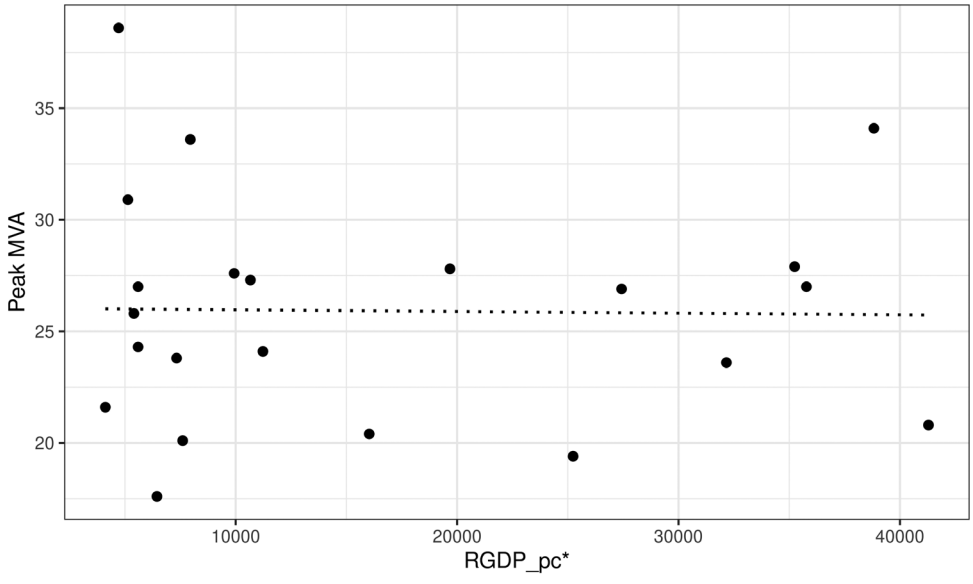

Fig. 3. *Peak MVA and adjusted RGDP: advanced economies.*

Data source: World Development Indicators (WDI) and authors' own calculations.

[12] Due to the increasing importance of GVC, OECD and WTO have recently published trade-in-value-added (TIVA) statistics based on harmonised OECD input-output tables. See Koopman *et al.* (2014) for the details of the TIVA database. The most recent World Development Report (World Bank, 2020) is entirely devoted to investigation of patterns, causes and consequences of GVC. Ponte *et al.* (2019) is a recent edited volume in the form of a detailed 'handbook' on GVCs.

[13] The TIVA data do not have a DE classification. However, as noted by Banga (2014) the category 'rest of the world' comprises all developing and under-developed countries. Therefore, DE in the figure corresponds to the 'rest of the world' classification of TIVA.

'headquarter' economies. EME excluding EA and LA have considerably lower participation in GVCs.[14]

Participation in GVCs, *per se*, does not necessarily lead to higher industrialisation. Most of the DE have comparative advantage in labour-intensive manufacturing sectors and consequently participating in skill-biased and new technology intensive GVCs may even result in deindustrialisation (Rodrik, 2016). Furthermore, integrating to GVCs may potentially enhance deindustrialisation if backward participation (the use of foreign inputs in exports) dominates. Their case of lower forward participation (the use of domestic intermediates in exports) in GVCs may be among the relevant explanations of the recent deindustrialisation of the LA countries. Consistent with this, Gallagher and Zarsky (2007), for instance, finds that higher manufacturing foreign direct investments (FDI) inflows [and thus higher FVA] failed to increase the domestic production capabilities of Mexico. African countries linked mainly as 'suppliers of raw materials' (UNECA, 2015, p. 173) leading to very limited productivity gains.

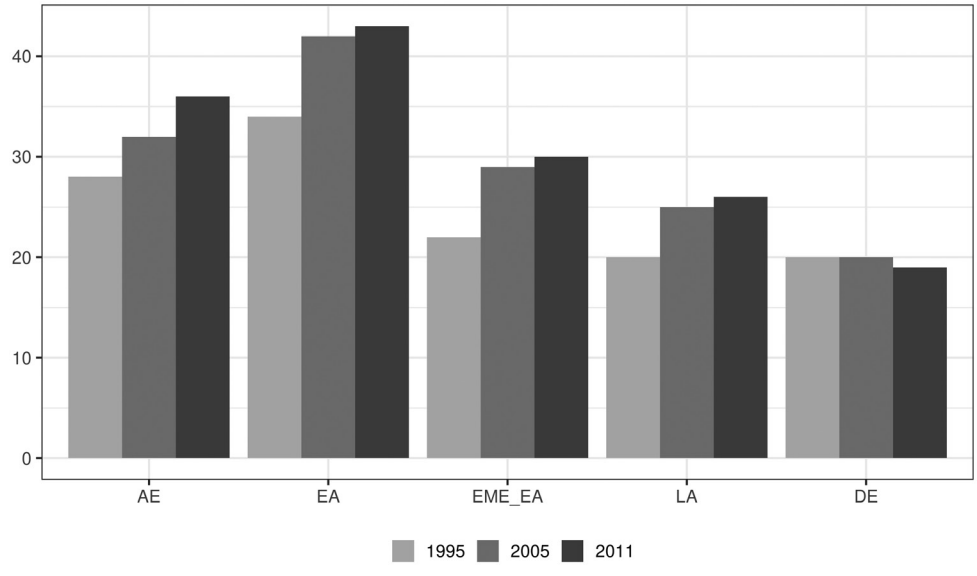

Fig. 4. *Foreign value-added share of gross exports (%).*
AE: Advanced economies; EA: East Asia, EME_EA: Emerging market countries excluding East Asia, LA: Latin America, DE: Developing economies. Source: OECD: TIVA.

