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DEINDUSTRIALISATION
An issue for both developed and developing countries

Fiona Tregenna

Introduction

Industrialisation has been seen as central to the development process since the earliest days of Development Economics as a field. In the policy sphere, this recognition was reflected in the prioritisation of industrialisation in developing countries’ drives to modernise and ‘catch up’, especially in the decades of the 1950s to 1970s.

However, with the notable exception of East Asia, many developing countries began to deindustrialise at relatively low levels of industrial development. Deindustrialisation is generally taken to refer to a fall in the share of manufacturing in a country’s GDP and/or employment. Deindustrialisation in many developing countries began before they even reached the levels of industrialisation that had been typical in advanced economies before those countries began deindustrialising around the 1970s. This is one of the key differences between the typical patterns of deindustrialisation in developing and advanced economies.¹

There have arguably been five central debates in the literature on deindustrialisation. The first of these concerns the causes of deindustrialisation. Most importantly, about the extent to which deindustrialisation is driven by domestic or international factors. A second key debate in the literature has been around the most appropriate way of defining deindustrialisation. Third, there is an issue about how much of apparent deindustrialisation is a genuine structure shift and how much is a ‘statistical illusion’ arising from the reclassification of jobs due to outsourcing. A fourth area of debate centres on the effects of deindustrialisation, particularly on economic growth. The question here is basically whether or not a decline in manufacturing is a pathological phenomenon which is likely to depress economic growth, due to special properties of manufacturing for growth. A related set of issues concerns the social and political effects of deindustrialisation. Fifth, there has been discussion in the literature about premature deindustrialisation in developing countries, including around whether and how this differs from deindustrialisation in advanced economies.

These debates, along with other relevant issues from the literature on deindustrialisation, are reviewed in this chapter. The existing literature on deindustrialisation focuses primarily on developed countries, for obvious reasons, but special attention is paid here to issues of deindustrialisation in developing countries as well. This chapter begins with an overview of the different definitions and typologies of deindustrialisation and then in the third section considers
the heterogeneity of deindustrialisation experiences internationally. The fourth section discusses the sources of deindustrialisation, and the fifth focuses on the specificity of deindustrialisation in developing countries. The sixth section explores the debate around the extent to which deindustrialisation is a 'statistical illusion'. The economic effects of deindustrialisation are reviewed in the seventh section and the social and political effects of deindustrialisation in the eighth. This is followed by a brief consideration of the spatial dimensions of deindustrialisation, in the ninth section. The tenth section concludes.

**Definitions and typologies of deindustrialisation**

While deindustrialisation always refers to some sort of problems or shrinkage in the manufacturing sector, there are different ways in which deindustrialisation has been defined. Different definitions would give rise to different judgements as to whether particular experiences should be characterised as deindustrialisation.

An early study of deindustrialisation was by Bluestone and Harrison (1982) for the USA. They defined deindustrialisation as “systematic disinvestment in a nation’s core manufacturing industries” (p. 6). Another prominent early contribution to the conceptualisation of deindustrialisation was that of Singh (1977). He conceptualises deindustrialisation in terms of an ‘efficient’ manufacturing sector, in terms of whether or not manufacturing can generate sufficient net exports to meet a country’s import requirements at acceptable levels of output, employment and the exchange rate. Singh considers deindustrialisation to be an outcome, instead of a cause, of this ‘inefficiency’ or of disequilibrium. He sees deindustrialisation as problematic insofar as it is indicative of structural disequilibrium.

Cairncross (1979) supports Singh’s approach to deindustrialisation and labels this the ‘Cambridge’ view of deindustrialisation. In a different perspective, Bacon and Eltis (1976) attribute deindustrialisation in the United Kingdom to excessive public spending crowding out manufacturing by starving it of resources.

Rowthorn and Wells (1987) introduced an important distinction between what they term ‘positive’ and ‘negative’ deindustrialisation. This distinction rests on both the causes and effects of deindustrialisation. In terms of causes, positive deindustrialisation is seen as a normal product of growth and development in mature economies, resulting from rapid productivity growth in the manufacturing sector. Because this rapid productivity growth is accompanied by even faster output growth, and extensive job creation in the services sector, there is no resultant increase in employment. While Rowthorn and Wells do not foresee negative economic effects of deindustrialisation, their focus is on employment. If the manufacturing sector does indeed have special properties that are important for growth, then even ‘positive’ deindustrialisation could arguably have negative effects for growth. Still, what they see as deindustrialisation, that is, a symptom of economic success, is in contrast to the pathological phenomenon of negative deindustrialisation. This results from economic failure, more specifically serious problems in industry. Negative deindustrialisation causes unemployment to rise because labour shed from the manufacturing sector is not absorbed into the service sector. Rowthorn and Wells also identify a third type of deindustrialisation, in which the composition of net exports shifts from manufactures towards other goods and services, bringing about a reallocation of labour and other resources from manufacturing to other sectors.

