
38. Deindustrialization and premature deindustrialization

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INTRODUCTION

Classical development economics, especially structuralist approaches, regard the manufacturing sector as having special properties as an engine of economic growth. From this perspective, industrialization is the key route for developing economies to catch up with developed economies. These theoretical and policy approaches rose to prominence in the 1950s and 1960s, for instance in the approach advanced by the Economic Commission for Latin American and the Caribbean (ECLAC).

At that time, industry was growing in most developed as well as developing economies. However, this has since been reversed, with de-industrialization setting in initially in advanced economies and subsequently in many middle-income and even lower-income economies as well. De-industrialization is intensifying over time, setting in at lower levels of income per capita, as well as at lower shares of manufacturing in countries' employment and gross domestic product (GDP), than earlier.

While de-industrialization always refers to some sort of problems or decline in manufacturing, there are alternative definitions of it. In an early study of de-industrialization, Bluestone and Harrison (1982, 6) define it as 'systematic disinvestment in a nation's core manufacturing industries'. Singh (1977) conceptualizes de-industrialization in terms of an 'efficient' manufacturing sector, which he defines as manufacturing being able to export enough to meet a country's import requirements at acceptable levels of employment, output and exchange rate. De-industrialization is usually defined as a fall in the share of manufacturing in total employment (see, e.g., Rowthorn and Ramaswamy 1997; Saeger 1997; Alderson 1999; Rowthorn and Coutts 2004; Dasgupta and Singh 2006; Palma 2005, 2008). Tregenna (2009, 2013) argues that de-industrialization should be defined in terms of a sustained decline in both the share of manufacturing in total employment and the share of manufacturing in GDP. This is based, firstly, on an argument that manufacturing may act as an engine of growth through both output and employment channels; and, secondly, on an empirical analysis suggesting that not all cases where the employment share of manufacturing falls should appropriately be classified as de-industrialization.¹

This chapter begins with an empirical overview of trends in the share of manufacturing in GDP and employment, across countries and over time. This is followed by a critical review of some central issues emerging from the literature on de-industrialization: causes

* Acknowledgements: helpful comments and suggestions were received from Gabriel Palma and Sylvi Endresen.

¹ See Tregenna (2016) for a discussion of alternative definitions of de-industrialization and a typology of different types of de-industrialization in the light of the heterogeneity of de-industrialization internationally.

of de-industrialization; the relationship between de-industrialization and technological retrogression; premature de-industrialization; and whether de-industrialization matters for economic growth.

EMPIRICAL OVERVIEW OF DE-INDUSTRIALIZATION TRENDS

This descriptive overview of international trends in de-industrialization analyses the shares of manufacturing in employment and GDP for various country groupings over time. Figures 38.1–38.4 show the share of manufacturing in countries' total employment and GDP between 1970 and 2010. In Figures 38.1 and 38.2 countries are grouped by income. Countries are divided into four quartiles based on their income per capita in each year, with Quartile 1 the lowest and Quartile 4 the highest. For instance, Quartile 1 in 1970 includes the quartile of countries with the lowest income per capita in that year, which differs from the set of countries in Quartile 1 in 1980.² In Figures 38.3 and 38.4 countries are grouped by region. Figures 38.1 and 38.3 show the share of manufacturing in total employment, and Figures 38.2 and 38.4 show the same for the share of GDP.

The first striking observation is the manifest failure to industrialize among poor countries. In Quartile 1, the share of manufacturing in employment does not reach 5 per cent in any period (see Figure 38.1), and the share of manufacturing in GDP barely surpasses 10 per cent at its peak in 1990 (see Figure 38.2). For both employment and GDP, even the peaks for Quartile 1 are far lower than the lowest points for any other quartile. The share of manufacturing in GDP in Quartile 1 countries actually declines after 1990, without even reaching 11 per cent of GDP (see Figure 38.2).

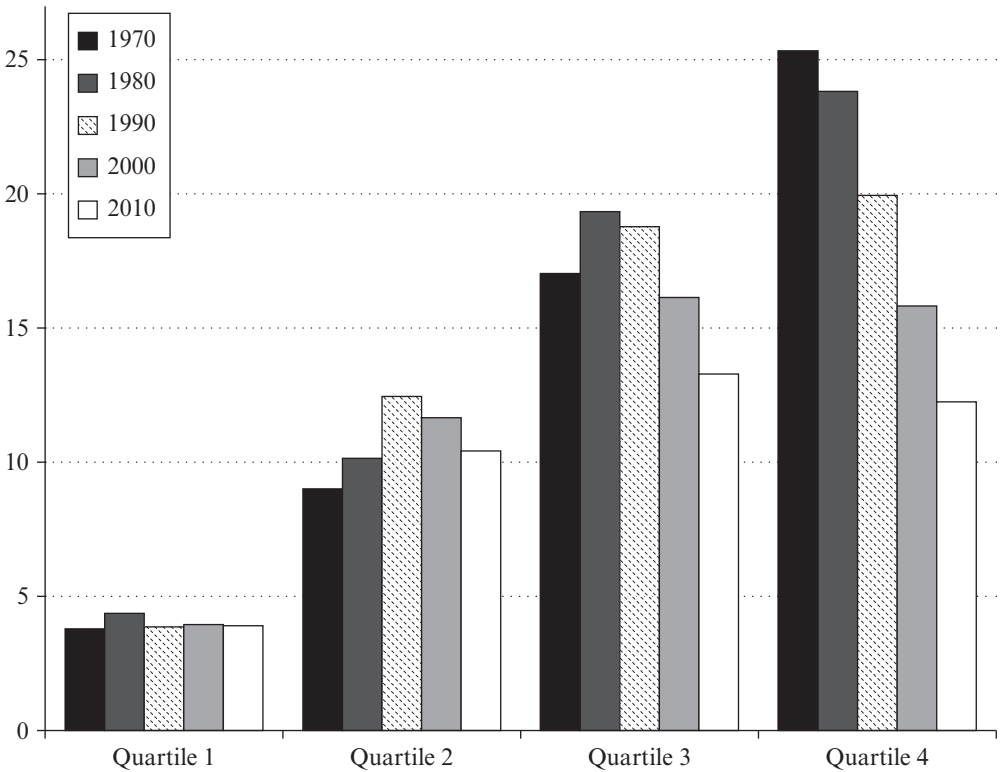
This can mainly be accounted for by the complete failure to industrialize in most of sub-Saharan Africa, given the preponderance of sub-Saharan African countries in the low-income grouping. As shown in Figures 38.3 and 38.4, even the peak share of manufacturing in both employment and GDP in sub-Saharan Africa is lower than the lowest points for any other region. If anything, by 2010 sub-Saharan Africa has actually begun to deindustrialize from the very low earlier 'peaks'.³

