STRUCTURAL CHANGE, FUNDAMENTALS, AND GROWTH: AN OVERVIEW

Dani Rodrik[1]
Institute for Advanced Study
September 2013, revised

I. Introduction

Two traditions exist side-by-side within growth economics. One of them has its roots in development economics and is based on the dual economy approach first formalized by Lewis (1954) and Ranis and Fei (1961). The other has its roots in macroeconomics, and derives from the neoclassical growth model of Solow (1956). The dual economy tradition draws a sharp distinction between the traditional and modern sectors of the economy, typically characterized as agriculture and industry, respectively. The neoclassical model eschews such distinctions and presumes different types of economic activity are structurally similar enough to be aggregated into a single representative sector.

Dual economy models are built on structural heterogeneity. They assume there are different economic logics at work in traditional and modern parts of the economy, so these two cannot be lumped together. Accumulation, innovation, and productivity growth all take place in the modern sector – often in unexplained ways – while the traditional sector remains technologically backward and stagnant. Economy-wide growth therefore depends in large part on the rate at which resources – principally labor – can migrate from the traditional to the modern sectors. In neoclassical models, by contrast, growth depends on the incentives to save, accumulate physical and human capital, and (in subsequent variants that endogenize technological change) innovate by developing new products and processes (Grossman and Helpman 1991; Aghion and Hewitt 1992).

[1] This essay was prepared as an the introduction to a series of country studies on structural change undertaken under the aegis of a World Bank-funded research project. I am grateful to Maggie McMillan for her overall direction of the project and suggestions.

These traditions offer complementary perspectives on economic growth. One way to combine their insights is to think of the neoclassical model as essentially focusing on the growth process within modern sectors, while the dual economy model focuses on inter-sectoral relationships and flows. As such, each perspective provides a distinct reason why growth in the lagging countries should be not just feasible, but also easy and therefore rapid. In the dual-economy world, growth is just matter of moving traditional farmers into modern industries in urban areas where productivity is on a positive trajectory. In the neoclassical world, physical and human capital levels in poor countries are low and therefore returns to accumulation should be high. Either way, economic convergence with rich nations should be the norm rather than the exception.

Those predictions have not been borne out, but their failure informs us about the obstacles that need to be overcome if economic development is to happen. Using these two sets of models to guide us, we can identify two broad development challenges. First, there is the "structural transformation" challenge: how to ensure that resources flow rapidly to the modern economic activities that operate at higher economic productivity. Second, there is the "fundamentals" challenge: how to accumulate the skills and broad institutional capabilities needed to generate sustained productivity growth not just in a few modern industrial sectors but across the entire range of services and other non-tradable activities. There is considerable debate on whether it is primarily the quality of institutions or the level of human capital that drives long-run levels of income (see Acemoglu, Robinson, and Johnson 2001 versus Glaeser et al. 2004). For present purposes, we need not take a position on this debate. We can lump both of these under the rubric of "fundamentals." An important question is the relationship between these fundamentals and the process of structural transformation.

The papers that accompany this overview hone in on the structural transformation challenge. They cover Botswana (McCaig et al. 2013), Brazil (Firpo and Pieri 2013), Ghana (Osei and Jedwab 2013), India (Ahsan and Mitra 2013), Nigeria (Adeyinka, Salau, and Vollrath 2013), Vietnam (McCaig and

Pavcnik 2013), and Zambia (Resnick and Thurlow 2013) They show that the experience with structural change has been quite diverse around the world, with countries such as Vietnam undergoing much more growth-promoting structural transformation from traditional agriculture to modern industries along dual-economy lines than the typical African economy.

The studies suggest no easy policy recommendations. The policy requirements of rapid structural change do not seem to align neatly with conventional recommendations of the "fundamentals" type. Despite significant improvement in policy regimes in Africa and Latin America – macroeconomic stabilization, external opening, democratization – the rate and direction of structural transformation have been disappointing in these regions. To place these results in perspective, I begin this overview by presenting an overall unifying framework for thinking about growth, drawing on Rodrik (2013a). I will then selectively highlight some of the project's findings.