More recently, drawing on an empirical analysis of deindustrialisation in developing countries, Pieper (2000) puts forward a taxonomy distinguishing between three types of deindustrialisation. She defines productivity deindustrialisation as a negative contribution of the industrial sector to overall productivity growth in an economy, and employment deindustrialisation and output
Deindustrialisation as decreases in the contribution of the industrial sector to overall output and employment respectively.

Jalilian and Weiss (2000) develop a novel test for deindustrialisation, based on an analysis of countries’ manufacturing level and share of GDP relative to what would be econometrically predicted based on cross-country regressions that include relevant country characteristics. A country is considered to have deindustrialised in absolute terms if the size of its manufacturing sector is lower than predicted and if this deviation has grown over time; similarly for relative deindustrialisation measured in the share of manufacturing.

One important issue in defining and measuring deindustrialisation is whether it should be understood as a fall in the share of manufacturing in total employment, or in value added \((/\text{GDP})\), or both. Deindustrialisation is most commonly defined in the literature as a fall in the share of manufacturing in total employment (see, for example, Palma, 2008; Rowthorn and Coutts, 2004; Rowthorn and Ramaswamy, 1997; Saeger, 1997; Alderson, 1999; Dasgupta and Singh, 2005).

The fact that the declines in manufacturing employment share have generally exceeded those in manufacturing output might partly explain the emphasis on the fall in the share of manufacturing employment in the deindustrialisation literature. This emphasis on manufacturing employment specifically probably also derives in part from a perspective that the special properties of manufacturing operate through the employment channel in particular, and in part from the social and political dimensions of falling manufacturing employment. Furthermore, apparent changes in manufacturing output share are complicated by concurrent changes in relative prices. The fall in the relative price of manufactures might make it difficult to pin down the real decline in manufacturing output, given the limitations of sectoral deflators, and this could be part of the reason for the focus in the literature on changes in manufacturing employment share rather than output share. In addition, in advanced capitalist economies in the 1980s, the decline in manufacturing employment was arguably more acutely felt socially and politically than was the decline in manufacturing output. The shedding of manufacturing jobs, and the apparent inability of the rest of the economy to absorb those who lost their jobs, made this an important political and social issue. The relative visibility and ‘political’ nature of manufacturing job losses may have contributed to the focus on this dimension of deindustrialisation (Tregenna, 2009). Conversely, the fact that sectoral employment is not as readily available as value added data could also be a factor leading empirical analyses to focus more on output than on employment, especially in developing countries.

Tregenna (2009, 2013) suggests that deindustrialisation 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 in part on an argument that manufacturing may act as an engine of growth through both output and employment channels. The growth-pulling effects of manufacturing through backward and forward linkages with the rest of the domestic economy are related more to the share of manufacturing in GDP and the growth of manufacturing output, than to its share of employment or growth in manufacturing employment. Manufacturing might also pull growth through Keynesian-type demand multiplier effects, through wages paid. In this respect it would clearly be manufacturing employment, rather than output per se, that would be relevant. However, this can be considered a ‘special property’ of manufacturing only insofar as manufacturing wages are higher than those in other sectors of the economy. A positive differential between manufacturing wages and average wages in the domestic economy can give manufacturing special growth-pulling properties, especially in an (effective) demand-constrained economy. The share of manufacturing in total employment is thus central in this particular regard.

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Tregenna’s proposition that deindustrialisation should be defined as the share of manufacturing in both output and employment is also based on an empirical analysis suggesting that not all episodes in which the employment share of manufacturing falls should appropriately be classified as deindustrialisation, as discussed in the next section.

**Heterogeneity of deindustrialisation experiences**

Figure 6.1 decomposes changes in the level of manufacturing employment into changes in the value added of manufacturing and changes in the labour-intensity of manufacturing. The coordinates of each point show the contribution of changes in manufacturing labour-intensity (that is, the inverse of labour productivity) (x-axis) and changes in manufacturing growth (y-axis), to the percentage change in manufacturing employment for a country.

Developing Asian countries are grouped towards the top left of the chart, with large and positive sector growth effects and large and negative labour-intensity effects. This is indicative of their strong manufacturing performance, both in value added and in productivity. The only developing Asian country that is an exception to this pattern is the ‘honorary Latin American’ case of the Philippines. Compared to developing Asian countries, Latin American countries have relatively low sector growth effects and the labour-intensity effects are either positive or less negative than in the case of Asian countries. The difference between the results for Asia and

![Figure 6.1](image)

*Figure 6.1* Decomposition of change in the level of manufacturing employment.

*Source:* Figure taken from Tregenna (2013).

*Notes:* Square marker refers to 1985–1995; end of line refers to 1995–2005. Venezuela, Argentina, France and Netherlands are included in the chart but are not labelled for reasons of space; these are the short lines located nearby the UK and Japan. Developed countries are shown in black and developing countries in grey.
Latin America fits in with the fact that the former generally had higher growth in both value added and productivity in manufacturing than the latter. The contrast between Latin American and Asian countries can be illustrated with a comparison of manufacturing performance in Korea and Venezuela. These two countries experienced roughly similar trends in the level of manufacturing employment between the two periods. However, the performance is vastly different when it comes to manufacturing value added and productivity, with growth of these variables multiple times higher in Korea than in Venezuela.