[14] As suggested by the pioneering study by Hirschman (1958), linkage effects, which are particularly strong in manufacturing, are crucially important for growth. Consistently, in terms of linking to the GVC, the TIVA data distinguish between backward participation (BP, the use of foreign inputs in exports) and forward participation (FP, the use of domestic intermediates in third country exports). According to the TIVA figures, advanced economies (AE) increased their FP/BP ratio for the manufacturing industry from 1.07 in 1995 to 1.26 in 2011. The increase in the emerging market economies excluding East Asia (EME_EA) was from 0.78 to 1.04. These figures suggest that both AE and EME_EA benefited from higher participation, as FP > BP. The FP/BP ratio, however, should be interpreted with a caution for resource-intensive economies, because a higher FP/BP ratio may reflect an increase in their resource-based or low-technology exports. Latin American countries (LA), for instance, increased its FP/BP ratio from 1.6 to 2.0, whilst developing economies (DE) increased it from 1.8 to 4.5 during the period. Considering their deindustrialisation process, this increase may basically be reflecting increases in resource-based exports, such as metals or low-technology exports.

As reported by UNECA (2011), the manufacturing sector is very weak and further marginalised by the globalisation process and the new rules of world trade in recent decades. As emphasised above, the case Africa can be regarded as 'pre-industrialisation deindustrialisation' (Tregenna, 2015).

4. PD: empirical methodology and results

4.1 Empirical methodology

To investigate the process of PD, we estimate the following equations for different country groups.

$$\text{Man\_va}_{it} = \beta_1 y_{it} + \beta_2 y_{it}^2 + \beta_3 \text{Trade}_{it} + \beta_4 \text{Finance}_{it} + u_{it} \quad (1)$$

In (1), Man_va is the manufacturing value added (% of GDP) and y is the natural logarithm of per-capita real GDP (constant 2,005 USD prices). The equation contains also the quadratic term (y^2) to investigate the validity of the inverse U-shaped relationship. The real GDP at the peak manufacturing share ($Y^\star$) is computed as $Y^\star = \exp(y^\star)$, where $y^\star = \left|\beta_1/2\beta_2\right|$. According to Rodrik (2016), trade openness and financial globalisation are the potential sources of deindustrialisation. Therefore, equation (1) contains also measures for trade openness (Trade) and international financial integration (Finance). Trade openness is expressed as the sum of exports and imports over GDP (%). According to Dowrick and Golley (2004) this is, indeed, a measure of 'revealed openness'. Following Lane and Milesi-Ferretti (2007), we consider gross international investment position [(Gross assets + Gross liabilities)/GDP, %] as a measure of international financial integration.[15] We use annual panel data for 80 countries (23 AE, 22 EME and 35 DE) over 1970–2011. The sample choice is dictated by data availability.[16]

Under the Kaldorian proposition that manufacturing is the engine of growth, the real per-capita income variable (y) in the equation is endogenous. Considering the potential endogeneity of this variable for the long-run evolution of manufacturing share, we estimate the equations by employing the fully-modified OLS (FM-OLS) procedure developed by Phillips and Hansen (1990) and Pedroni (2004). The FM-OLS procedure takes into account the potential heterogeneity in the long-run relationships along with endogeneity and serial correlation (Pedroni, 2004).

[15] As convincingly argued by Bortz and Kaltenbrunner (2017, p. 386), 'international aspect of financialization is more than an increase in cross-border capital flows; rather, it is characterized by distinct qualitative changes in the way economic agents relate to international financial markets'. An alternative may be the use of the *de jure* measures such as the one developed by Chinn and Ito (2006) which are often based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). As noted by Kose *et al.* (2009, p. 14) 'these measures do not always reflect the actual degree of integration of an economy into international capital markets'. Consequently, 'what matters in analyzing the effects of financial globalization, is not how integrated economies seem on paper but how integrated they are in practice' (p. 14). Furthermore, as argued by Bortz and Kaltenbrunner (2017, p. 387), 'the incessant drive for innovation in financial markets, combined with the complexity of instruments and actors that characterizes the process of international financialization, increase the costs of imposing those controls, while rendering them inefficient, or ultimately ineffective'.

[16] The data for real GDP, trade and manufacturing share are from the WB's WDI and United Nations Statistics Division (UNSTAT). The data for international financial integration (finance) are from the updated database constructed by Lane and Milesi-Ferretti (2007). Although we have data for MVA, RGDP_pc and trade for the 1960–2014 period for most of the countries, the effective sample is determined by the availability of finance data only for the 1970–2010 period.

Trade openness and financial globalisation may cause deindustrialisation through two main channels, according to Rodrik (2016). Higher trade openness may lead EME or DE 'without a strong comparative advantage to become net importers of manufacturing, reversing a long process of import-substitution' (Rodrik, 2016, p. 4). Higher trade openness also leads EME and DE, which are often price takers in international manufacturing markets, to become much more exposed to relative price changes in AE. Consequently, a decline in the relative price of manufacturing in AE, due to, for instance, productivity improvements, may lead to 'imported deindustrialisation' (Rodrik, 2016, p. 4) in other countries. Furthermore, Bortz and Kaltenbrunner (2017) suggests that 'subordinated' international financialisation often leads to uneven international development and worsening of the productive structure.

The conventional literature suggests that trade openness facilitates diffusion of knowledge and technology through high technology imports and better resource allocation (Baldwin and Lopez-Gonzalez, 2015). According to Rowthorn and Coutts (2013), on the other hand, greater openness to international trade in AE leads to higher relative labour productivity, and hence lower manufacturing employment. However, trade openness may not enhance growth if it leads economies to specialise in sectors with comparative disadvantage (Redding, 1999). Dowrick and Golley (2004) find that trade openness promotes growth basically through productivity increases, but such effects vary by the level of development and trade specialisation. This effect is substantially higher for the more advanced countries, and becomes negative or negligible for the developing countries specialising in the export of primary products.

According to the conventional literature, international financial integration allows countries (with stronger institutional and macroeconomic structure) to finance their investments also by foreign savings, and thus stimulates the manufacturing industry. However, the countries lacking adequate financial development and sound macroeconomic policies may turn out to be more vulnerable to sudden stops of capital flows, and hence more prone to financial crises (Kose *et al.*, 2009). According to Palma (2005, 2014), 'Dutch disease' caused by higher financial integration and the consequent massive inflows of foreign capital can lead to deindustrialisation through manufacturing export bias towards primary goods.