II. A unifying framework

I drew above a distinction between the "structural transformation" and "fundamentals" challenges in growth, the first focusing on moving resources into modern industries and the second on developing broad capabilities. At first sight, these two challenges may seem one and the same, too closely linked to be separable. Much of the development literature operates on the assumption that policy that is good on one front is also good on the other. For example, investing in human capital and improving the legal regime should be good both for overall productivity and for promoting industrial expansion. Deregulation of industrial restrictions and of international trade should be good for the economy as a whole as well as foster entry into new economic activities. What is desirable policy for growth need not differ based on whether we look at growth from the perspective of affecting structural transformation or building fundamentals.

While there is substantial overlap between the two sets of policies, it is also clear that the two challenges have somewhat different strategic implications. In practice, it may be far easier to promote industrialization directly, by subsidizing industry in diverse ways or removing specific obstacles to it, than to do it indirectly by making broad investments in human capital and institutions and hoping that these will trickle down to investment incentives in industry. It is possible to have rapid structural transformation (industrialization) without commensurate improvements in fundamentals. East Asia is the premier example of this strategy. In China, governance and human capital have lagged significantly behind the country's manufacturing prowess. Vietnam, reviewed below, is a similar case, following on China's footsteps with some lag.

It is also possible to invest significantly in fundamentals without reaping much reward in terms of structural transformation. Since the early 1990s, Latin America has considerably improved its governance and macroeconomic fundamentals, yet structural change in the region has been, if anything, growth-reducing. Manufacturing and some other modern sectors have lost employment to lower-productivity services and informal activities (McMillan and Rodrik 2011).

In Rodrik (2013a), I summarized the implications for growth using the 2×2 table reproduced below. Structural transformation can fuel rapid growth on its own, but if it is not backed up by fundamentals, growth peters out and remains episodic. The accumulation of fundamentals, on the other hand, requires costly, time-consuming, and complementary investments across the entire economy. So it produces steady but slow growth.

Ultimately, sustained growth and convergence require both processes. Even in the best of all worlds, structural transformation will eventually run its course and industrialization will reach its limits. From that point on, growth must depend on the steady accumulation of fundamentals emphasized by neoclassical growth theory. Long-term successes such as Britain, Germany, and the United States have all gone through these phases, as have more recent examples such as Japan, South Korea, and Taiwan.

If doubts remain about China's economic future, it is because so much of the country's institutional transformation, particularly with respect to political institutions, still remains ahead of it.

		Structural transformation	
		Slow	*rapid*
Investment in fundamentals	*low*	(1) no growth	(2) episodic growth
	high	(3) slow growth	(4) rapid, sustained growth

Figure 1: A typology of growth patterns and outcomes

The typology helps clarify one of the puzzling aspects of cross-national data. Institutional quality and human capital are both highly correlated with income levels. Yet improvements in institutions and human capital are not a reliable predictor of economic growth. This framework suggests this is not a contradiction. Only countries that steadily enhance their fundamental capabilities eventually become rich. But investment in fundamentals is not the quickest or easiest way of getting there, at least during the early stages of development. Early on, it is rapid industrialization that fuels growth, and this requires policies that may differ considerably from conventional fundamentals. Countries that rely exclusively on building up broad-based capabilities are rewarded with modest growth, and may in fact be diverted from those policies as a result (Rodrik 2013a).

III. A tale of two countries: Vietnam versus Ghana

The studies that follow look at growth from the perspective of structural transformation. Taking as their starting point the cross-country analysis of McMillan and Rodrik (2011), they analyze the

contribution of broad patterns of structural change to aggregate trends in labor productivity. One of the striking findings in McMillan and Rodrik was the difference in this respect between Asia, on the one hand, and Africa and Latin America, on the other. Unlike in the other two regions, where growth had been slow and erratic, Asian growth tended to rely heavily on the engine of structural change.