Unlike most developing countries, almost all developed countries fall below the dashed diagonal line in both periods, indicating absolute falls in manufacturing employment. The positive sector growth effects were outweighed by larger negative labour-intensity effects. This shows a different pattern of deindustrialisation in advanced economies.

In Figure 6.2, changes in the share of manufacturing in total employment are decomposed into three components. The labour-intensity effect measures the contribution of changes in the labour-intensity of manufacturing. The sector share effect measures the contribution of changes in the share of manufacturing in total value added. The aggregate labour productivity effect measures the contribution of changes in aggregate labour productivity; this component is not shown here. Each point in Figure 6.2 shows the combination of the labour-intensity effect (x-coordinate) and sector share effect (y-coordinate) for a country. For each country, the initial point (square marker) is for 1985–95 and the second point is for 1995–2005.

**Figure 6.2** Partial results from decomposition of changes in the share of manufacturing employment.

*Source:* Figure taken from Tregenna (2013).

*Notes:* Only the labour-intensity and sector share effects are shown here, not the aggregate labour productivity effect. Square marker refers to 1985–1995; end of line refers to 1995–2005. Italy and the Philippines are included in the chart but are not labelled for reasons of space. Developed countries are shown in black and developing countries in grey.
The paucity of points in the North-East quadrant points to the unlikelihood of a country’s manufacturing sector simultaneously becoming more labour-intensive and growing as a share of total value added, especially at higher levels of income per capita. The overwhelming majority of points are located either in the South-West quadrant, where manufacturing became less labour-intensive while shrinking as a share of total value added, or in the North-West quadrant below the \( y = x \) line, where manufacturing became less labour-intensive but grew as a share of total value added.

There is again an interesting difference between Asian and Latin American countries. Almost all the Asian Newly Industrialised Countries (NICs) in both periods are in the North-West quadrant, with manufacturing becoming less labour-intensive (i.e. more productive) and growing as a share of value added. In most middle-income Latin American countries, by contrast, both the labour-intensity and sector share effects were negative in both periods. Even though manufacturing constituted a lower share of GDP in Latin America than in the Asian NICs at the beginning of the period, the share of manufacturing in GDP shrank further in the Latin American countries while growing further in the Asian NICs.

Where falling manufacturing employment share is mostly accounted for by falling labour-intensity of manufacturing, and in particular where manufacturing output is growing (in level and as a percentage of GDP), this should arguably not be regarded as deindustrialisation. Such a phenomenon would not necessarily negatively affect growth. This differs from cases where the fall in the share of manufacturing employment is accounted for primarily by a decline of the manufacturing sector as a share of GDP. In such a scenario, an economy would be particularly at risk of losing out on the growth-pulling effects of manufacturing. This difference underscores the need to recognise the heterogeneity of ‘deindustrialisations’ and for nuanced analysis of any specific country experience.

**Sources of deindustrialisation**

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

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, 1995). This relationship between income per capita and the share of manufacturing in total employment is depicted in Figure 6.3 (based on a cross-country regression using 1990 data). As countries’ income per capita grows over time, industrialisation sees the share of manufacturing in total employment initially growing and the share of agriculture declining concomitantly. At a turning point (which Rowthorn estimates to be around $12,000), the share of manufacturing in total employment levels off and declines. With deindustrialisation defined as a fall in the share of manufacturing in total employment, this turning point marks the onset of deindustrialisation. Palma (2005, 2008) conceptualises deindustrialisation through the framework of Rowthorn’s inverted-U curve. He starts with Rowthorn’s influential approach in which deindustrialisation occurs through a transition into the downwards part of the curve – the fall in the share of manufacturing in total employment as economies mature. This is the ‘classical’ form of deindustrialisation.
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in the literature, with deindustrialisation understood as being part of the stylised facts of a transition from the secondary to tertiary sectors. However, Palma argues that there are more complex dynamics at work than those identified by Rowthorn and the 'classical' school.

First, he shows empirically that the curve itself has shifted 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. Graphically, this is represented by a series of downward shifts in the inverted-U curve over time, as shown in Figure 6.4.

![Figure 6.4](image)

Figure 6.4 Second source of de-industrialisation: a declining relationship, 1960–2000.

Source: Figure taken from Palma (2008), with permission.

Note: $\ln$ = natural logarithm.
Second, he also shows that there is a decline in the level of income per capita at which the share of manufacturing in total employment begins to decline, in particular during the 1980s. This is understood as a leftwards shift in the turning-point of the curve, as can be seen in Figure 6.5. Between 1980 and 1990 the income per capita turning-point of the regression halved, from approximately $21,000 in 1980 to just over $10,000 in 1990 (1985 international US$). The reversal of this shift between 1990 and 2000 is indicative of the fact that deindustrialisation affected mainly advanced economies during the 1980s but primarily middle-income developing countries during the 1990s.