4.2 Empirical results

Table 2 reports the pooled FM-OLS estimation results for equation 1 for the whole sample and different country groups. The signs and statistical significance of y and y2 suggest the validity of an inverted-U shaped relationship between MVA and per-capita RGDP for all the country groups, as well as for the whole sample. Figure 5 plots the simulated relationship between RGDP_pc and MVA share using the estimated parameters presented in Table 1. The figures plot also the estimated per-capita real GDP (constant 2,005 USD prices) at the peak manufacturing share ($Y^\star = \exp(y^\star)$, where $y^\star = \left|\beta_1/2\beta_2\right|$).

As the pooled FM-OLS uses 'demeaned' (i.e. deviations from the deterministic components including means) variables, the estimated $Y^\star$ is not directly comparable to the evidence presented in Table 1 and Figure 2. However, the figures provide some important information about the relative deindustrialisation patterns in different country groups. The lowest peak MVA and income are observed in developing and developing African (DE AFR) countries. As indicated by the higher downward slope of MVA after

Table 2. *Manufacturing value added (% of GDP): FM-OLS estimations*

Sample	y	y^2	Finance	Trade	Statistics
All	9.063	−0.676	−0.0001	0.0232	R^2 = 0.828, LRV = 5.1,
	(0.378)**	(0.023)**	(0.0001)	(0.0028)**	N = 80, NT = 3147
Advanced	11.037	−0.786	−0.0002	0.0364	R^2 = 0.819, LRV = 2.5,
	(1.250)**	(0.066)**	(0.0001)**	(0.0044)**	N = 23, NT = 909
Emerging or	8.458	−0.637	0.0060	0.0015	R^2 = 0.811, LRV = 6.2,
Developing	(0.648)**	(0.045)**	(0.0012)**	(0.0036)	N = 57, NT = 2238
Developing	6.124	−0.481	0.0071	−0.0171	R^2 = 0.778, LRV = 5.7,
	(0.996)**	(0.074)**	(0.0012)**	(0.0043)**	N = 35, NT = 1356
Developing	6.317	−0.527	0.0078	−0.0370	R^2 = 0.741, LRV = 5.6,
Africa	(1.312)**	(0.091)**	(0.0013)**	(0.0049)**	N = 26, NT = 1026
E. Asia	8.106	−0.499	−0.0011	0.0647	R^2 = 0.733, LRV = 4.0,
	(0.848)**	(0.055)**	(0.0006) **	(0.0048)**	N = 10, NT = 397
Emerging	12.852	−1.008	0.0034	−0.0557	R^2 = 0.638, LRV = 8.7,
(Excluding	(1.697)**	(0.109)**	(0.0036)	(0.0129)**	N = 15, NT = 608
E. Asia)					
L. America	32.929	−2.374	−0.0169	0.0458	R^2 = 0.727, LRV = 10.7,
	(2.786)**	(0.180)**	(0.0044)**	(0.0135)**	N = 13, NT = 515

Notes: LRV denotes long-run variance. The values in parentheses are the standard errors.* and ** denote the significance at 5% and 1%, respectively. N and NT are, respectively, the numbers of countries and observations.

the peak, deindustrialisation process appears to be much faster for these countries. For the E. Asian countries (Figure 5.1.g), the data do not provide clear evidence for deindustrialisation. Also, the figures show that, at the peak MVA, per-capita RGDP is much higher in AE and E. Asian countries than DE and EME. The evidence for LA, on the other hand, appears not to be substantially different from the AE.

The results in Table 2 suggest that the effects of trade openness and financial globalisation tend to substantially differ across country groups. Trade openness leads to higher manufacturing value-added shares for the whole sample and AE. Higher trade openness (the sum of exports and imports over GDP) and the consequent reallocation of investment and production with higher linkages to the GVCs tend to enhance industrialisation in the 'headquarter' economies (AE). Consistent with their higher and increasing forward participation linkages to the GVCs, higher openness to international trade leads to higher manufacturing share in E. Asian and L. American countries. Higher trade openness, on the other hand, leads to deindustrialisation in DE and African countries, which presumably have the weakest linkages to the GVCs and lack comparative advantage in manufacturing. Therefore, trade openness leads to 'imported deindustrialisation' (Rodrik, 2016) in DE and African countries.

The coefficient of the 'financial openness' variable, the sum of gross capital inflows and outflows over GDP (Lane and Milesi-Ferretti, 2007), is negative and significant for the AE. This result is consistent with the argument that higher financial globalisation encourages servisification in the AE (Palma, 2005). However, the estimated coefficient appears to be tiny albeit being significant. Interestingly, higher international financial integration enhances industrialisation in DE and African economies but leads to deindustrialisation in East Asia and Latin America. This contrasting evidence may be plausibly explained by the different effective finance constraints of these country