Consider how this process worked in Vietnam, as described in McCaig and Pavcnik (2013). In the late 1980s, three-quarters of the country's workforce remained in agriculture, and produced a third of the country's GDP. This discrepancy between agriculture's claim on the economy's resources and its contribution to output reflected the large differential in labor productivity across activities. The typical worker in manufacturing produced four times more output than the typical worker in agriculture. The typical worker in services such as construction or wholesale and retail trade produced even a bigger multiple than this.

To be sure, some of these productivity gaps reflected differences in the stock of physical capital that workers were equipped with, or differences in labor skills. For example, labor productivity in finance, insurance, and business services stood 30 times higher than in agriculture. But this multiple is largely meaningless since the skills (i.e., human capital) required in this sector are substantially greater than in agriculture. A rice farmer and a bank accountant are essentially different factors of production, as one cannot be transformed into another without substantial investment of time and resources. But a farmer can more easily transform herself into a production worker in a garment factory, thereby multiplying her income, if not by a factor of four, by a multiple close to that. While manufacturing jobs might require rudimentary literacy skills, these skills are a fraction of those needed in finance or other business services.

From the late 1980s on, that is indeed what happened, and at a remarkable pace. Agriculture's employment share declined by 20 percent over the next two decades, while manufacturing's share rose from 8 percent to 14 percent and services' rose from 19 percent to 32 percent. Employment in

manufacturing as a whole rose at an annual rate greater than 10 percent during the 2000s, with the growth exceeding 15 percent in garments and reaching 30 percent in office and computing machines (McCaig and Pavcnik 2013, Table 5). Figure 2 illustrates the movement of labor from low- to high-productivity activities. The growth of manufacturing jobs was particularly rapid in the South East and Red River Delta, which entered the world economy on the back of export-oriented industrialization.