Together, these two phenomena mean that since the 1960s, deindustrialisation has begun at lower levels of income per capita and lower shares of manufacturing in total employment than was previously the case. This is of particular importance for developing countries, as will be discussed further later.

Third, Palma (2008) defines Dutch Disease as a specific form of deindustrialisation, resulting from the fact that commodity-rich countries have a different (i.e., lower) path of industrialisation than commodity-poor ones. As some of the latter countries have become commodity-rich, these countries have experienced an ‘extra’ degree of deindustrialisation. This is due to switching from one (higher) path of industrialisation to the other (lower) one. In this context, Dutch Disease should only be regarded as the additional level of deindustrialisation associated with the latter movement. Palma demonstrates that this ‘excess’ degree of deindustrialisation is not only found in cases where a country discovered significant natural resources, but also when countries have developed significant export finance or tourism. Additionally, he shows that it can also happen as a result of policy shifts (notably trade or financial ‘liberalisation’) in middle-income countries – as has happened in Latin America since economic reform.

Figure 6.6 illustrates Palma’s conception of Dutch Disease as a form of deindustrialisation, with reference to four Latin American countries and the classical case of the Netherlands. Here, countries are divided into two groups: those that show a trade surplus in manufacturing (‘mf’) and those that show a trade surplus in primary commodities or services (‘pc’). The ‘pc’ countries have a lower level of industrialisation than do the ‘mf’ countries at any point in time, as
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...can be seen here by the ‘2000 pc’ line lying below the ‘2000 mf’ line (an intercept dummy differentiates the two groups of countries). For both groups, the level of industrialisation fell over time, evident here in the downwards shift of ‘1960 mf’ to ‘2000 mf’. However, countries that experienced an additional degree of deindustrialisation associated with the Dutch Disease actually jumped from the ‘mf’ line to the ‘pc’ line by 2000. As can be seen in Figure 6.6, these five countries began on the ‘mf’ line in 1960, but by 2000 had switched to the ‘pc’ line.

The specificity of deindustrialisation in developing countries

Palma (2005, 2008) has argued that, in general, deindustrialisation in developing countries is policy-induced to a greater extent than was the case in deindustrialisation in advanced economies. In particular, trade and financial liberalisation has instigated or accelerated deindustrialisation among developing countries.

In the case of Latin America specifically, these liberalisations and other aspects of economic reforms have shifted economies from paths of industrialisation similar to countries that are commodity-poor (due to the ‘forced-industrialisation’ from import-substituting industrialisation), to their Ricardian ‘commodity-rich’ path. This can be understood as a form of Dutch Disease, as discussed in the previous section. In Latin America the share of manufacturing in total employment has been falling for at least the past two decades, while the share of manufacturing in GDP started falling even earlier.

In many African countries, the share of manufacturing in employment and GDP began falling at even lower levels of income per capita than in Latin America. The shares of manufacturing in employment and output began to fall before reaching levels anywhere close to the typical turning points marking the onset of deindustrialisation internationally. There have been prominent debates around deindustrialisation in Africa. These debates have centred on whether or not there has actually been deindustrialisation in Africa and, if so, what has caused it and in particular whether there is a link to Structural Adjustment Programmes (SAPs).
Using the novel test mentioned earlier, Jalilian and Weiss (2000) find no evidence that Africa as a whole experienced deindustrialisation beyond that experienced elsewhere (over the period 1975–1993), although deindustrialisation is identified in certain African countries. The empirical analysis of Noorbakhsh and Paloni (1999) through to 1994 shows that manufacturing output and employment in Africa contracted, labour productivity in manufacturing fell, there was little technological transfer or advancement, investment and the productivity of investment in manufacturing were stagnant, and industrial non-diversification continually worsened. Their empirical analysis indicates that SAPs in Africa have contributed to deindustrialisation. Stein (1992) believes that there has been deindustrialisation in Africa and criticises SAPs for causing or contributing to this. He critiques the World Bank/IMF approach for neglecting the structural nature of Africa’s industrial crisis and argues that SAPs reduce import-substituting public sector manufacturing, but without promoting other manufacturing, leading to deindustrialisation. The World Bank itself (1994) disputes the hypothesis of deindustrialisation in Africa and argues that adjustment programmes that led to successful macroeconomic reforms were also associated with industrial growth, thus rejecting a link between SAPs and deindustrialisation. Tribe (2002) finds that there is no evidence for strong deindustrialisation having occurred in Africa in the late 1990s, and not much empirical support for liberalisation either having caused deindustrialisation or strengthened manufacturing. While there was an initial contraction of manufacturing after liberalisation, there was subsequently some recovery, albeit based largely on increased capacity utilisation and followed by a slowdown, at least in some African countries. This points to the need for a focus on long-term trends in evaluating whether deindustrialisation has occurred, and the importance of measuring deindustrialisation as a sustained decline in manufacturing, as discussed in the second section of this chapter.