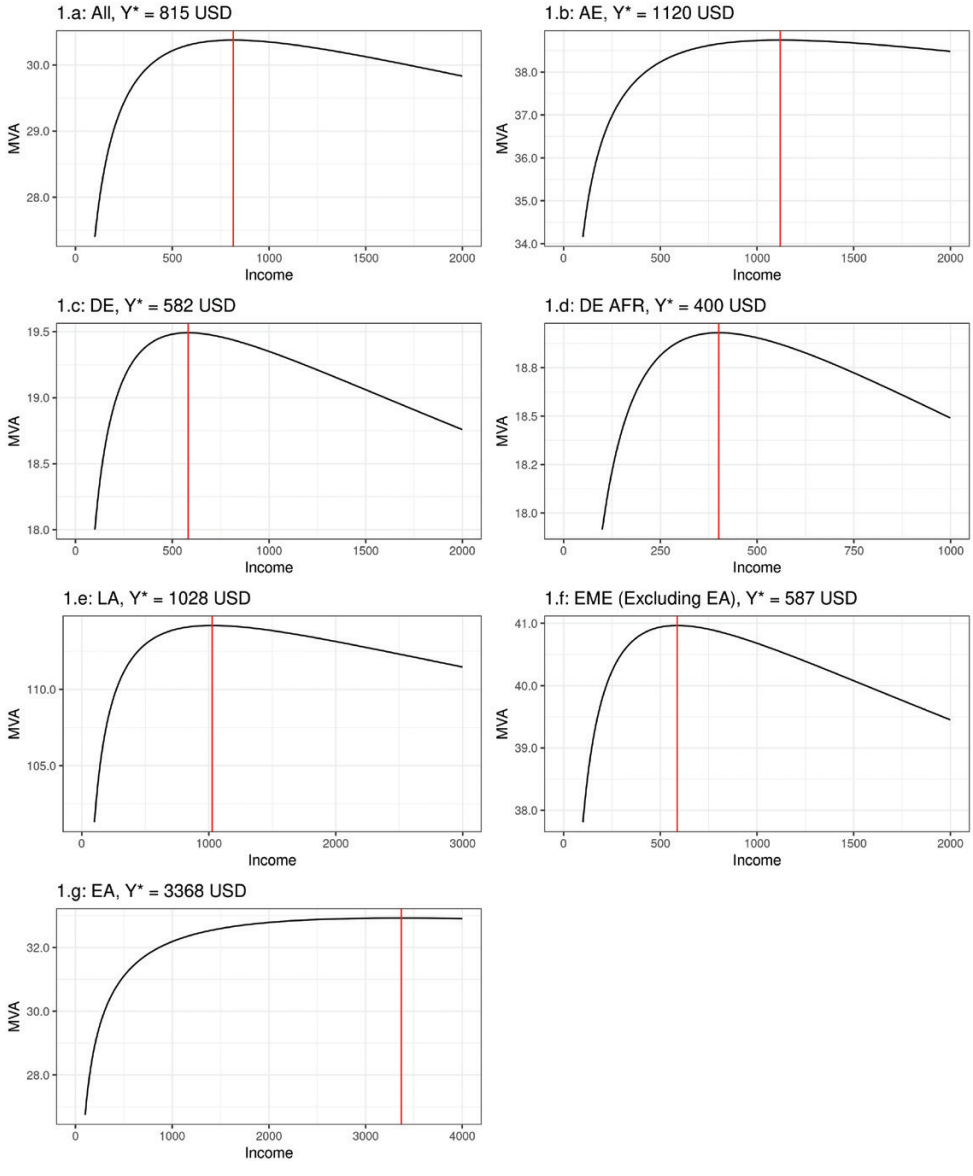

Fig. 5. *Manufacturing value-added share (%) and income.*
AE: Advanced economies; DE: Developing economies; DE AFR: African (developing) countries; LA: Latin American countries; EME: Emerging market economies; EA: East Asian countries.

groups. The DE and African economies, characterised typically by higher domestic finance constraints, have been heavily dependent on foreign savings for investment and growth. Higher international financial integration allows these countries, especially the ones with stronger macroeconomic and institutional structures, to finance manufacturing investments also by foreign savings. Higher financial openness, on the other hand, enhances deindustrialisation in countries that already have a relatively well-developed industrial base, such as in E. Asian and L. American countries. This result is

consistent with Teimouri and Zietz (2018) finding that net capital inflow surges tend to exacerbate deindustrialisation in both output and employment in middle income Asian and L. American countries.[17] In a similar vein, the results by Benigno *et al.* (2015) suggest that, during episodes of large capital inflows (surges) capital and labour shifts out of the manufacturing sector in a sample of 70 middle- and high-income countries.

5. Concluding remarks

Manufacturing industry, as a technologically dynamic tradable sector with the strongest backward and forward linkages, has often been considered as the engine of growth in AE, DE and EME. The crucial importance of manufacturing industry, which was indeed amongst the major concerns of the pioneering contributions by the earlier development economists, now appears to be recognised by the growing number of studies in the literature (Storm, 2015). The hump-shaped relationship between the manufacturing value-added share (MVA) and real per-capita GDP during the economic growth process, however, has shifted downwards and towards the origin, respectively, corresponding to much lower levels of peak MVA and real per-capita GDP at this peak for EME and DE, except East Asia. This study investigated this pattern, which is often called 'premature deindustrialisation' in the recent literature.

Our results suggest that PD has been the case in DE and EME, excluding East Asia. The East Asian countries, owing to their strategic and proactive industrial, trade and financial policies leading them to create internationally competitive and technologically upgraded industrial bases without obeying their static comparative advantage positions, appear to have achieved much stronger linkages to the GVCs which allowed them to avoid PD. Following Storm (2017), the East Asian success may be interpreted as the result of effective capital and foreign exchange controls and interventionist industrial policies to increase domestic savings and selectively channelling these funds into strategically important industries. The DE, specifically the African DE, on the other hand, have been much more severely hit by PD even before achieving a considerable industrial base. Such a process of deindustrialisation may be interpreted as 'pre-industrialisation deindustrialisation' (Tregenna, 2015).

The causes of PD appear not to be the same for different country groups. Higher trade openness leads to deindustrialisation in DE and African DE, which generally lack a considerable industrial base and suffer from the lack of strategic development policies to overcome their static comparative disadvantage in manufacturing.[18] Consequently, consistent with Palma (2011, 2014) and Rodrik (2016), higher trade openness appears to lead to imported deindustrialisation for these relatively backward economies. PD, even before some considerable degree of industrialisation, may thus be taken as a major obstacle to growth for such countries. These countries, on the other hand, often lack sufficient domestic resources to finance their investments. Higher financial integration, in this context, seems to serve as a remedy, and leads to higher MVA in DE and African DE, thereby mitigating the process of deindustrialisation.

[17] These results may also be interpreted in the context of the broader interpretation of the 'resource curse' or 'Dutch disease' by Palma (2005, 2011, 2014) which considers also the impact of international financialisation. Our results, along with Benigno *et al.* (2015) and Teimouri and Zietz (2018) provide a support to the pioneering contributions by Palma (2005, 2011, 2014).

