Abstract This chapter outlines the contours of contemporary structural change and economic development along the following lines: in all developing regions agriculture shares of GDP and employment have fallen substantially—albeit they still persist at high levels among the poorest countries; regional manufacturing shares are consistent with deindustrialization or stagnant industrialization in employment shares and value-added; and, service shares of GDP and employment are on an upward trend in general, with the exception of East Asian economic growth, which has been driven by an inter-sectoral movement toward manufacturing. There is also a trend toward greater capital intensity of growth. Further, while in East Asia there have been substantial changes in the composition of exports, this is not the case in all regions.

Keywords Deindustrialization · Tertiarization · Service sector · Growth decomposition · Labor productivity · Trade

3.1 A Sketch of Contemporary Economic Development and Structural Transformation

In this section, a sketch of the empirical experience of economic development and structural transformation (ST) in the developing world is discussed to set the later discussion in an empirical context. One could
say that a conceptualization of ST has three discernible dimensions framed around a shift toward higher productivity activities. These are sectoral, factoral, and integrative. The first dimension—the sectoral aspects of ST—is about the inter- and intra-reallocation of sectoral activity toward higher productivity. The second dimension is the factoral aspects of ST and is about the composition or drivers of economic growth in terms of a shift of factors of production toward higher productivity activities. Third are the integrative aspects of ST. This is the extent of integration in terms of the global economy and a shift from forms of incorporation—trade deficits and capital inflows that come with liabilities (for example, profit repatriation or debt repayment)—toward trade surpluses.

The Groningen Growth and Development Centre (GGDC) 10-Sector Database (version 2014) developed by Timmer, de Vries, and de Vries (2015) provides a long-run, comparable dataset on value-added, employment and exports for ten economic sectors covering thirty-three developing countries covering the period since the 1950s. The GGDC 10-Sector Database covers eleven countries in Africa; eleven in Asia; nine in Latin America; and two in the Middle East and North Africa. The GGDC 10-Sector Database can thus be used to consider ST over time in developing countries.¹

Additionally, the specific limitations of the GGDC 10-Sector Database are discussed by Diao, McMillan, Rodrik, and Kennedy (2017, pp. 4–6) who note the following: (i) the data broadly include all employment regardless of formality or informality, but the extent to which the value-added data do so depends on the quality of national sources (see Timmer et al. 2015); (ii) the quality of data from poor countries and Africa in particular is questioned, though it is noted that Gollin (2014) have shown high correlations between national accounts data and sectoral measures of consumption which is reassuring, and the African countries in the GGDC dataset are those with the strongest national statistical offices; (iii) the measurement of labor inputs is not by hours but number of employees in a sector: thus seasonality might lead to an underestimation of labor productivity in agriculture for example, though it is noted that Duarte and Restuccia (2010) find a correlation between hours worked and employment shares in a set of twenty-nine developed and developing countries; and (iv) if labor shares differ greatly across economic activities, then comparing average labor productivity can be misleading.
We use the data here to give a broad brush of ST in the developing world since the 1960s and the identification—or proof of concept—of new modes of ST in terms of the identification of deindustrialization and tertiarization in some parts of the developing world since around 2000. Figures 3.1–3.6 illustrate ST in the developing world cover in turn, sectoral ST, factoral ST, and integrative ST.

First, sectoral ST: we are interested in the extent and trajectory of ST—in terms of sectoral allocations of GDP, and employment and exports. How one reacts to such graphs depends, in part, on assumptions made about privileging manufacturing in terms of productivity and

Fig. 3.1 GDP and employment shares by region, 1960–present. Source Author’s calculation based on Timmer et al. [2015]
employment generation potential vis-à-vis services (see later discussion). Figure 3.1 shows the sectoral structure of GDP and employment relative to GDP per capita (and one can also assess the relative labor or capital intensity of regional production by the position of the value-added and employment curves: if the employment curve is above the value-added curve then production in that sector and region is relatively more capital intensive).