There are important differences in the causes of deindustrialisation in developed and developing countries. In particular, international trade would affect manufacturing in developing countries in dissimilar ways from developed countries. As discussed above, trade with the global South has been identified in the literature as one of the causes of deindustrialisation in developed countries, with debates about its importance in explaining deindustrialisation. A different analysis is thus needed for analysing deindustrialisation in the global South.

The manufacturing power of China and other relatively low unit cost producers from Asia is important in understanding industrialisation and deindustrialisation among developing countries. Developing countries with levels of income per capita both above and below that of China struggle in competing with the unit costs of Chinese manufacturing. This relates not just to unit labour costs but to the entire cost structure of manufacturing in China, including the competitive advantages afforded by the state of infrastructure. The challenge for lower-income countries is particularly sharp and is very different from earlier deindustrialisation in advanced economies that was associated in part 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 than they are able to manufacture goods at lower unit costs.

In these developing countries the issue is thus not deindustrialisation in existing 'grandfather industries' due to the emergence of lower-cost production in lower-income countries. Rather than the displacement of existing mature industries, it is industrialisation itself that is being stymied as many low-income countries are unable to break into manufacturing markets and into the 'globalisation club'. This is even the case for labour-intensive manufactures such as clothing, which have traditionally been amongst the important stepping stones in countries’ industrialisation paths. There is thus a failure for nascent industries to develop, or for industries that may have emerged to do so. 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.

In earlier deindustrialisation 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 advanced economies underwent deindustrialisation (especially in relatively labour-intensive industries), they retained comparative advantages in other parts of manufacturing. To put it simply, even as advanced economies were deindustrialising, there were some things that they could still manufacture better and/or cheaper than their developing-country competitors. By contrast, many developing countries today are uncompetitive relative to a country such as China, with respect to both unit labour costs and technology, and with respect to both simple labour-intensive manufactures and more technologically advanced manufactures. With a few exceptions, countries at lower levels of income per capita than China are almost universally behind in technology and cannot currently compete in manufacturing electronics, cars and other relatively advanced manufactures. However, they commonly also cannot currently compete with China on unit labour costs, and so import goods such as clothing instead of developing their own labour-intensive manufacturing industries.

Negative effects of deindustrialisation on economic growth are likely to be particularly pronounced in developing countries, especially low-income developing countries. There are three main reasons for this, all related to the point of development at which deindustrialisation commences. First, compared to deindustrialisation in advanced economies, deindustrialisation in developing countries will typically commence not only at lower levels of income per capita but also at a lower turning point of manufacturing’s share in the economy. This suggests that a country will have obtained less of the benefits of manufacturing for broader economic growth by the time deindustrialisation begins. Second, the sustainability of a dynamic services sector is questionable under such circumstances. The services that develop are unlikely to be technologically advanced services with strong growth-pulling properties. The types of services that ‘replace’ manufacturing in a low-income deindustrialising 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. Third, the usual causes of deindustrialisation differ in developing and developed countries. In developing countries, deindustrialisation is typically brought on by policy shifts, especially trade liberalisation 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).

The ‘statistical illusion’ aspect of deindustrialisation

How much of deindustrialisation can be attributed merely to a reclassification of jobs instead of structural change in the economy? To illustrate: information technology (IT) personnel within a factory would be classified as manufacturing workers, but if the IT function is then outsourced to a specialised IT company, those personnel would be classified as service workers. This change would show up in the national employment statistics as a relative decline in manufacturing employment, suggesting deindustrialisation. This would occur despite the same personnel being employed in the IT activity as were previously employed at the factory, with their sector merely being reclassified. This has been referred to in the literature as the ‘statistical illusion’ or ‘statistical artefact’ component of deindustrialisation.
Rowthorn and Coutts (2004) drew attention to this as one of the sources of apparent deindustrialisation. They characterise this as a reclassification of activities as opposed to a genuine shrinkage in the manufacturing sector. It is suggested that a broad definition of the manufacturing sector would include all of the service inputs embodied in the final output of the sector. Using such a definition, broadly defined manufacturing employment would have fallen less than is evident from official statistics. Rowthorn and Coutts did not undertake any empirical analysis to quantify the extent of outsourcing and its contribution to apparent deindustrialisation. However, they 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 thirty years” (Rowthorn and Coutts, 2004: 5).

From the perspective of The Economist, by contrast, much of (apparent) deindustrialisation can be attributed to domestic outsourcing of services:

> a small part of the fall in manufacturing jobs is a statistical illusion caused by manufacturers contracting out services. If a carmaker stops employing its own office cleaning services and instead buys cleaning services from a specialist company, then output and employment in the service sector appear to grow overnight, and those in manufacturing to shrink, even though nothing has changed.