[18] A recent edited volume examines Africa's economic underdevelopment in detail (Kanbur *et al.*, 2019). Chapters 4–10 of that volume focus especially on the problems of structural change and economic transformation facing African countries, which are prominently characterised by the absence of development strategies and inadequacy of industrial policies.

The East Asian countries, characterised by much stronger and increasing linkages to the GVCs, benefit from higher international trade integration in terms of the persistence of their industrialisation process. Indeed, as Akyüz (2005, p. 3) argues, 'trade liberalization in the Asian countries came after a period of successful industrialization and combined with policy interventions to support domestic industry'. This is consistent with the argument that these countries have become 'factory Asia' during recent periods, along with their much more intense participation in the GVCs (Baldwin and Lopez-Gonzalez, 2015). However, higher international financial integration leads to deindustrialisation in the East Asian countries. This result may be consistent with the broader interpretation of the 'Dutch disease' (Palma, 2005, 2014) (and with the argument that manufacturing industry competitiveness worsens due to real exchange rate appreciation resulting from capital inflows). Nevertheless, the story may not be exactly like this for these countries. Given the fact that many East Asian countries have very high saving rates and positive net international investment positions. higher financial integration, indeed, leads their domestic savings to finance more investments abroad. Consequently, in the case of East Asian countries, higher international financial integration does not necessarily mean higher resources to finance domestic investments, but the reverse; and thus it generates an adverse impact on industrialisation. On the other hand, the negative effect of real exchange rate appreciations on the international competitiveness of the manufacturing industry appears to be valid in Latin American countries. Higher trade openness, potentially leading them to increase their forward participation in the GVCs, tends to have a positive impact on industrialisation in Latin America.

The East Asian case, characterised by higher participation in the GVCs and the consequent avoidance of PD, however, should be interpreted with caution. This aspect of the East Asian case does not necessarily mean that these countries have passively adjusted to the new international division of labour, the rules of which are basically determined by 'headquarter economies' (i.e. AE). The forward participation ratios of East Asian economies (i.e. the use of domestic intermediates in the third country exports) have been higher than their backward participation ratios (i.e. the use of foreign inputs in exports). Consequently, it may be argued that, not necessarily the higher participation in the GVCs *per se*, but the structural and institutional conditions of such participation may better be interpreted as the main determinant of industrialisation. Such favourable conditions emerge and develop as the outcome of active and well-designed industrial and trade policies, including real exchange rate policies conducive to growth (Rodrik, 2008; Storm, 2017; Guzman *et al.*, 2018; Chang and Andreoni, 2020).

PD has been the case in EME and DE excluding East Asian countries. The causes of PD are not the same for all country groups. Countries with higher participation to GVCs tend to continue to industrialise, but mainly within the context of an international division of labour, which is determined dominantly by AE (headquarter or centre economies). However, strategic trade, finance, industrial and technology policies, regardless of their static comparative advantage positions may be important in achieving higher forward participation relative to backward participation to GVCs. The seminal contribution by Hirschman (1958) shows that manufacturing industry is growth enhancing as it has much stronger linkage effects in the economy. The recent studies, including Baldwin and Venables (2015), stressing the importance of backward and forward linkages in the international division of production appear to be consistent with the pioneering insights of Hirschman (1958).

All in all, this article has analysed the effects of economic globalisation on the process of deindustrialisation with an eye to the inverted-U shaped relationship between per-capita real income and the manufacturing value-added share for different country groups. The first message of the article is that PD has been observed widely in the developing world, and it may tend to persist as quite a 'global' development issue unless it is addressed domestically. The second message is that there seems to be no 'standard recipe' to deal with PD in the face of economic globalisation, because, as revealed and discussed throughout the article, trade openness and financial integration tend to have different effects in different country contexts. Globalisation-oriented standard policy prescriptions (for more and more trade openness and financial integration) need to be considered cautiously by taking into account specific domestic circumstances in order to design context-conscious, promising and fruitful industrial policies. Without such policies in the first place, many less-developed countries are unlikely to integrate their economies to the GVCs. Reaping the potential developmental benefits from the GVCs is a matter of conscious and active industrial policy, as has been depicted by the case of East Asian countries. Indeed, there has been a recent revival of studies that draw attention to the need for a major mentality change in scholarly and policy-making attitudes towards the developmental role of industrialisation (e.g. Noman and Stiglitz, 2016; Storm, 2017; Hauge and Chang, 2019; Andreoni and Chang, 2019; Chang and Andreoni, 2020). In this line of developmental thought, neither free-market policies nor the GVCs are treated as ready-made panacea for developmental problems. This article, we hope, provides useful empirical support and encourages further research in the developmental benefits of industrialisation. Last but not least, the third message is that the indispensable role of industrial policy in increasing forward participation to the GVCs should be prioritised and accentuated, rather than merely reciting the potential benefits of the GVCs.

Bibliography

Akyüz, Y. 2005. *'Trade, Growth and Industralization: Issues, Experience and Policy Challenges'*. Discussion Paper, No. 3, Ankara, Turkish Economic Association

Andreoni, A. and Chang, H. -J. 2019. The political economy of industrial policy: Structural interdependencies, policy alignment and conflict management, *Structural Change and Economic Dynamics*, vol. 48 (March), 136–50

Araujo, E., de Araújo, E., Peres, S.C. and Punzo, L.F. 2021. *An Investigation into Shapes and Determinants of Deindustrialization Processes: Theory and Evidence for Developed and Developing Countries (1970–2017), EconomiA*, vol. 22, no. 2, 129–143, Elsevier, Amsterdam.