De-industrialization in these countries has set in before they even industrialized in any real sense. This de-industrialization is not just premature, but one can perhaps introduce a term of 'pre-industrialization de-industrialization' to characterize such cases. While 'pre-industrialization de-industrialization' may sound contradictory or paradoxical, it is intended to characterize situations where countries begin to de-industrialize at a point where the shares of manufacturing in employment and GDP are still very low, that is, before they have even really industrialized.

This problem can be elucidated with some country examples. In Liberia, the share of

² Note that in the World Bank's classification of low-, middle- and upper-income countries, countries are recategorized annually based on countries' income per capita for that year, but this classification only goes back to 1987.

³ The share of manufacturing in GDP in Quartile 1 countries in particular, and especially in African countries, may be 'artificially' depressed in the recent decade by the commodity price boom, which inflated the share of primary products in GDP. Even so, there seems to be a downward trend in the share of manufacturing in these economies.



Note: Income measured in income per capita. Quartile 1 is countries in the lowest quartile for a given year; Quartile 4 is countries in the highest quartile for a given year.

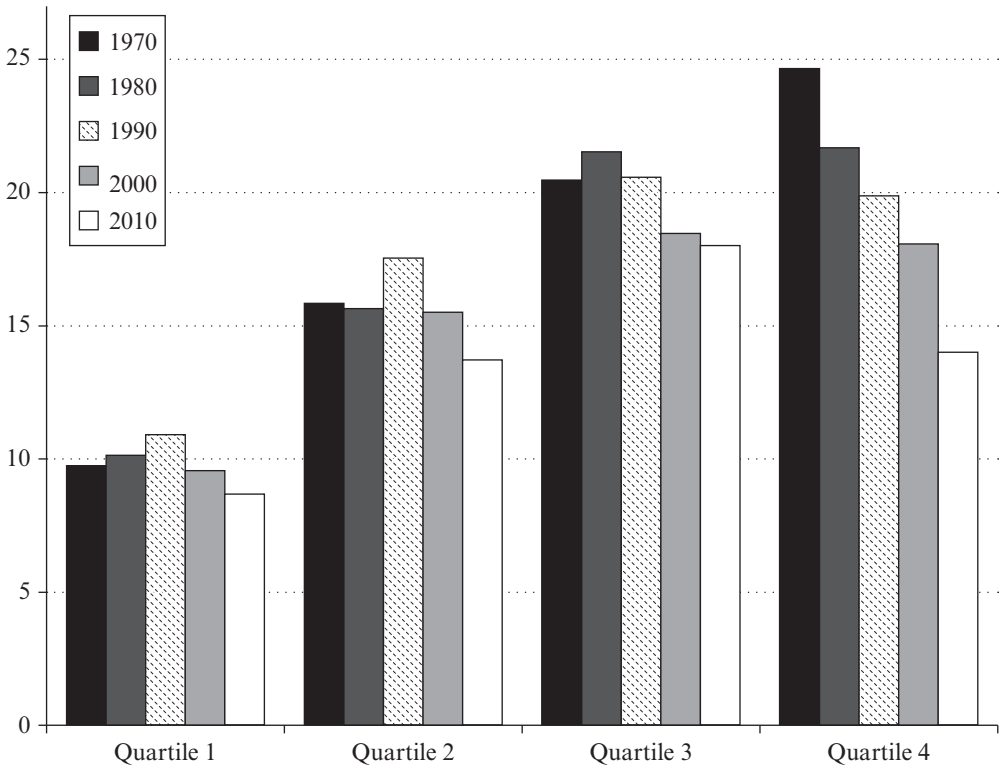
Sources: Employment data from ILO, income data from Penn World Tables.

Figure 38.1 Share of manufacturing in total employment, countries by income group, 1970–2010

manufacturing in total employment fell from 3 per cent in 1970 to 0.3 per cent in 2010, and the share of manufacturing in GDP fell from 11 per cent in 1990 to 6 per cent in 2010. In Mozambique, manufacturing constituted 4 per cent of employment and 24 per cent of GDP in 1990, falling to 1.5 per cent and 14 per cent, respectively, by 2010. Similar evidence of ‘pre-industrialization de-industrialization’ can be seen in countries such as Sierra Leone, Malawi, Kenya, Madagascar, Guinea, Tanzania and Sudan.⁴ Even allowing for poor data quality and possible data discontinuities over time, it is a bleak picture, and the trends are probably genuine in at least some sub-Saharan countries.

In contrast to sub-Saharan Africa, in South Asia manufacturing is still growing as a share of total employment (and stable as a share of GDP), though from a low base. This

⁴ Employment data sourced from the International Labour Organization (ILO), income data from Penn World Tables.