As is well known, the agriculture component is falling in share of GDP and employment in all regions and is very low in Latin America. In East Asia, the declining shares of agriculture in GDP and employment over the period is notable relative to other regions. The rise in manufacturing shares in East Asia’s GDP over the period is particularly impressive, though this is less the case for employment shares. This suggests

Fig. 3.2  Growth decomposition by sector, by region, 1960–present (change in growth = 100). Source Author’s calculation based on Timmer et al. [2015]
that capital intensity is higher relative to other regions, and consequentially that growth is capital accumulation-led rather than labor productivity-led. Shares in the service sector in East Asia also saw a substantial rise over the period. The regional manufacturing shares for regions in Fig. 3.1 are consistent with what has been “premature deindustrialization” (a term credited to UNCTAD, 2003 and used by many others), in that developing countries have reached “peak manufacturing”

Fig. 3.3  Growth decomposition by factor, by region, 1970–present (change in growth = 100). Source Author’s calculation based on Timmer et al. [2015]
in employment and value-added shares at a much earlier point in per capita income than the advanced nations. Kaldor in his detailed empirical investigation on the relationship between manufacturing and growth concluded the UK was experiencing “premature maturity.” This concept referred to an experience whereby manufacturing has “exhausted its growth potential before attaining particularly high levels of productivity or of average per capita income” (Kaldor 1978 [1966], p. 102). In contrast to manufacturing shares, service shares of GDP and employment are on an upward trend in general, particularly so in South Asia with a caveat that South Asia is represented by India alone in this estimation.

Deindustrialization and tertiarization raise questions about the importance or otherwise of manufacturing as the driver of growth. In short, is manufacturing special as Kaldor outlined? Figure 3.2 estimates the sectoral sources of growth by region. These estimates are based on the method of Anand, Cheng, Rehman, and Zhang (2014) and show the decomposition of growth by sector (and factor–discussed next). The total

Fig. 3.4 Labor productivity versus GDP per capita, by region, 1960–present. Source Author’s calculation based on Timmer et al. [2015]
change in growth equals 100%. Figure 3.2 shows that growth in East Asia has been driven by an inter-sectoral movement toward manufacturing and away from agriculture over time. The contribution of nonmanufacturing industry and services has not changed much over the period. In contrast, services are a much more important contributor to growth in all other regions.
Figure 3.3 make estimates of the decomposition of growth by factors of production. And Fig. 3.4 shows labour productivity trends. Figure 3.3 shows that capital accumulation (physical capital stock) played a major role in East Asia, and that role has been increasing over time which suggests an increase in the capital intensity of growth. Initially, this was mixed largely with labor input and human capital stock but as this diminished over time, total factor productivity (TFP) took a more significant role in growth.

In short, capital accumulation played a major role in East Asia over the entire period, while labor and human capital were gradually replaced with TFP from the mid-1980s onwards. In contrast, capital accumulation is relatively less important to growth in the other regions. In South Asia, capital accumulation becomes more important over time, whereas in sub-Saharan Africa it becomes less so. What is of interest here is the apparent either/or question of labor input and productivity. Growth is either physical capital plus labor absorption-driven or capital plus productivity-driven. This means that when TFP rises the labor input share tends to shrink and vice versa.4

Figure 3.4 shows labor productivity over the period by sector. It is not surprising to find a large increase in labor productivity in East Asia’s manufacturing sector, given the inter-sectoral shifts away from agriculture to manufacturing. However, the labor productivity gains in other
sectors are also significant, certainly in contrast to other regions where productivity has grown less or even fallen over the period.\(^5\)

In terms of factors of production—labor in particular—demographic change is important. If we take the UN World Population Prospects (medium variant) we have estimates of the dependency ratio (the nonworking age population/working age population); the working age population (15–64 years) as a proportion of total population; and absolute changes (millions of people) in working age population. We find that the dependency ratio is falling in all regions and the working age population peaking in all regions with an exception to both in the case of sub-Saharan Africa. The sub-Saharan Africa curve lags somewhat, in that the trough of the dependency ratio curve will be experienced in all other regions by 2030–2050. In contrast, East Asia and Pacific, as well as Latin America and the Caribbean will face a shrinking labor force as sub-Saharan Africa is peaking.

Finally, integrative ST: Figs. 3.5 and 3.6 show the composition of exports and the trade balance. Over the period, East Asia’s exports show dramatic change over time. There are large declines in shares of agricultural raw material exports and food exports, and very rapid rises in shares of manufacturing exports and shares of high-tech exports. However, the plateauing of shares of manufacturing exports, and the peak and subsequent fall of shares of high-tech exports is cause for some alarm, given the importance of such exports to the region’s economic development. The trends are consistent with a deindustrialization pattern. Perhaps surprisingly, despite economic development, the import shares show that East Asia still has a high proportion of import shares in manufactures, although this has fallen from a peak of 80% to approximately 60%. This is related to the phenomenon of manufacturing exports with corresponding high import content. If one looks across the overall trade position, only in East Asia is there a surplus for virtually the entire period. Latin America and sub-Saharan Africa both fluctuate from surpluses to deficits and back, and South Asia has a persistent trade deficit over the period.