(The Economist, 2005: 82)

Along similar lines to Rowthorn and Coutts (2004), Karaomerlioglu and Carlsson (1999) argue that manufacturing and producer services should be grouped together as they are complementary and interdependent and the boundaries between them have become increasingly blurred. Empirically analysing changes in sectoral structure in the USA using input–output tables, the study finds that the ‘unbundling’ of producer services (such as legal or data processing services) from manufacturing explains most of the apparent growth in producer services between 1987 and 1994. This result goes against the expectations of Rowthorn and Coutts. With a concomitant broader definition of manufacturing including producer services, Karaomerlioglu and Carlsson argue that total manufacturing employment in the USA declined only slightly.

Tregenna (2010) developed a methodology for estimating the extent to which intersectoral outsourcing might account for apparent changes in the sectoral composition of employment using employment survey microdata. For the case of South Africa, the relatively high growth in services employment in the 2000s was based in part on the outsourcing-type reallocation of services such as cleaning and security from manufacturing and from the public sector towards private services. An increasing share of the total employment of these occupations was thus classified in private services. Had there not been intersectoral outsourcing, it is projected that manufacturing employment would actually have grown slightly faster than employment in private services over that period. This suggests a strong ‘statistical illusion’ aspect to deindustrialisation in this case.

There is as yet no comprehensive evidence about the extent to which domestic outsourcing might account for deindustrialisation in different countries. This is likely to vary considerably between countries. Taking account of how much of deindustrialisation is a ‘statistical artefact’ is important to understanding the degree to which there is a real shift in the underlying structures of production and employment. This is particularly germane where deindustrialisation is defined in terms of employment (as opposed to output or other measures).

A similar source of apparent deindustrialisation could arise from the privatisation and restructuring of state-owned manufacturing enterprises, especially in developing countries, where welfare and other services previously provided by the enterprise to employees and the
surrounding community are either outsourced or closed down. These services would have been classified in manufacturing, and their closure would reflect as a decline in manufacturing. The underlying dynamic is, however, actually the closure of service activities. Identifying and quantifying the closure or outsourcing of service activities previously classified as part of manufacturing is important for ascertaining the extent to which apparent deindustrialisation is a genuine structural shift.

**Economic effects of deindustrialisation**

One of the important debates around deindustrialisation concerns its effects on economic growth. From an international econometric analysis, Dasgupta and Singh (2005) 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 does not necessarily play a similar role as manufacturing as an engine of growth.

Thirlwall (1982) and Bazen and Thirlwall (1986) analyse the negative effects of deindustrialisation in the UK on growth. They attribute deindustrialisation especially to falling demand for manufactured exports from the UK, and emphasise a concern with the effects of the resulting balance of payments constraint on growth.

Most studies of the effects of deindustrialisation on growth are for advanced economies. A study of deindustrialisation 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 deindustrialisation’ 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.

Several studies analyse the effects of deindustrialisation on growth at the sub-national level. Friedhoff et al. (2010) studied 114 metropolitan areas of the USA that had been specialised in manufacturing in 1980 and which deindustrialised between then and 2005. They found that two-thirds of these areas performed worse that the national averages in job and wage growth over that period. Interestingly, emergent services jobs appear to be complementary to, rather than competitive to or substitutes for, manufacturing jobs. The areas that lost the fewest manufacturing jobs gained the most non-manufacturing and advanced service jobs (although no causal relationship is established). Friedhoff et al. also conclude that the loss of manufacturing jobs reduced wages in the deindustrialised areas.

Kottis (1972) studied the relationship between employment and non-manufacturing employment in urban areas of Michigan, USA. His results show that changes in manufacturing employment cause changes in non-manufacturing employment (in the same direction). Although not proving causality, these findings point to complementarity between manufacturing and non-manufacturing employment and suggest that a decline in manufacturing employment may negatively affect non-manufacturing employment as well.

Dasgupta and Singh (2005) econometrically analyse the effects of manufacturing on aggregate economic growth across the states of India. The results suggest that manufacturing, as well as the formal and informal manufacturing sectors when analysed separately, play an important role in growth.

In a perspective different from much of the literature, Crafts (1996) warns against what he views as exaggerated dire predictions about the economic effects of deindustrialisation. Focusing on the economic performance of the UK during the 1980s, he argues that deindustrialisation
of the labour force was actually necessary for raising growth, in order to make the returns to innovation better able to be appropriated and to liberalise the economy. Crafts views deindustrialisation as a distraction, rather than as a cause of unsatisfactory economic performance. He advocates greater policy attention to human capital formation and technological advancement, rather than physical investment and the balance of payments.

Perhaps surprisingly, there is not yet a solid body of empirical evidence that comprehensively analyses the effects of deindustrialisation on economic growth. This could provide a fruitful avenue for future research. Clear evidence in this regard would be helpful in shedding light on the extent to which deindustrialisation should be considered a problem, and concomitantly whether policymakers should be concerned with it. Research in this direction could be enriched by taking into account any relevant differences in the effects of deindustrialisation on growth by type of country (such as by region and level of development), as well as by type of deindustrialisation. The economic effects of deindustrialisation will certainly be strongly contingent on the level of development at which a country begins to deindustrialise, as well as the nature of that deindustrialisation.