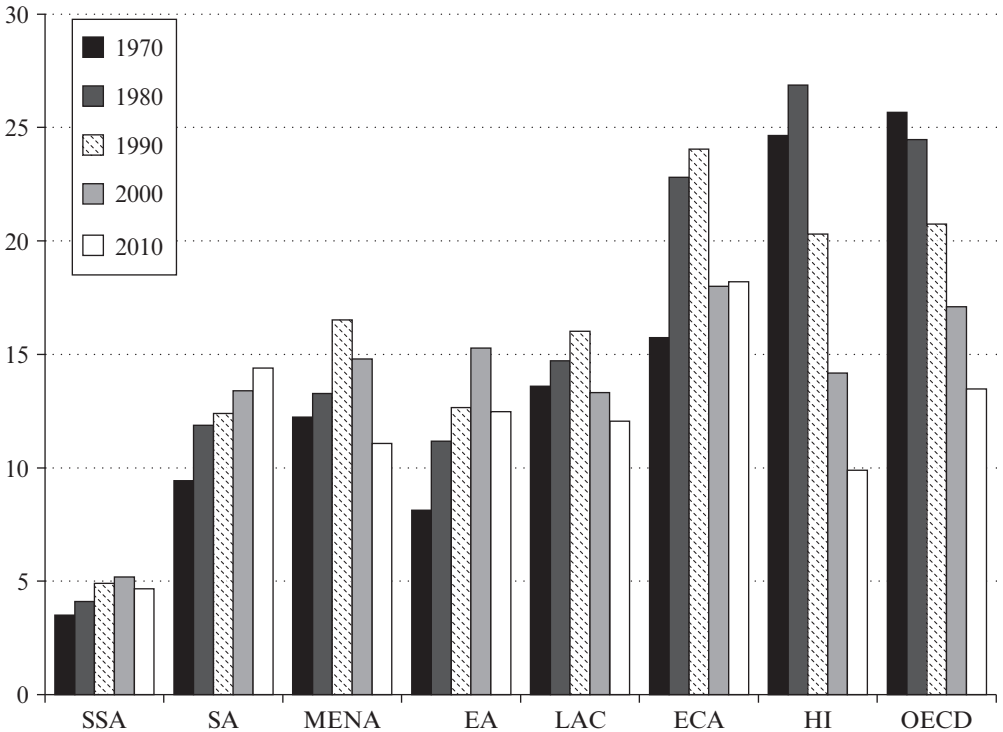
Note: Income measured in income per capita. Quartile 1 is countries in the lowest quartile for a given year; Quartile 4 is countries in the highest quartile for a given year.

Sources: Value added data from UN, income data from Penn World Tables.

Figure 38.2 Share of manufacturing in GDP, countries by income group, 1970–2010

is with income per capita being higher in South Asia than in sub-Saharan Africa. The most dramatic drop evident here, across all country groupings, is the enormous fall in the share of manufacturing in GDP in Europe and Central Asia (ECA) between 1990 and 2000. Note that this country grouping excludes Organisation for Economic Co-operation and Development (OECD) and other high-income European countries. This directly follows the rampant liberalization after the fall of the Berlin Wall. Before this collapse of manufacturing, it was stable at about a third of GDP, falling by more than 10 percentage points by 2000. There is also a significant fall in the share of manufacturing in total employment in ECA, though not as dramatically as with value added, the difference associated with declining productivity.

Significant ongoing de-industrialization is evident for Quartile 4 (highest income per capita) countries. The share of manufacturing in employment in 2010 was less than half that in 1970, with almost as large a fall in the share of manufacturing in GDP. Of course, this de-industrialization was of a much larger initial base than for any other country group.



Note: SSA = Sub-Saharan Africa excluding South Africa; SA = South Asia; MENA = Middle East and North Africa; EA = East Asia (does not include Pacific); LAC = Latin America and Caribbean; ECA = Europe and Central Asia; HI = High-income non-OECD members; OECD = High-income OECD members.

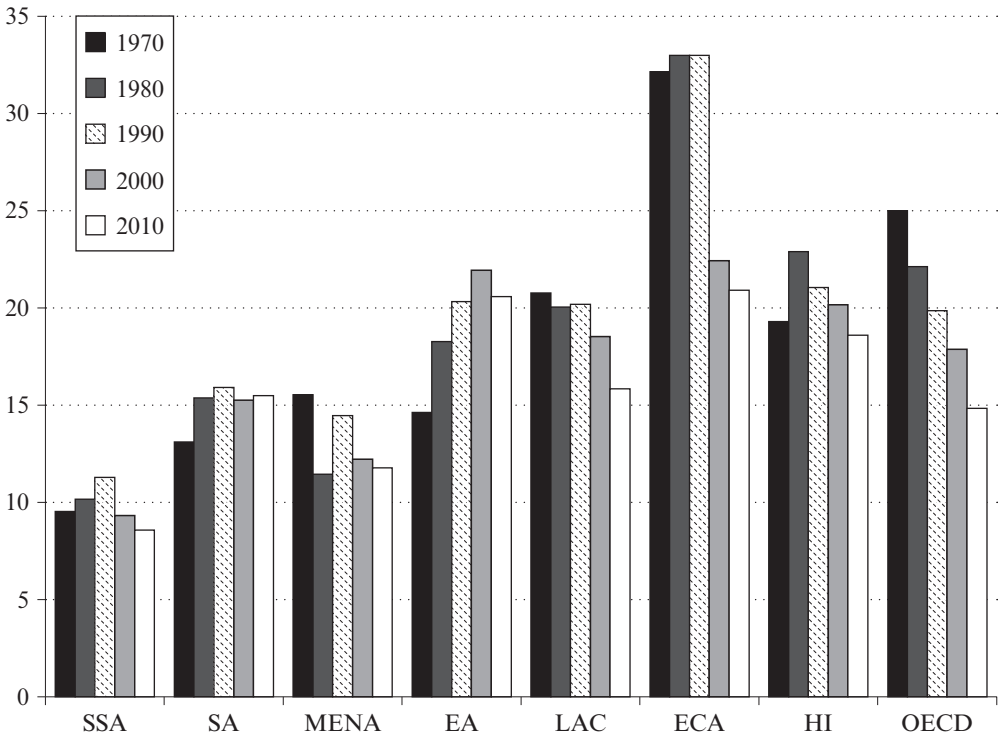
Sources: Employment data from ILO, country groupings from IMF.

Figure 38.3 Share of manufacturing in total employment, countries by region, 1970–2010

Even with the dramatic de-industrialization in OECD and other Quartile 4 countries, by 2010, only Quartile 3 had higher shares of manufacturing in employment and GDP. Even the reduced shares of manufacturing remain higher in Quartile 4 than the all-time peaks for Quartile 1. In the earlier periods, the shares of manufacturing in employment and GDP are highest for Quartile 4 countries, and in the later periods these countries are only overtaken by Quartile 3 countries. Quartile 3 countries (taken together) were already de-industrializing by this time, but just not as rapidly as Quartile 4 countries.

The literature on de-industrialization emphasizes an inverted-U relationship between income per capita and the share of manufacturing, notably in employment (Rowthorn 1994). This inverted-U relationship is evident here primarily in the trends within country groupings. However, what comes through more strongly is the de-industrialization over time across almost all country groups, with countries de-industrializing at lower income per capita and at lower shares of manufacturing (see Palma 2005, 2008).