### 3.2 The Characteristics of Contemporary Economic Development

In sum, over the period since the 1960s we can outline three stylized facts as follows: First, in all developing regions agriculture shares of GDP and employment have been falling substantially, though—surprisingly—employment shares in agriculture can persist at 40% of total employment
up to $4000 per capita. This may simply be disguised under or unem-
ployment though (or a statistical artefact). The rise in manufacturing
shares in East Asia’s GDP over the period is dramatic, though this is less
the case for East Asia’s manufacturing shares of employment. Further,
the regional manufacturing shares are consistent with deindustrialization
in employment shares and value-added though it is more a case of a pla-
teau than a substantial downturn at least in the regional aggregates. It
would appear even within the developing world the plateau is appear-
ing earlier and earlier ($3000–$4000 for Latin America versus $1500 for
East Asia). And service shares of GDP and employment are very much
on an upward trend in general.

Second, growth in East Asia has been driven by an inter-sectoral
movement toward manufacturing but services have been a much more
important contributor to growth in all other regions. In East Asia capital
accumulation (physical capital stock) played a major role and that role
has been increasing over time which suggests an increase in the capital
intensity of growth. In contrast, capital accumulation is relatively less
important vis-à-vis other factors of production to growth in the other
regions.

Third, while in East Asia there have been substantial changes in the
composition exports—large falls of in shares of agricultural raw material
exports and food exports, and rises in shares of manufacturing exports
and shares of high-tech exports—this is not the case elsewhere. That
said, in East Asia there is a visible plateauing of shares of manufactures
in exports, and there is a peak and subsequent fall of shares of high-tech
manufactures shares of exports. Persistent trade surpluses appear to be
regionally elusive outside East Asia. In both Latin America and sub-Sahar-
ran Africa the trade position fluctuates from surpluses to deficits and back
and South Asia has a persistent deficit for all of the period under study.

Notes

1. One general limitation of any such measures is specifically, as Fischer
(2011, 2014) discusses whether productivity can be accurately measured in
a complex economy give that measuring productivity relies on value-added
account data, but such data is a combination of output and prices/wages.
So, most measurements for productivity show price or wage differentials
not actual effort, output, or skill. This is an even bigger problem in the
service sector as the comparability of services is more problematic because
they are not physical goods that can be compared. Fischer (2014) also
notes another problem that, because transnational companies (TNCs)—
who dominate production and its coordination in global value chains—
conduct practices such as transfer pricing and the transferring of profits
from Southern subsidiaries to Northern HQs (for example, low-interest
loans from subsidiary to parent company), such actions could make the
subsidiary look less productive. These are clearly important issues that,
although not easily resolved, should not be forgotten.

2. See also Dasgupta and Singh (2006), Heintz (2009), Rowthorn and
Ramawamy (1999), Amirapu and Subramanian (2015). Lewis (1979, p.
220) notes that “the surest way to run into trouble is to have ‘de-industrial-
ization’ (industrial employment growing more slowly than the labor force),
since this means that the reservoir or cheap labor will be filling instead of
emptying. The political and social health of the community, no less its eco-
nomic health, requires a continual transfer from the reservoir to the more
productive sectors, rather than the relative expansion of the reservoir.”

3. We construct regional aggregates as follows: East Asia includes China,
Indonesia, Malaysia, Philippines, and Thailand; South Asia includes India;
Latin America includes Argentina, Bolivia, Brazil, Colombia, Costa Rica,
Mexico, Peru, and Venezuela; Sub-Saharan Africa includes Botswana, Ethiopia,
Ghana, Kenya, Malawi, Nigeria, Senegal, South Africa, and Tanzania.

4. In the graphs, the labor and human capital accumulation contribution is
smaller (or the physical capital contribution share is larger) than in Anand
et al. (2014) because they assume (22), as does Kaldor (1957), that the
labor share is constant at two-thirds across all countries and all years. This
is based on Cobb-Douglas (1928) who argued empirically (based on the
United States) that labor shares are static, as labor is paid according to
its own productivity (see Douglas 1976). However, when one takes the
labor shares from the latest Penn World Tables we find that the labor
share ranges substantially. For example, in 2005, from a minimum of 0.18
to a maximum of 0.89 and a mean of 0.52 in 2005. Thus, of the set of
countries we use here, the labor share is much lower than the commonly
thought two-thirds share for most years, and therefore the labor share is
a smaller contributor and the capital share is a bigger contributor if one
takes into account the actual labor shares.

5. This is an alternative view on the “middle-income trap” debate. Rather
than seek to plot a growth slow-down, the figure plots productivity growth
versus GDP per capita and demonstrates a middle-income trap as a pro-
ductivity slow-down in Latin America in all sectors but agriculture.
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