Baldwin, R. and Lopez-Gonzalez, J. 2015. Supply-chain trade: a portrait of global patterns and several testable hypotheses, *The World Economy*, vol. 38, no. 11, 1682–1721

Baldwin, R. and Venables, A. J. 2015. Trade policy and industrialisation when backward and forward linkages matter, *Research in Economics*, vol. 69, no. 2, 123–31

Banga, R. 2014. Linking into global value chains is not sufficient: do you export domestic value added contents?, *Journal of Economic Integration*, vol. 29, no. 2, 267–97

Barro, R. J. and Sala-i Martin, X. 1992. Convergence, *Journal of Political Economy*, vol. 100, no. 2, 223–51

Bell, D. 1976. *The Coming of Post-industrial Society*, Harmondsworth, Penguin Books

Benigno, G., Converse, N. and Fornaro, L. 2015. Large capital inflows, sectoral allocation, and economic performance, *Journal of International Money and Finance*, vol. 55 (July), 60–87

Benigno, G. and Fornaro, L. 2014. The financial resource curse, *Scandinavian Journal of Economics*, vol. 116, no. 1, 58–86

Bortz, P. G. and Kaltenbrunner, A. 2017. The international dimension of financialization in developing and emerging economies, *Development and Change*, vol. 49, no. 2, 375–93
Chang, H. -J. and Andreoni, A. 2020. Industrial policy in the 21st century, *Development and Change, Focus issue, January*, 1–28
Chang, H-J., Hauge, J. and Irfan, M. 2016. *Transformative Industrial Policy for Africa*, Addis Ababa, United Nations Economic Commission for Africa
Chenery, H. B. 1960. Patterns of industrial growth, *American Economic Review*, vol. 50, no. 4, 624–54
Chinn, M. and Ito, H. 2006. What matters for financial development? Capital controls, institutions, and interactions, *Journal of Development Economics*, vol. 81, no. 1, 163–92
Clark, C. 1940. *The Conditions of Economic Progress*, New York, NY, Macmillan
Dasgupta, S. and Singh, A. 2006. *'Manufacturing, Services and Premature Deindustrialization in Developing Countries: A Kaldorian Analysis'*, UNU-WIDER, United Nations University Research Paper, No. 2006/49
Dowrick, S. and Golley, J. 2004. Trade openness and growth: who benefits?, *Oxford Review of Economic Policy*, vol. 20, no. 1, 38–56
Felipe, J., Mehta, A. and Rhee, C. 2019. Manufacturing matters … but it's the jobs that count, *Cambridge Journal of Economics*, vol. 43, no. 1, 139–68
Fisher, A.G.B. 1935. *The Clash of Progress and Security*, London, Macmillan
Foster-McGregor, N., Kaba, İ. and Szirmai, A. 2015. *'Structural Change and the Ability to Sustain Growth'*, UNIDO/UNU-MERIT background papers for the UNIDO, Industrial Development Report 2016 (IDR 2016 WP 11)
Gallagher, K.P. and Zarsky, L. 2007. *The Enclave Economy: Foreign Investment and Sustainable Development in Mexico's Silicon Valley*. Cambridge, MA: MIT Press
Gereffi, G. 2014. Global value chains in a post-Washington Consensus world, *Review of International Political Economy*, vol. 21, no. 1, 9–37
Gereffi, G. 2015. *'Global Value Chains, Development and Emerging Economies'*, UNIDO/UNU-MERIT background papers for the UNIDO, IDR 2016 WP 10
Gereffi, G., Humphrey, J. and Sturgeon, T. 2005. The governance of global value chains, *Review of International Political Economy*, vol. 12, no. 1, 78–104
Guzman, M., Ocampo, J. A. and Stiglitz, J. 2018. Real exchange rate policies for economic development, *World Development*, vol. 110 (October), 51–62
Haraguchi, N., Cheng, C. F. C. and Smeets, E. 2017. The importance of manufacturing in economic development: has this changed?, *World Development*, vol. 93 (May), 293–315
Hauge, J. 2020. Industrial policy in the era of global value chains: towards a developmentalist framework drawing on the industrialisation experiences of South Korea and Taiwan, *The World Economy*, vol. 43, no. 8 (August), 2070–92.
Hauge, J. and Chang, H.J. 2019. The role of manufacturing versus services in economic development, pp. 12–36 in Bianchi, P., Duran, C.R. and Labory, S. (eds.), Ch. 1, *Transforming Industrial Policy for the Digital Age*, Cheltenham, UK & Northampton, MA, USA: Edward Elgar Publishing
Hickel, J. 2017. Is global inequality getting better or worse? A critique of the World Bank's convergence narrative, *Third World Quarterly*, vol. 38, no. 10, 2208–22
Hirschman, A. O. 1958. *The Strategy of Economic Development.* New Haven, CT: Yale University Press
Hirschman, A. O. 1992a [1986] Linkages in economic development, pp. 56–76 in A. O. Hirschman, *Rival Views of Market Society and Other Essays*. Cambridge, MA, Harvard University Press
Hirschman, A. O. 1992b [1986]. A dissenter's confession: the strategy of economic development revisited, pp. 3–34 in A. O. Hirschman, *Rival Views of Market Society and Other Essays*, Cambridge, MA, Harvard University Press. Originally published in G. M. Meyer and D. Seers (eds.), Pioneers in Development (1984). New York, Oxford University Press
Johnson, R. C. 2015. Five facts about value-added exports and implications for macroeconomics and trade research, *The Journal of Economic Perspectives*, vol. 28, no. 2, 119–42
Jorgenson, D. W. and Timmer, M. P. 2011. Structural change in advanced nations: a new set of stylised facts, *Scandinavian Journal of Economics*, vol. 113, no. 1, 1–29

Kaldor, N. 1963. Capital accumulation and economic growth, pp. 177–222 in F. A. Lutz and Hague, D.C. (eds.), *Proceedings of a Conference Held by the International Economics Association*, London, Macmillan

Kaldor, N. 1966. *Causes of the Slow Rate of Economic Growth of the United Kingdom,* Cambridge, Cambridge University Press

Kaldor, N. 1967. *Strategic Factors in Economic Development*, Ithaca, NY, New York State School of Industrial and Labour Relations, Cornell University

Kanbur, R., Noman, A. and Stiglitz, J. (eds.) 2019. *The Quality of Growth in Africa*. New York, NY, Columbia University Press.