If these trends continue, the share of manufacturing in middle-income countries will



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Sources: Value added data from UN, country groupings from IMF.

Figure 38.4 Share of manufacturing in GDP, countries by region, 1970–2010

only catch up with that in upper-income countries due to de-industrialization being more rapid in the latter than in the former, similarly for low-income countries catching up with middle-income countries. This ‘catch-up’ is not happening through continued industrialization among the less-developed countries, just through different paces of deindustrialization.

Following this empirical overview of trends in the share of manufacturing in economies internationally, in the following sections I proceed to discuss causes of de-industrialization, the relationship between de-industrialization and technological retrogression, premature de-industrialization, and whether de-industrialization matters for growth.

CAUSES OF DE-INDUSTRIALIZATION

Various factors causing or contributing to de-industrialization have been discussed in the literature. Rowthorn and Coutts (2004) identify five key explanations of de-industrialization: (1) the reclassification of jobs from manufacturing to services due to 'specialization' through the outsourcing of activities to domestic service providers; (2) decline in the share of manufacturing in total consumer expenditure due to a fall in the relative prices of manufactures; (3) slower employment growth in manufacturing than in services because of higher productivity growth in manufacturing than in services; (4) the negative effects of international trade (especially imports from lower-cost producers) on manufacturing employment in developed countries; (5) negative effects of lower rates of investment on the share of manufacturing (in both GDP and employment), since investment expenditure goes disproportionately into manufacturing.

The relationship between the share of manufacturing in total employment and income per capita is described in Rowthorn's well-known inverted-U curve (Rowthorn 1994). As countries' income per capita grows over time, the share of manufacturing in total employment initially grows and that of agriculture declines, through the process of industrialization. At a turning point, the share of manufacturing in total employment levels off and declines. With de-industrialization defined as a fall in the share of manufacturing in total employment, this turning-point marks the onset of de-industrialization.

De-industrialization can thus result from countries' transition into the downwards-sloping part of the inverted-U curve: the fall in the share of manufacturing in total employment as economies mature. This is the 'classical' form of de-industrialization in the literature, understood as being part of the stylized facts of a transition from the secondary to the tertiary sectors.

Palma (2005, 2008) identifies three additional sources of de-industrialization. Firstly, downward shifts in the curve over time. This means that whether or not countries reached the turning-point, there was a declining level of manufacturing employment associated with each level of income per capita. Secondly, a decline in the level of income per capita at which the share of manufacturing in total employment declined. This could be understood as a leftwards shift in the curve. Together, these shifts mean that de-industrialization is beginning at lower levels of income per capita and lower shares of manufacturing in total employment than was previously the case.

Thirdly, Palma introduces an argument that the Dutch Disease could be understood as a further form of de-industrialization. This is in the sense of a decline in the share of manufacturing in total employment over and above the above-mentioned changes. This 'excess' degree of de-industrialization is found in cases where a country discovered significant natural resources, developed export finance or tourism, or as a result of policy shifts in middle-income countries (Palma 2005, 2008).

Turning to the literature on the more specific causes of de-industrialization, on one side of an early controversy, Bacon and Eltis (1976) attribute it in the United Kingdom to a stifling of the manufacturing sector. They ascribe this to an overallocation of resources to the services sector, in particular the government sector. High taxes are required to support high government expenditure. However, since neither workers nor capitalists are willing to reduce their consumption commensurately, there is a squeeze on exports, savings and investment. Essentially, in the Bacon–Eltis hypothesis, manufacturing suffers

from a shortage of resources, being crowded out by increases in government spending. This argument evoked much debate in the late 1970s in the United Kingdom. It can be counterposed to what has been referred to as the Cambridge view of de-industrialization (see, e.g., Singh 1977; Cairncross 1978), which focuses primarily on falling demand for domestic manufactures as a cause.

One of the sources of de-industrialization identified by Rowthorn and Coutts (2004) is the reclassification of jobs from manufacturing to services due to domestic intersectoral outsourcing. This refers to the reclassification of manufacturing employees as service employees, due to an outsourcing of certain functions from manufacturing firms to specialized service providers. This has been referred to as the ‘statistical illusion’ or ‘statistical artefact’ component of de-industrialization, since it does not represent an underlying structural shift in the sectoral composition of an economy. Rowthorn and Coutts (2004, 5) argue that ‘it seems implausible that this accounts for more than a modest fraction of the huge recorded fall in the share of manufacturing employment in advanced economies over the past 30 years’.

Tregenna (2010) applied a new methodology for estimating the extent of intersectoral outsourcing for the case of South Africa. The results indicate that the relatively high growth in service employment in the 2000s was based in part on the outsourcing-type reallocation and reclassification of services such as cleaning and security. Without this outsourcing, it is projected that manufacturing employment in South Africa would have grown slightly faster than employment in private services, suggesting that at least some of South Africa’s apparent de-industrialization over this period was actually a statistical illusion. There is no comprehensive international evidence about how much domestic outsourcing has contributed to apparent de-industrialization, which would be important to evaluate the extent of real structural shifts.

An ongoing central debate in the literature on de-industrialization is whether it is caused primarily by domestic or external factors. More specifically, on the one hand, some studies have emphasized the effects of changes in productivity in the domestic manufacturing sector, rather than external factors. The argument here is that faster productivity growth in manufacturing than in services leads to slower employment growth in manufacturing than in services, even if output in both sectors were to grow at the same pace. Krugman (1996) and Rowthorn and Ramaswamy (1999) are amongst those who do not regard trade as a primary factor in the de-industrialization of the North. On the other hand, various studies attribute de-industrialization in the North primarily to external factors, specifically the impact of trade with the global South. Authors such as Wood (1995), Saeger (1997), Kucera and Milberg (2003), Alderson (1999) and Sachs et al. (1994) attribute de-industrialization largely to the impact of trade from the South or to globalization more broadly.