Social and political effects of deindustrialisation

Beyond the possible effects of deindustrialisation on growth, as discussed above, loss of manufacturing jobs may have welfare effects. In aggregate, these effects depend partly on whether there is simply a change in the sectoral composition of employment, or a net loss in manufacturing jobs without these being replaced by new jobs in other sectors.

We can identify several factors determining the welfare effects on those losing jobs in the manufacturing sector: first, the probability of obtaining alternative employment; second, the differential in wages and non-wage benefits between the lost manufacturing job and an alternative job; third, other differences or changes between a lost manufacturing job and an alternative job, such as spatial relocation that may be required; fourth, in the case of people displaced from the manufacturing sector but unable to find alternative employment, the change in their income and other circumstances. This difference between manufacturing employment and an unemployed ‘fall-back position’ would in turn depend on the level of social security and other factors.

There is an interdisciplinary literature, including several sociological studies, concerning the broader effects of deindustrialisation. Case studies of specific geographic areas have attempted to track the social effects of deindustrialisation on communities.

In an early study of deindustrialisation, Bluestone (1983) draws attention to the devastating effects of deindustrialisation in the USA on workers and communities. He points to evidence that displaced workers are put at a long-term earnings disadvantage, and experience prolonged unemployment and deleterious effects to health and wellbeing. He also notes that job losses associated with deindustrialisation in the USA affected black workers proportionately more than whites.

Manufacturing is a major source of employment for skilled and semi-skilled workers. According to Armah (1992), this means that manufacturing contributes to an egalitarian income distribution to a greater extent than do other industries. Deindustrialisation is thus likely to lead to higher poverty and earnings inequality. Furthermore, since the median wage in manufacturing is higher than in other sectors, deindustrialisation is likely to depress the overall median wage. Armah also argues that, given the demographics of industrial employment in the USA, deindustrialisation particularly affects minorities.
Rowthorn and Webster (2008) econometrically analyse the effects of male worklessness on lone parenthood in Great Britain over the period 1971–2001. They argue that deindustrialisation has eliminated many traditionally male jobs, especially in certain regions of Great Britain, and that this has contributed to lone parenthood as a social problem. Their regression results suggest that the fall in male employment explains between 38 per cent and 59 per cent of the increase in lone parent families over the period of analysis. The effects were greatest in the areas that suffered most from deindustrialisation. Rowthorn and Webster also draw attention to associated high rates of child poverty, especially in the old industrial areas of Great Britain.

Brady and Wallace (2001) analyse the effects of deindustrialisation on poverty in Lake County, Indiana, United States from 1964 to 1993. Using time series econometric analysis, they find that deindustrialisation (especially the loss of steel jobs) contributed significantly to impoverishment in the area. The growth in services jobs did little to mitigate the negative effects of deindustrialisation.

A 20–year case study tracked the effects of deindustrialisation in the sawmill industry in British Columbia on the health and wellbeing of workers who were employed there immediately prior to the onset of deindustrialisation (Ostry et al., 2001). High unemployment followed deindustrialisation. Even workers who were subsequently employed commonly experienced protracted periods of unemployment. However, the physical and psychosocial conditions of workers who were re-employed outside the sawmill sector were found to be superior to those of workers from the original cohort who remained employed in the sawmill sector, particularly unskilled workers.

The literature on the social effects of deindustrialisation focuses on advanced economies. This is probably in part because their longer experience of deindustrialisation allows for an analysis of the longer–term social effects thereof. There is certainly a gap in the literature pertaining to the social effects of deindustrialisation in low– and middle-income countries. Compared to most advanced economies, low– and middle-income countries tend to have poorer social security systems and less well-developed services sectors in which alternative employment may be found. Both of these factors may exacerbate the social effects of deindustrialisation. Conversely, factors such as dynamic informal sectors and well-developed family networks may somewhat cushion the effects of deindustrialisation in low– and middle-income countries. Overall, differences between developed and developing countries regarding the social effects of deindustrialisation will depend on differences in the four factors suggested earlier in this section.

There is a separate debate in the literature, especially in political science, regarding the effects of deindustrialisation on the welfare state. One line of argument is that deindustrialisation erodes the political support for the welfare state, with the channel being the decline of the organised blue-collar working class (see for example Piven, 1991). A contrary view, which Iversen (2001) advances through an international empirical study, is that deindustrialisation has actually been a key driver of the expansion of the welfare state since the 1960s. The mechanism postulated is the need to support the displaced blue-collar working class, particularly in the context of limited transferability of skills between the manufacturing and services sectors (see also Iversen and Cusack (2000).) In an empirical study of the effects of deindustrialisation in Latin America, Carnes and Mares (2010) find little evidence of a positive relationship between deindustrialisation and social spending, but they do find a positive relationship between deindustrialisation and the introduction of non-contributory health and old-age insurance policies. They surmise that deindustrialisation brings about labour market changes, specifically changes in employment status from more stable contractual relationships with employers to forms of ‘independent employment’, which influences preferences towards non-contributory programmes.
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Spatial dimensions of deindustrialisation

Several studies take a spatial angle to the analysis of deindustrialisation, focusing on regional differences in the changes in manufacturing employment. Hanham and Banasick’s (2000) study analyses spatial aspects of structural change, for the case of Japan, using shift-share analysis. The results show that local spatial structure had an important influence on changes in regional manufacturing employment in Japan from 1981 to 1995.