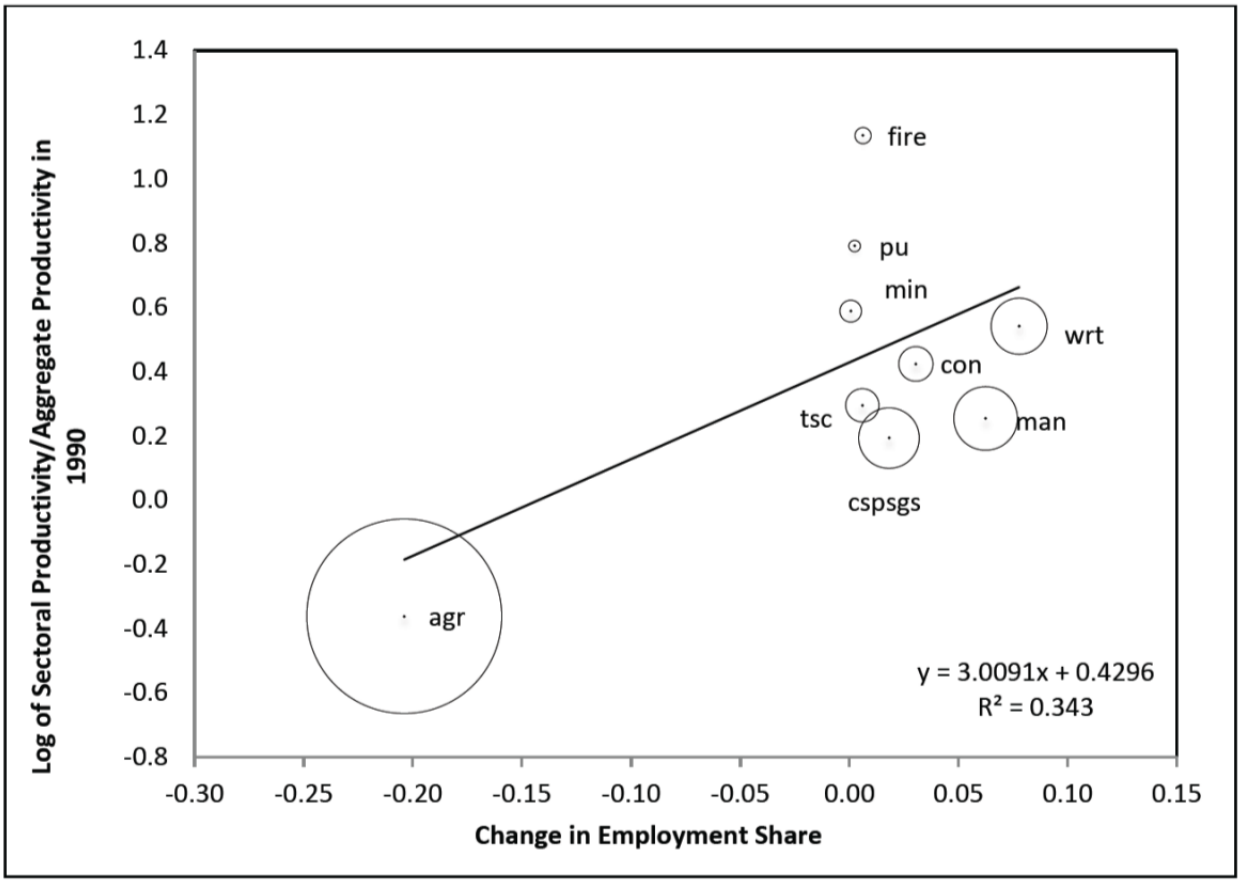

Figure 2: Vietnam: The relationship between initial productivity and changes in employment share, 1990-2008

Source: McCaig and Pavcnik (2013). Size of circle indicates employment in 1990.

As McCaig and Pavcnik emphasize, this structural transformation – from agriculture to manufacturing and modern services – came alongside two other important shifts, which were closely linked. There were transitions from state-owned firms to private employment, and from family farms

and businesses to formal, registered firms. These structural shifts contributed directly to productivity growth within sectors, but also enabled reallocation of factors of production across sectors.

As a result, GDP per capita tripled in real terms over two decades and poverty fell sharply. The growth in aggregate labor productivity was 5.1 per cent per annum (1990-2008). Structural change accounts for 38 percent of this increase, with labor productivity growth within sectors accounting for the rest. Vietnam is a clear-cut case of development success enabled in important part by structural transformation – at least over the period covered by the McCaig-Pavcnik study.

In examining a case like Vietnam's, ex-post explanations are easy to come by. The country started with a large pool of "excess" labor in the countryside. The unexploited productivity gains from moving people from the farm to urban employment were huge. Relaxing the grip of state regulations and state-owned enterprises could unleash these hidden sources of productivity. In Vietnam this meant abolishing collective farms and replacing them with household farms, titling of land, liberalization of internal and external trade, and introduction of competition and of private businesses. Opening up to the world economy – through special economic zones and liberalization of investment rules – would bring in foreign investment and technology, rendering modern sectors even more competitive. Encouraging exports would enable expansion of manufacturing enterprises without running into market-size constraints.

Now consider Ghana, a country that has also done reasonably well in recent years, certainly by African standards. Osei and Jedwab (2013) tell the country's story from the perspective of structural change. Following a sharp decline in the 1970s, Ghana's real GDP per capita picked up from the mid-1980s on, with labor productivity registering growth of 3.0 percent per year between 1992 and 2010. This is only 60 percent of Vietnam's growth rate over the same period. While structural change appears to have contributed roughly a third of the increase over this period, a closer look indicates that the impact was highly uneven across sub-periods. The contribution of structural change was in fact negative

during 2000-2006 (Osei and Jedwab 2013, Table 1). While agricultural employment did decrease, the labor that was released was absorbed mostly by low-productivity services, with limited impact on economy-wide productivity. Moreover, the bulk of manufacturing took place in the informal sector, where productivity is more than 20 times lower than in formal manufacturing (Osei and Jedwab 2013). Despite the apparent potential, structural change has so far played a much more modest role in Ghana than in Vietnam.