Krugman analyses de-industrialization as a ‘domestic distortion’ within Bhagwati’s theoretical framework. Krugman critiques the argument that de-industrialization associated with import competition causes welfare losses due to positive wage differentials between the manufacturing and non-manufacturing sectors. The ‘de-industrialisation hypothesis’, according to Krugman, is that the loss of high-wage jobs in manufacturing because of foreign trade (as opposed to domestic changes in technology or demand) has been a major source of stagnant or falling wages among workers in the United States. He argues that ‘few economists with mainstream credentials have taken the

deindustrialisation hypothesis seriously' (Krugman 1996, 5), but it has been influential on policy discourse. Krugman's extended back-of-the-envelope-type calculations suggest that only a fraction of a percentage point of the decline in American workers' incomes can be attributed to the trade-induced loss of high-wage manufacturing jobs.

Nickell et al. (2008) estimate an econometric specification based on a neoclassical trade and production model in order to decompose the decline in manufacturing and the rise in services in the OECD into the respective contributions of prices, technology and factor endowments. They find that the more rapid pace of deindustrialization in countries such as the United States (US) and United Kingdom (UK) is largely attributable to patterns of productivity growth and differential changes in the relative prices of manufactures and non-manufactures.

According to Kucera and Milberg (2003), between the late 1970s and the mid-1990s, ten OECD countries lost 3.5 million manufacturing jobs (more than half of the overall decline in those countries' manufacturing employment in that period) due to changes in world trade of manufactures. Their results attribute these losses almost exclusively to North–South trade, with all ten countries estimated to have lost manufacturing jobs from changes in North–South trade, and with changes in North–North trade having had a negligible impact. Disaggregating manufacturing job losses in the North at an industry level, Kucera and Milberg find large losses in labour-intensive industries as well as in industries that were successfully targeted by developing countries' industrial policies (such as electronics). They also find that, rather than there being winning and losing industries, there were job losses in almost all manufacturing industries in the OECD; they attribute these generalized losses to the decline in exports of manufactures from the North to the South.

Saeger (1997) observes a strong negative correlation between countries' net or gross imports of manufactures from developing countries as a ratio of GDP and the countries' change in manufacturing employment share between 1970 and 1990. Significantly, Kucera and Milberg, Saeger and Rowthorn and Ramaswamy all find the expansion in North–South trade in manufactures to account for about 20–30 per cent of the percentage point decline in the share of manufacturing in total employment in the North, using different country samples and methodologies. Similarly, according to Wood's (1995) estimates, trade with developing countries brought about a reduction of about a fifth of manufacturing employment in developed countries by 1990, with about half of this fall accounted for by changed factor content and the other half by defensive innovation. Virtually all the fall in demand for labour in his estimates is for unskilled labour.

A 1996 study by the US Department of Commerce (cited by Armah 1992) attributed 80 per cent of the total fall in manufacturing employment in the US between 1980 and 1984 to lower export-related employment. Half of this was found to be associated with a decrease in export volume, 38 per cent with increased productivity and 11 per cent with higher demand for imported inputs. Brady and Denniston (2006) find that low levels of globalization initially cause industrialization, while higher levels of globalization subsequently cause de-industrialization. Alderson (1999) finds an outflow of direct investment, as well as import penetration from the South, to have contributed to de-industrialization in OECD countries between 1968 and 1992.

Reinert and Kattel (2007) set out a taxonomy of different forms of economic integrations and a framework for analysing the effects of these. They argue that asymmetrical

free trade areas that take a 'colonial' or non-integrative form can bring about the Vanek–Reinert effect. This refers to a situation where rapid trade liberalization between countries (or regions) with very uneven levels of development leads to the destruction of the most-developed industries of the less-developed country (or region). While the more advanced country reinforces its comparative advantages in increasing-returns 'Schumpeterian' industries, the less advanced country falls back to its comparative advantage in diminishing-returns 'Malthusian' activities. This form of economic integration between countries is likely to lead to the less-developed country specializing in activities that are less technologically advanced and that require less advanced skills, with decline in the more advanced activities. Where these advanced activities are in manufacturing, the decline takes the form of de-industrialization. In extreme cases, such as Mexico, this de-industrialization can be followed by de-agriculturalization and even depopulation (Reinert and Kattel 2007).

DE-INDUSTRIALIZATION AND TECHNOLOGICAL RETROGRESSION

De-industrialization – premature de-industrialization in particular – may be linked to what Endresen (1994) has termed 'technological retrogression'. This is closely related to what has been referred to as 'primitivization' in the historical literature. Technological retrogression essentially refers to a situation in which production equipment, production organization or production methods that had been used in the past are adopted by some producers in the present. Technological retrogression almost inevitably leads to reduced labour productivity, and hence to a loss of competitiveness and growth prospects.

Endresen (1994) argues that technological retrogression should not be understood as a choice made by producers, since the retrogression may be forced upon producers by immediate economic conditions (such as a lack of access to capital). She sees 'lock-in' as a structural precondition of technological retrogression, where lock-in refers to a situation where there are no outlets for labour displaced by technological modernization and where a lack of economic diversification traps producers in a certain economic activity. Endresen emphasizes that technological retrogression is essentially a reversal of modernization. Instead of technological modernization proceeding in a linear manner over time, with the use of 'primitive' techniques preceding modernization, technological retrogression can lead to producers using less-advanced techniques than they had previously done.

De-industrialization could be considered both a possible cause and a possible consequence of technological retrogression. On the one hand, technological retrogression could be brought about by factors such as increased competition or a reduction in access to capital, and this technological retrogression could contribute to de-industrialization. For instance, where technological retrogression reduces productivity, manufacturing (or sections of manufacturing) would become less competitive internationally and hence would lose market share, leading to de-industrialization. This would probably show up in a lower share of manufacturing in value added in particular, with manufacturing employment being less affected.

On the other hand, de-industrialization itself could contribute to technological retrogression. De-industrialization could lead to reduced investment and the degrading of

technological capacity, bringing about technological retrogression. De-industrialization could also lead to the closure of established manufacturing firms, with manufacturing workers previously employed in such firms continuing in similar activities on their own but without the machinery previously utilized in the firms. For instance, de-industrialization in the clothing manufacturing sector would be likely to lead to the closure of established clothing manufacturing firms, but workers previously employed in those firms may continue sewing clothing as independent producers, using more basic equipment than the machinery previously utilized. This could be understood as a form of technological retrogression, brought about by de-industrialization. In reality, de-industrialization and technological retrogression may occur concurrently and may have common or related causes. Technological retrogression is likely to be linked to premature de-industrialization in particular.