Kaplinsky, R. and Morris, M. 2016. Thinning and thickening: productive sector policies in the era of global value chains, *European Journal of Development Research*, vol. 28, no. 4, 625–45

Koopman, R., Wang, Z. and Wei, S. -J. 2014. Tracing value added and double counting in gross exports, *The American Economic Review*, vol. 104, no. 2, 459–94

Kose, M. A., Prasad, E., Rogoff, K. and Wei, S. -J. 2009. Financial globalization: a reappraisal, *IMF Staff Papers*, vol. 56, no. 1, 8–62

Kowalski, P., Gonzalez, J. L., Ragoussis, A. and Ugarte, C. 2015. *'Participation of Developing Countries in Global Value Chains: Implications for Trade and Trade-Related Policies'*, OECD Trade Policy Papers, No. 179, Paris, OECD Publishing

Kuznets, S. 1971. *Economic Growth of Nations: Total Output and Production Structure*, Cambridge, MA, Harvard University Press

Lane, P. R. and Milesi-Ferretti, G. M. 2007. The external wealth of nations mark II: revised and extended estimates of foreign assets and liabilities, 1970–2004, *Journal of International Economics*, vol. 73, no. 2, 223–50

Lauridsen, L. S. 2018. New economic globalization, new industrial policy and late development in the 21st century: a critical analytical review, *Development Policy Review*, vol. 36, no. 3, 329–46

Marconi, N., de Borja Reis, C. F. and de Araújo, E. C. 2016. Manufacturing and economic development: the actuality of Kaldor's first and second laws, *Structural Change and Economic Dynamics*, vol. 37 (June), 75–89

MSCI. 2012. *Emerging vs. Developed Markets Classification*, Investor Insight, November, MSCI Index Research (msci.com)

Noman, A. and Stiglitz, J. (eds.) 2016. *Efficiency, Finance and Varieties of Industrial Policy.* New York, NY, Columbia University Press

Palma, G. J. 2005. Four sources of "de-industrialisation" and a new concept of the "Dutch disease", in Ocampo, J. (ed.), *Beyond Reforms: Structural Dynamics and Macroeconomic Vulnerability*, New York, NY, Stanford University Press and World Bank

Palma, G. J. 2011. Why has productivity growth stagnated in most Latin American countries since the neo-liberal reforms?, pp. 568–607 in Ocampo, J. A. and Ros, J. (eds.), *The Handbook of Latin American Economics*, Chp. 23, Oxford, UK: Oxford University Press

Palma, G. J. 2014. *'De-Industrialisation, "premature" de-industrialisation and the Dutch-disease'*, Revista NECAT - Ano 3, no 5 Jan-Jun

Pedroni, P. 2004. Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the purchasing power parity hypothesis, *Econometric Theory*, vol. 20, no. 3, 597–625

Phillips, P. and Hansen, B. 1990. Statistical inference in instrumental variables regression with I(1) processes, *Review of Economic Studies*, vol. 57, no. 1, 99–125

Ponte, S., Gereffi, G., Raj-Reichert, G. (eds.) 2019. *Handbook on Global Value Chains*, Cheltenham, UK & Northampton, US, Edward Elgar Publishing

Ravenhill, J. 2014. Global value chains and development, *Review of International Political Economy*, vol. 21, no. 1, 264–74

Redding, S. 1999. Dynamic comparative advantage and the welfare effects of trade, *Oxford Economic Papers*, vol. 51, no. 1, 15–39

Rodrik, D. 2008. The real exchange rate and economic growth, *Brookings Papers on Economic Activity (Fall)*, 365–412

Rodrik, D. 2013. Unconditional convergence in manufacturing, *Quarterly Journal of Economics*, vol. 128, no. 1, 165–204

Rodrik, D. 2016. Premature deindustrialization, *Journal of Economic Growth*, vol. 21, no. 1, 1–33
Rodrik, D. 2018. *'New Technologies, Global Value Chains and Developing Economies'*, NBER Working Paper No. 25164
Rowthorn, R. and Coutts, K. 2004. De-industrialisation and the balance of payments in advanced economies, *Cambridge Journal of Economics*, vol. 28, no. 5, 767–90
Rowthorn, R. and Coutts, K. 2013. *'De-industrialisation and the balance of payments in advanced economies'*, Centre for Business Research, University of Cambridge, Working Paper 453
Storm, S. 2015. Structural change, *Development and Change*, vol. 46, no. 4, 666–99
Storm, S. 2017. *The Political Economy of Industrialization: Introduction to Development and Change Virtual Issue* (February), 1–19
Szirmai, A. 2012. Industrialisation as an engine of growth in developing countries, 1950-2005, *Structural Change and Economic Dynamics*, vol. 23, no. 4, 406–20
Szirmai, A. and Verspagen, B. 2015. Manufacturing and economic growth in developing countries, 1950–2005, *Structural Change and Economic Dynamics*, vol. 34 (September), 46–59
Targetti, F. 2005. Nicholas Kaldor: key contributions to development economics, *Development and Change*, vol. 36, no. 6, 1185–99
Teimouri, S. and Zietz, J. 2018. The impact of surges in net private capital inflows on manufacturing, investment, and unemployment, *Journal of International Money and Finance*, vol. 88 (November), 158–70
Timmer, M., de Vries, G., and de Vries, K. 2014. *Patterns of Structural Change in Developing Countries*. GGDC Research Memorandum, 149
Tregenna, F. 2009. Characterising deindustrialisation, *Cambridge Journal of Economics*, vol. 33, no. 3, 433–66
Tregenna, F. 2015. '*Deindustrialisation, Structural Change and Sustainable Economic Growth, UNIDO/UNU-MERIT Background Papers for the UNIDO'*, Industrial Development Report 2016 (IDR 2016 WP 4)
Tregenna, F., Nell, K. and Callaghan, C. 2021. Determinants of industrial development, pp. 378–406 in Fooster-McGregor, N., Alcorta, l., Szirmai, A. and Verspagen, B. (eds.), *New Perspectives on Structural Change: Causes and Consequences of Structural Change in the Global Economy*, Oxford, Oxford University Press
UNCTAD 2016. '*Structural Transformation for Inclusive and Sustained Growth*', Trade and Development Report
UNECA. 2015. *Economic Report on Africa 2015: Industrializing Through Trade*, Addis Ababa, UNECA
UNECA. 2011. '*Industrial Policies for the Structural Transformation of African Economies: Options and Best Practices'*. Policy Research Paper No. 2. , Addis Ababa, UNECA
UNIDO. 2013 *Industrial Development Report 2013 – Sustaining Employment Growth: The Role of Manufacturing and Structural Change*, Vienna, UNIDO
Van Neus, L. 2019. The drivers of structural change, *Journal of Economic Surveys*, vol. 33, no. 1, 309–49
Werner, M., Bair, J. and Fernandez, V. R. 2014. Linking up to development? Global value chains and the making of a post-Washington consensus, *Development and Change*, vol. 45, no. 6, 1219–47
World Bank. 2020. *World Development Report 2020 - Trading for Development in the Age of Global Value Chains*, Washington, DC: The World Bank