Why the difference between the two countries? It is tempting to ascribe Vietnam's superior performance to its government's liberalization policies and other efforts to remove obstacles facing private business. For example, McCaig and Pavcnik laud Vietnam for its progress on the World Bank "Doing Business" indicators. They note that Vietnam was ranked 99th out of 185 countries in 2013, "slightly behind China, ranked 91st, and ahead of countries such as Indonesia and Bangladesh."

Yet Ghana ranks 27 countries ahead of Vietnam, in 64th place.[2] According to the indicators, it was considerably easier to get credit in Ghana than in Vietnam, paying taxes was less of a hassle, insolvency was much more quickly resolved, and access to electricity was less problematic. In terms of how well investors are protected, there is a whopping 40 rank difference between the two countries, in favor of Ghana. Other cross-national indices tell a similar story. The Cato Institute's Index of Economic Freedom, which attempts to quantify the extent to which economies are free of government encumbrance, ranks Vietnam in 96th place, compared to 71st for Ghana. (This is for 2010, which is the latest year available.)[3]

A reasonable objection to these comparisons would be that what matters is more the change than the level of an index. Economic progress may be more a function of how much policies have "improved" than where they stand at the end of the relevant period. But here too, it is hard to make

[2] http://www.doingbusiness.org/rankings, accessed August 12, 2103.
[3] See the 2012 Annual Report, available at http://www.cato.org/economic-freedom-world. The rankings refer to the "unadjusted" version, since that is the only one available for Vietnam. The chain-linked version of the rankings show Ghana at 53rd place in 2010.

the case that Vietnam looks better than Ghana. Both countries have undertaken significant reforms since the 1980s, opening up their economies to trade, reducing the role of the state, and deregulating. Ghana's summary rating on the Cato Index steadily rose (on a scale from 0 to 10) from 3.05 in 1980 to 5.53 in 1995 and to 7.09 in 2010. Unfortunately, Cato does not provide a comparable series for Vietnam over the full period, so a direct comparison is not possible. But in light of the scale of improvement in Ghana's rating, it is difficult to imagine that Vietnam could have done much better. (To get a sense of these ratings, note that U.S. had a rating of 7.70 in 2010.)

None of this is deny the possibility that Vietnam's government does indeed provide a more hospitable environment for private business, both by nurturing new economic activities and by removing obstacles that existing ones face. The point is that the manner in which such an environment is constructed is obviously rather more subtle than what is captured by standard indices and conventional types of policy advice. Economic liberalization and removing red tape may foster private investment. But the comparison with Ghana suggests it would be mistake to describe Vietnam's strategy in those terms – or those terms alone. A similar argument could be made for many other East Asian success stories as well of course.

IV. Specialization matters: natural resources, services, and manufacturing

So it is difficult to make the case that the difference in performance between Vietnam and Ghana is due to the former having pursued more market- and business-friendly policies than the latter, or to Vietnam having been the more aggressive reformer along conventional lines. What else then?

One proximate cause of the difference seems to be reliance on natural resources. In Ghana manufacturing expanded very little while investment and growth were concentrated in the resource sector – a trend that was exacerbated after the discovery of oil in 2008. Aside from oil, Ghana's main exports are gold, cocoa beans, timber products and other natural resources. Vietnam, meanwhile, is a

major exporter of textiles and garments. In 2012, manufactures' share of merchandise exports stood at 65 percent in Vietnam, but only 9 percent in Ghana (having actually come down from a peak of 25 percent in 2009).[4]