It is also worth noting that in particular circumstances where de-industrialization either induces or is accompanied by technological retrogression, this technological retrogression may actually facilitate a form of re-industrialization (or at least mitigation of de-industrialization), albeit at lower levels of productivity and competitiveness. This may occur where there are plant closures and retrenchments of manufacturing workers, who subsequently embark on similar manufacturing activities individually or in small-scale informal enterprises. For instance, workers who lose their jobs in clothing manufacturing may engage in the manufacturing of clothing from their homes or in small groups in order to generate income. This could constitute a form of re-industrialization, or at least mitigate the extent of de-industrialization. However, it will almost certainly be at lower levels of productivity. The contribution of these activities to manufacturing employment will be higher than the contribution to manufacturing value added, given below-average productivity. Furthermore, such a phenomenon is most likely where the manufacturing is relatively labour-intensive and does not require heavy capital equipment or advanced technology.

PREMATURE DE-INDUSTRIALIZATION

When a country de-industrializes at a lower level of income per capita than would be typical by international standards, this can be considered premature de-industrialization. Widespread premature de-industrialization, among not only middle-income countries but low-income countries as well, is evident from the empirical trends discussed at the beginning of this chapter.

Premature de-industrialization is characteristically caused or triggered by shifts in policy, as opposed to being an incremental process associated with the 'maturation' of advanced economies. It is typically neoliberal economic 'liberalization' policies that are associated with bringing about premature de-industrialization: trade liberalization, liberalization of product markets, austere monetary policy and financial liberalization.

Although premature deindustrialization has become widespread in recent years among middle-income countries and some lower-income countries, it is not an entirely new phenomenon. Chile after the 1974 coup is an early example of policy-induced premature de-industrialization. This can be directly linked to the conservative economic policies implemented under Pinochet. As well as austere monetary policies, trade was rapidly

liberalized. Average nominal tariffs fell from 94 per cent in 1973 to 16 per cent in 1977, and maximum tariffs fell even more dramatically (Gwynne 1986). There was also rapid privatization of state-owned enterprises. Output and employment in Chilean manufacturing were negatively affected. With growing imports of manufactures, by the early 1980s manufacturing output was contracting significantly in real terms. Interestingly, after the displacement of the 'Chicago Boys' in 1984 and the strengthening of protection for domestic industry, manufacturing began recovering to a certain extent. This recovery was especially evident in the import-substituting sectors that had been hit hardest in the preceding decade (Gwynne 1986). However, Chilean manufacturing has seemingly never recovered the lost ground. This experience of early de-industrialization in Chile is illustrative of how policy changes can trigger de-industrialization. More recent episodes of de-industrialization in Chile could arguably also be linked to policy, in particular trade and financial liberalization.

De-industrialization in Latin America and the Caribbean is clearly evident from Figures 38.3 and 38.4. Frenkel and Rapetti (2012) take the view that it is de-industrialization, not external instability, which is the primary danger currently facing Latin American countries as a result of capital inflows. The channel that the authors posit for this relationship is capital inflows leading to real exchange rate appreciation, eroding the competitiveness of manufacturing and thereby reducing output and employment in manufacturing; it is thus a form of Dutch Disease. Their empirical analysis of Latin American countries supports this. Frenkel and Rapetti expect this de-industrialization to reduce countries' long-run growth, owing to the important externalities of modern tradable activities for growth.

Dasgupta and Singh (2006) believe that although the share of manufacturing in total employment is beginning to fall to a lower level of income per capita in many developing countries than was previously the case in developed countries, this is not necessarily a pathological phenomenon. In some developing countries it may be benign or even advantageous. They distinguish between two types of de-industrialization in developing countries. In the first type, manufacturing is not growing in the formal sector but is growing reasonably fast in a large informal sector, such that total manufacturing employment (formal and informal sectors combined) is not falling, and there may also be growth in manufacturing production. India is suggested as the archetype of this sort of developing-country de-industrialization. The second type, which Dasgupta and Singh regard as likely to be pathological, can be described as industrial failure. This took place in several African and Latin American countries in the 1980s and 1990s. Structural changes in these economies derived in part from policies imposed by the international financial institutions (IFIs), with countries specializing in their current comparative advantages rather than their long-term dynamic comparative advantages. Dasgupta and Singh warn that the long-term prospects of these countries developing modern manufacturing or services sectors have worsened.

Reinert and Kattel (2007) argue that post-1989 Central and Eastern Europe (CEE) and the newly independent countries from the former Soviet Union (NIS) experienced a form of de-industrialization akin to that in poor countries. This de-industrialization was triggered by rapid liberalization of their economies, in particular rapid trade liberalization. Industry collapsed in these countries, taking years to recover to 1990 levels. This can also be seen in Figures 38.3 and 38.4, showing the dramatic drop in the shares of manufacturing in employment and GDP between 1990 and 2000 in the European and Central Asian

countries (labelled ECA). It is noteworthy that services also declined in these countries, albeit not as dramatically as industry did. De-industrialization in CEE and NIS countries was thus very different from the natural maturation of economies and the transition to advanced services experienced in developed economies that gradually de-industrialized (Reinert and Kattel 2007). Although premature de-industrialization is generally taken to refer to developing countries, the post-1989 de-industrialization in CEE and NIS countries can thus be understood as policy-induced premature de-industrialization.