Appendix

Table A1. *Peak manufacturing VA and per-capita RGDP*

Country (Classification)	Peak MVA	RGDP at the peak	Year	RGDP_pc*	Country (Classification)	Peak MVA	RGDP at the peak	Year	RGDP_pc*
B. Faso (D)	15.9	85	1969	198	***Costa Rica (D)***	25.2	1695	1985	2768
Burundi (D)	9.8	98	1975	226	***Chile (E)***	26.9	1432	1974	2964
Malawi (D)	21.1	184	1992	240	***Jordan (D)***	21.2	3022	2007	3203
Uganda (D)	9.2	276	1999	294	***Mexico (E)***	24.1	2197	1989	3640
Benin (D)	11.7	157	1974	341	***Uruguay (D)***	24.1	2608	1989	3760
Sierra Leone (D)	9.1	166	1971	351	***Argentina (E)***	38.2	2112	1977	3879
Sudan (D)	8.9	336	1998	409	***Japan (A)***	33.5	2234	1971	4084
Rwanda (D)	15.5	313	1992	412	***Portugal (A)***	21.6	2101	1976	4116
Niger (D)	7.3	238	1986	420	***Turkey (E)***	23.9	3850	1999	4619
Zambia (D)	12.3	409	1998	438	***UK (A)***	38.6	1449	1962	4716
Mali (D)	19.3	372	2004	439	***S. Africa (E)***	23.7	2910	1983	4825
Sri Lanka (D)	25.4	271	1977	481	***Venezuela (E)***	29.2	3324	1986	5036
India (E)	19.2	383	1996	510	***Australia (A)***	30.9	2085	1971	5133
Togo (D)	11.2	403	1991	553	***Spain (A)***	25.8	2240	1974	5405
Ghana (D)	16.8	292	1977	575	***Malaysia (E)***	29.9	4492	2004	5517
C. African R. (D)	12.1	462	1991	640	***France (A)***	24.3	1908	1965	5594
Cameroon (D)	20.9	616	2001	649	***Netherlands (A)***	27.1	2208	1969	5594
Pakistan (E)	17.3	624	2005	707	***Gabon (D)***	9.3	4011	1986	5925
Guyana (D)	14.2	587	1987	710	***Cyprus (E)***	17.6	4033	1981	6406
Senegal (D)	17.9	569	1995	711	***Greece (A)***	17.6	3136	1976	6445
Côte d'Ivoire (D)	22.2	756	2000	718	***Austria (A)***	23.8	3001	1970	7332
Lesotho (D)	21.8	645	2004	720	***Denmark (A)***	20.1	3068	1970	7607
Nigeria (D)	6.7	637	1983	741	***Belgium (A)***	33.6	3239	1972	7953
Zimbabwe (D)	26.6	668	1993	774	***Israel (E)***	20.9	6215	1985	8876
Kenya (D)	14.5	846	2007	880	***Italy (A)***	27.6	4735	1978	9932
Algeria (D)	16.8	436	1972	901	***Luxemburg (A)***	41.5	3771	1970	9956
Philippines (E)	25.1	642	1989	970	***N. Zealand (A)***	27.3	7243	1984	10667
Morocco (E)	19.6	670	1985	991	***USA (A)***	24.1	4393	1968	11231
Bolivia (E)	20.4	679	1988	1008	***Barbados (D)***	12.7	4521	1981	11232
Indonesia (E)	28.7	914	2003	1242	***Norway (A)***	20.4	6837	1975	16032
Honduras (D)	22.1	1175	2002	1304	***Sweden (A)***	27.8	8383	1975	19678
Congo R. (D)	8.4	1152	1992	1551	***Iceland (A)***	19.4	13731	1986	25238
Egypt (E)	20.7	1219	1998	1568	***Finland (A)***	26.9	25115	2001	27428
Peru (E)	21.0	976	1990	1591	***Switzerland (A)***	23.6	18785	1980	32162
Colombia (E)	24.3	768	1978	1606	***Ireland (A)***	27.9	28836	2002	35243
Botswana (D)	9.0	1057	1983	1681	***Singapore (E)***	27	30284	2006	35776
Jamaica (D)	16.5	1162	1987	2069	***Germany (A)***	34.1	17463	1970	38822
Ecuador (D)	24.3	1707	1992	2322	***Canada (A)***	20.8	20113	1973	41288
Brazil (E)	33.9	1778	1984	2516	**NOTES:**				
Fiji (D)	15.0	2069	1998	2562	D: Developing economies,				
El Salvador (E)	23.7	2298	2002	2594	E: Emerging economies,				
Tunisia (E)	21.3	1980	1996	2676	A: Advanced economies.				

Notes: E: Emerging economies, D: Developing economies, A: Advanced economies