A manufactures-based growth strategy has two distinct advantages. First, much of manufacturing is labor-intensive, so it can absorb large amounts of relatively unskilled workers from the rest of the economy. It is comparatively easy to turn a rice farmer into a garment factory worker, without significant investments in human capital and with manageable investment in physical capital. And the industrialization process can go on for quite some time – several decades – during which income and productivity levels converge with rich countries. By contrast, resource sectors that exhibit high labor productivity, such as oil, tend to be very capital intensive and absorb few workers. Continued growth in a resource-based economy is dependent on rapid and sustained productivity increases in the resource sector, new discoveries, or steady rise in world market prices. And even if one or more of these fortuitous circumstances materialize, the pattern of growth tends to become very skewed. Growth benefits the state or a rentier class, spawns inequality and distributive politics, and proves generally detrimental to institutional development. Resource-based growth tends to produce spurts of growth, followed by stagnation or decline; Ghana's economic history is as good an example of this as any.

The second advantage of manufacturing – or of formal manufacturing specifically – is that it exhibits a remarkable property: *unconditional* convergence. Labor productivity in lagging manufacturing sectors, which is the norm for developing nations, tends to converge to the frontier as if on an automatic escalator, at a rate of 2-3 percent per year. The greater the distance from the productivity frontier, the faster the rate of productivity growth. I reported this result in Rodrik (2013b), based on detailed sectoral data from UNIDO, covering mostly formal manufacturing activities. What is remarkable about this is that convergence takes place regardless of the quality of domestic policies or institutions

[4] World Bank World Development Indicators, http://data.worldbank.org/indicator/TX.VAL.MANF.ZS.UN .

and other aspects of economic context such as geography and infrastructure. Of course, convergence can be even more rapid in more advantageous environments.

Figure 3 provides a graphical illustration of the result, restricting the coverage to the 21 sub-Saharan countries (including Ghana) with the requisite data. Each observation represents a 2-digit manufacturing industry in an African country, for the latest 10 year period for which data are available. The horizontal axis is the initial level of labor productivity (in logarithms), and the vertical axis is its growth rate over the subsequent decade. Period, industry, and period × industry dummies are included as controls, so that values on the axes are purged of these "fixed effects". But there are no country-level controls. The negative slope of the scatter plot, even in the absence of any country controls, captures the essence of unconditional convergence. The trend is as unmistakable in Africa as it is elsewhere.

So manufacturing is essentially a source of double whammy for productive transformation. First, it can absorb a substantial part of the economy's low-skilled labor at a substantial productivity premium. Second, it also puts the labor it employs on an automatic escalator that rises up to the global frontier. While we cannot be sure, because we lack systematic data, the same is likely to be true of a range of modern services linked to manufacturing and that expand alongside it.

Figure 3: Unconditional convergence in African manufacturing labor productivity

Source: Author's calculations, based on Rodrik (2013b). See text for explanation.

Asian countries such as Vietnam start out with a high labor-land ratio and a relative dearth of natural resources. So they have a latent comparative advantage in low-skill intensive manufactures. African countries like Ghana, on the other hand, have been "blessed" with plentiful natural resource endowments, everything from cash crops to minerals.

But comparative advantage is also partly the result of policy decisions and strategies. Brazil in the 1950s was a country rich in natural resources, yet experienced significant growth-promoting structural change through the 1970s. Trade and industrial policies, as well as the level of the real exchange rate, play an important role in promoting – or delaying, as the case may be – productive diversification.

As Firpo and Pieri (2013) show, structural change was quite rapid in Brazil from the 1940s through the 1970s, accounting for up to half of total growth during parts of this period (e.g., 1965-1979). As agricultural employment shrank, manufacturing expanded, and modern service activities even more so. By the late 1970s, manufacturing accounted for 45 percent of Brazil's GDP. This period of high-growth, rapid structural change was one in which policies of import-substitution predominated. It goes without saying that such policies are anomalous from the perspective of Cato/Doing Business type of indicators. Firpo and Pieri argue that by the late 1970s the country had run out of room for further structural change – at least along broad inter-sectoral lines. From the 1980s on, growth had to rely on within-sector enhancements in productivity, which in turn required sustained investments in human capital and new technologies (in agriculture especially) as well as institutional improvements.