The de-industrialization of Mongolia after 1990 is an illustrative case of policy-induced premature de-industrialization and the catastrophic effects thereof (see Reinert 2004). Mongolia's earlier industrialization was itself policy-induced in a deliberate Soviet programme of industrialization. From 1991 on Mongolia implemented drastic economic liberalization, including full financial liberalization and capital account convertibility, and from 1997 all tariffs were abolished (except on alcohol). Reinert compares this programme to the Morgenthau Plan, a plan for the deliberate de-industrialization and subjugation of Germany after World War II which was not implemented, in favour of the Marshall Plan. Following these reforms, Mongolia's manufacturing sector quickly collapsed. In a number of sectors, manufacturing output fell to below 1 per cent of its 1989 levels within less than a decade, or even ceased altogether (data measured in quantities; figures from Reinert 2004 using data from the National Statistical Office of Mongolia). All manufacturing sectors (with the exception of alcohol) dropped by more than 50 per cent. Displaced industrial workers fell back to the land, and agricultural productivity plummeted, demonstrating the importance of an industrial base for the sustainability of other sectors of the economy. Mongolian de-industrialization and the associated shift to diminishing-returns activities brought on a vicious cycle of deterioration of the terms of trade, a trade deficit and an inability to import, a collapse of agricultural productivity, institutional collapse and falling real wages. Mongolia is a case study of policy-induced de-industrialization and 'de-development' of an economy, with devastating economic and social ramifications.

Apart from the role of policy in inducing premature de-industrialization, there are also important differences in the ways in which trade and globalization affect developing countries. As discussed earlier, trade with the global South has been identified in the literature as one of the causes of de-industrialization in developed countries, with debates about its importance in explaining this. A different analysis is thus needed when the focus is on de-industrialization or premature de-industrialization in the global South.

There is considerable heterogeneity amongst developing countries in the levels and stages of industrialization and de-industrialization. There are huge differences between: the global manufacturing powerhouse of China; low-income Asian emerging manufacturing forces; middle-income countries such as Turkey, South Africa and Brazil that have been de-industrializing over a long period; and low-income countries (especially in sub-Saharan Africa) that have as yet never really industrialized. This heterogeneity among developing countries is clearly visible in the divergent trends between the regional groupings shown in Figures 38.3 and 38.4.

The manufacturing power of China and other relatively low unit cost producers from Asia is important in understanding de-industrialization – and the challenges of industrialization and re-industrialization – in developing countries. Developing countries at levels of economic development that are both above and below that of China struggle

in competing with the unit costs of Chinese manufacturing. This refers not only to unit labour costs but to the overall cost structure of Chinese manufacturing.

The challenge for low-income countries is especially sharp, and is distinct from earlier de-industrialization in advanced economies that was associated with cheaper manufacturing from countries at lower levels of income per capita. The situation faced by low-income countries is that economies (notably China) at higher levels of income per capita are able to manufacture goods at lower unit costs. The dynamic in these developing countries here is thus not de-industrialization in 'grandfather industries' due to the emergence of lower-cost production in lower-income countries, as was the case in the earlier de-industrialization of advanced economies. Rather than the displacement of existing mature industries, it is actually industrialization that is being blocked as many low-income countries are unable to break into manufacturing markets. This is even the case for labour-intensive manufactures such as clothing, which have traditionally been important stepping-stones in countries' industrialization paths. There is thus a failure of nascent industries developing, at least at a rapid enough pace. Given the importance of economies of scale, positive externalities, cumulative causation and industry networks in manufacturing, this also hampers the emergence of a dynamic manufacturing sector in low-income countries.

There are thus specific dynamics of de-industrialization, and challenges of industrialization and re-industrialization, in developing countries. In earlier de-industrialization in advanced economies, manufacturing was squeezed by lower-cost imports from less-developed countries, due primarily to lower labour costs in the latter countries. Nonetheless, advanced economies had technological and other advantages over developed economies. Hence, even as they underwent de-industrialization (especially in relatively labour-intensive industries), they retained comparative advantages in other parts of manufacturing. Even while these advanced economies were de-industrializing, there were segments of manufacturing in which they retained pronounced comparative advantage over developing-country competitors.

In contrast, many developing countries today are uncompetitive against a country such as China with respect to both unit labour costs and technology. With a few exceptions, countries at lower levels of income per capita than China are almost universally behind in technology and cannot compete in producing electronics, cars and other relatively advanced manufactures. However, they also cannot compete with China on unit labour costs, and so they import goods such as clothing instead of developing their own labour-intensive manufacturing infant industries.

Further compounding the difficulty for low-income aspiring industrializers is that, even beyond China, most niche areas of low-value-added manufacturing have already been occupied by other developing countries, such as Bangladesh in textiles. Gaining the purported special properties of manufacturing requires reasonable scale in the production of specific manufactures within countries. This suggests that countries need some level of specialization in niche areas of manufacturing in order to become competitive and to industrialize. The existing competitive advantage of some developing countries in niche areas of low-value-added manufacturing of course does not suggest that other developing countries are blocked from these segments of manufacturing. However, it is unlikely that they can break in without robust and effective industrial policies.

DOES DE-INDUSTRIALIZATION MATTER FOR GROWTH?

Does de-industrialization matter for growth? Is it a pathological phenomenon or simply part of the natural maturation and development of economies? The answers to these questions depend in part on the extent to which growth is regarded as sector-specific. If growth is sector-neutral – in the sense that the effects of a unit of value added on growth do not depend on the sector in which that unit of value is added – then a change in the sectoral composition of an economy would not necessarily be expected to have growth implications. Conversely, if growth is sector-specific, then a change in sectoral structure could affect economic growth. From a Kaldorian-type perspective, manufacturing is thought to have superior scope for learning-by-doing, increasing returns to scale and overall for cumulative productivity increases, strong growth-pulling linkages with the rest of a domestic economy, technological progressivity and other characteristics that accord it a special role as an engine of growth. This would suggest that a decline in the share of manufacturing in an economy could be expected to diminish a country's growth prospects, especially in the medium to long term.

Tregenna (2014) put forward a new conceptualization and typology of de-industrialization based on a Marxian theoretical framework. This combines the sectoral approach, which is the basis of the standard approaches to de-industrialization, the position of an activity in the circuit of capital. De-industrialization is thus conceptualized both in terms of the sectoral composition of surplus-value-producing activities and as a shift between those activities that produce surplus value and those that do not. Structural change can thus be analysed in terms of both sectoral specificity and other important dimensions of activity specificity, including what can be termed the level of 'technological-organizational' advancement. This allows for a distinction between two forms of deindustrialization: 'Form I' de-industrialization refers to a relative decline in manufacturing and a relative increase in non-surplus-value-producing activities; 'Form II' de-industrialization refers to a relative shift from manufacturing to other types of surplus-value-producing activities. These are likely to have different effects on growth. The use of Marxian tools of analysis can bring out the heterogeneity of diverse types of de-industrialization and the different ways in which they can affect growth.