Fotopoulos et al. (2009) also use shift-share analysis to analyse spatial differences in the growth of manufacturing employment, in the case of Greece. Important determinants of regional employment in manufacturing which they identify include the degree of specialisation, imports, and domestic demand.

Green and Sanchez (2007) draw attention to the spatial aspects of changes in manufacturing employment in the US Midwest. They find significant differences in the effects of manufacturing employment between localised labour markets. Graham and Spence (2000) study the decline in manufacturing employment in Britain, quantifying this as a loss of 20 per cent of manufacturing employment, or just over 900,000 jobs, between 1987 and 1994. They emphasise the pronounced regional character of this decline. Over 40 per cent of the losses affected just one region, the South East (a 31 per cent loss for that region). These job losses occurred despite growth in manufacturing GDP over this period, including in the South East. Significant regional differences can thus be observed in manufacturing output, employment, and labour productivity. Graham and Spence find that technological growth and changes in the price of capital and in the wage rate are crucial in explaining spatial differences in the growth of labour productivity.

There is very little evidence on the spatial aspect of deindustrialisation in developing countries. This presents as a fruitful avenue for future research. It would be expected that there would a pronounced spatial dimension to deindustrialisation in developing countries, as appears to be the case in developed countries. The composition of manufacturing invariably varies between the regions of a country, and deindustrialisation itself is uneven between the various sectors of manufacturing. The combination of these two factors implies that deindustrialisation has uneven effects on different regions of a country. This spatial unevenness will be especially pronounced where there is a lack of diversification of manufacturing within regions, which could well be the case in developing countries in particular. Manufacturing in a region could have strong backward linkages to primary sectors such as agro-processing. For example, a decline in the production of certain agricultural commodities would induce deindustrialisation in the sectors of manufacturing based on those. This would hit hardest in those regions of a country most dependent on that agriculture and associated agro-processing.

Conclusion

Reindustrialisation is arguably especially necessary in developing countries that have deindustrialised compared to advanced economies. It may be more necessary in developing countries for the same reasons advanced above for why deindustrialisation is likely to be especially harmful in these countries.

Reindustrialisation may also potentially be more feasible, compared to advanced economies. This is in the sense that policy-induced deindustrialisation could be at least partially reversible with alternative policies, where an economy was not yet ‘ready’ for the original policy-induced deindustrialisation.

This is not to suggest that reindustrialisation is easy anywhere. It takes ‘effort’ to rebuild manufacturing production capacity, even where this capacity was lost over a short time period.
due to policy changes. When manufacturing firms downsize or close, there is generally a loss in
firm and/or country share in international manufacturing markets, depreciation of skills, tacit
knowledge and fixed capital, and loss of production and marketing networks. Where manufactur-
ing production capacity has dissipated and linkages and spillovers have been lost, it is unlikely
that capacity will be regained without active policy interventions. Furthermore, what is needed
for a country to reindustrialise is not just the regaining of the same manufacturing capacity that
was previously lost, but different manufacturing capacity that is competitive and sustainable.

This underscores the need for active industrial policies. Industrial policy is crucial both for
avoiding or mitigating deindustrialisation, and for reindustrialisation. Developing countries are
likely to face particular challenges of resource and state capacity constraints in implementing
comprehensive industrial policies. Yet these constraints need not prevent developing countries
from undertaking effective industrial policy. This is demonstrated by the experiences of East
Asian countries in implementing successful industrial policies whilst they were still at low levels
of economic development.

There seems to be a fresh appreciation of the need for industrialisation and for industrial
policies in recent years. In Africa for example, various continental, regional and national
initiatives seek to advance new industrial policy measures for African countries, in an effort
to promote rapid industrialisation. Such measures will also need to halt deindustrialisation,
where this has already taken place, while advancing sustainable reindustrialisation.

Notes

1 See Tregenna (2015) for an empirical overview of changes in sectoral structure in different country
groupings.
2 This analysis is based on Tregenna (2013), which contains further technical details and discussion of results.
3 See Tregenna (2015) for a broader discussion of the causes of deindustrialisation.
4 See Tregenna (2014) for a theoretical typology of different forms of deindustrialisation using Marxian tools
of analysis, and a conceptualisation of how these different forms of deindustrialisation may affect growth.
5 See for instance the African Union/NEPAD the African Productive Capacity Initiative (APCI), the
African Union Plan of Action for Accelerated Industrial Development (PAAID), the West African
Common Industrial Policy (WACIP) of the Economic Community of West African States (Ecowas)

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