Whether de-industrialization matters for growth is also likely to depend on the circumstances and nature of the de-industrialization. The level of income per capita at which de-industrialization commences in a particular country, and how this compares to typical international patterns in this regard, would be one of the relevant circumstances. The extent to which de-industrialization is triggered or accelerated by a policy change (such as a tariff liberalization), as opposed to just gradually taking place over time with economic development, is also germane to the probable effects of de-industrialization on growth. Another aspect is the nature of the particular manufacturing activities that are (relatively) declining and of the non-manufacturing activities that are (relatively) growing. This includes the extent to which each of these activities are technologically advanced and the extent of their positive externalities for the rest of the economy.

Even taking account of these dimensions and of the specificity of particular de-industrialization processes, on the balance of probabilities it is most likely that de-industrialization will negatively affect a country's growth. As Reinert (2004, 177)

observes, 'a nation with even an inefficient manufacturing sector will be infinitely better off than a nation with no manufacturing sector at all'.

The extent to which manufacturing has been an engine of growth has been empirically tested by Szirmai and Verspagen (2011) for a panel of 88 countries over the period 1950–2005. Overall, they find a moderate positive effect of manufacturing on growth, with no such effect evident for services. However, when the time period is broken down, the direct effect of manufacturing on growth is only apparent for the subperiod 1970–1990. The authors argue that since 1990 manufacturing has become a more difficult route to growth than was previously the case. More human capital is now required to gain the same positive marginal effects of manufacturing expansion than was previously the case, and the catching-up bonus has diminished. Szirmai and Verspagen thus argue that it is now increasingly difficult for middle-income countries to benefit from manufacturing as an engine of economic growth.

According to Szirmai and Verspagen's calculations, in 1950 the average share of manufacturing in GDP for developing countries was just 12 per cent, much lower than the average share of 29 per cent for advanced economies. Significantly, the share of manufacturing in GDP for developing countries never rose above a peak of 18 per cent (in the early 1980s), well below the earlier peak of 30 per cent for advanced economies.

From an international econometric analysis, Dasgupta and Singh (2006) conclude that the manufacturing sector plays a critical role in economic growth. Although a similar econometric result is found for services, Dasgupta and Singh argue that in terms of causal interpretation of the model, services do not necessarily play a similar role to manufacturing as an engine of growth.

Most studies of the effects of de-industrialization on growth are for advanced economies. A study of de-industrialization in developing countries (Pieper 2000) finds industrial performance to be correlated with overall economic performance. Industry has a strong influence on aggregate productivity and employment outputs. Pieper's results show 'productivity de-industrialization' to be associated with negative aggregate productivity growth. Slow industrial growth seems to lead to 'low road development' in which there is a trade-off between productivity growth and employment growth.

Any negative effects of de-industrialization are likely to be particularly pronounced in developing countries, especially low-income developing countries. Three main reasons can be put forward for this, all related to the point of development at which de-industrialization commences.

Firstly, compared to de-industrialization in advanced economies, premature de-industrialization typically sets in not only at lower levels of income per capita but also at a lower share of manufacturing in the economy. This suggests that a country will have obtained less of the benefits of manufacturing for broader economic growth by the time de-industrialization begins. Secondly, the sustainability of a dynamic services sector is questionable under such circumstances. The services that develop are unlikely to be technologically advanced services with the sort of desirable qualities for growth that have been attributed to manufacturing in Kaldorian-type approaches. The types of services that 'replace' manufacturing in a low-income de-industrializing country may be, for example, low-value-added consumer services. In an advanced economy, at least some of the types of services that are 'replacing' manufacturing may be relatively high-technology, high-skills, tradable, increasing-returns producer services with strong

linkages with the rest of the economy. But this is unlikely to be the case with premature de-industrialization. Thirdly, the typical causes of de-industrialization are different in developing and developed countries. In the former, de-industrialization is commonly brought on by policy shifts, especially trade liberalization and/or tight monetary policy. This is not the sort of incremental 'maturation' found in advanced economies (which may well still have negative effects on growth but of a different form and magnitude). These three differences, and reasons for why de-industrialization is likely to be more deleterious in less developed countries, are closely related to one another.

CONCLUDING REMARKS

It is important to recognize that there are very different types of de-industrialization. One important dimension of these differences is in the level of income per capita at which de-industrialization begins. In general, the effects of de-industrialization can be expected to be more negative, the lower the level of economic development at which it commences. A second important dimension is the nature and characteristics of the manufacturing activities that are in relative decline, and of the non-manufacturing activities that are relatively growing. Of particular relevance here is the scope in each of these activities for cumulative productivity increases (as well as other pro-growth characteristics, such as contribution to the balance of payments). Notwithstanding the common denominators that demarcate sectors, there is enormous heterogeneity within sectors with respect to these characteristics. A third key aspect that distinguishes different types of de-industrializations is the dynamics of the de-industrialization process itself, in terms of what is happening with manufacturing output (both the share and level), manufacturing employment (both the share and level) and manufacturing productivity (see Tregenna 2009, 2011, 2013). Where the share of manufacturing in total employment declines due to productivity rising more rapidly than in the rest of the economy, while the absolute level of manufacturing employment and output as well as the share of manufacturing in GDP all rise, this is probably not pathological and would not be appropriately characterized as de-industrialization. This is very different from a situation where the manufacturing sector as a whole collapses.

So, for instance, 'grandfather' manufacturing industries or manufacturing activities which are not especially technologically advanced, which are not strongly linked in with the rest of the domestic economy, and which are not enjoying significantly increasing returns to scale, may be supplanted by niche services activities that actually have stronger Kaldorian-type properties. While there are likely to be immediate negative effects for the individuals and regions directly affected by this form of de-industrialization, the overall economic effects are probably progressive and good for economic growth. This is a fundamentally different economic phenomenon from a case in which premature de-industrialization is brought about by economic policy 'liberalization' and in which the most advanced segments of a developing country's manufacturing are destroyed. De-industrialization in cases such as the destruction of manufacturing in Eastern Europe post-1989, and the 'pre-industrialization de-industrialization' in many sub-Saharan African countries, are not only bad for growth but are just plain ugly.

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