India provides an interesting contrast. On paper, it has the makings of an industrial success story, with its large endowment of relatively unskilled labor force still in rural areas. Yet it has underperformed remarkably on that dimension. As Ahsan and Mitra (2013) note, during the 45-year period between 1960 and 2004, agriculture's share of employment fell only by 10 percentage points (from 71.5 percent to 61.5 percent) and manufacturing's share rose a meager 2.6 percentage points (from 9.8 percent to 12.4 percent). To put these numbers in perspective, Vietnam was able to achieve more than double this rate of industrialization in less than half the time.

Structural change did make a positive contribution to growth in India after the 1990s, especially during the first decade after the 1991 reforms. But the biggest part of that came from the expansion of finance, insurance, and other business services, with manufacturing actually shrinking and making a negative contribution during 2000-2004. Information technology (IT) and business process outsourcing services (BPO) on which India 's recent growth has relied are no doubt high-productivity activities with convergence dynamics that may be even stronger than in manufacturing. But these are also highly skill-intensive sectors, unable to absorb the vast majority of the Indian workforce that remains poorly

educated. As a consequence, India's underlying growth trend is suppressed by the necessarily slow accumulation of fundamental capabilities -- education, infrastructure, and governance -- in the economy as a whole.

Like India, African countries seem to be bypassing the industrialization stage that was so important to East Asia's rapid growth. I mentioned the Ghana case previously. Zambia, Nigeria, Botswana provide additional examples. In Zambia, during the negative growth period of the 1990s, workers actually moved from urban jobs back to agriculture, producing growth-reducing structural change. During the recovery of the subsequent period (2002-2010), positive structural change kicked in, but it was mainly services that absorbed workers leaving the farms (Resnick and Thurlow 2013). In Nigeria, labor moved from agriculture and wholesale and retail trade to other services and manufacturing, but structural change contributed only about a fifth of the increase in aggregate productivity. Adeyinka, Salau and Vollrath (2013) reckon Nigeria could have added an extra 1.7 percent per year to its growth through further structural change. In Botswana, McCaig et al. (2013) find that trade liberalization led to a substantial increase in trade flows, along with sizable expansion of employment in wholesale and retail trade activities (presumably linked to international trade). Employment in directly traded sectors meanwhile fell.

Encouragingly, the more recent African evidence for the post-2000 period paints a brighter picture. McMillan (2013) notes that there has been a general turnaround in Africa from growth-reducing structural change during the 1990s to growth-enhancing structural change in the most recent decade. On average, structural change has contributed 0.87 percentage points of the 2.18 percent annual post-2000 growth rate (or 40 percent of the total) for the 19 countries in McMillan's sample (2013, Table 7). But the bulk of this contribution is accounted for by the movement into services, with the expansion of manufacturing remaining modest at best. The share of employment in African manufactures is still roughly half the share in Asia (McMillan 2013).

An expansion of services is not necessarily a bad thing for structural transformation and growth, as long as the economy has been able to build up human capital and accumulate fundamental capabilities that transform those services into high-productivity activities. However, this typically happens rather late in the development process, after industrialization runs its course. A particularly successful instance of this pattern can be observed in Hong Kong. The structural transformation picture in Hong Kong looks just like that in Vietnam, except that the roles of agriculture and manufactures are reversed (Figure 4). In Hong Kong, it is manufactures that has rapidly shrunk since 1990, releasing more than 20 percent of the economy's labor force to other sectors. The displaced labor found employment in services (wholesale and retail trade, finance, insurance and business services, etc.), but at even higher levels of productivity. So de-industrialization was growth-promoting. The difference with other countries is two-fold. First, Hong Kong first achieved significant levels of industrialization before de-industrializing. Second, it used the intervening period to strengthen its human capital base and other fundamental capabilities.

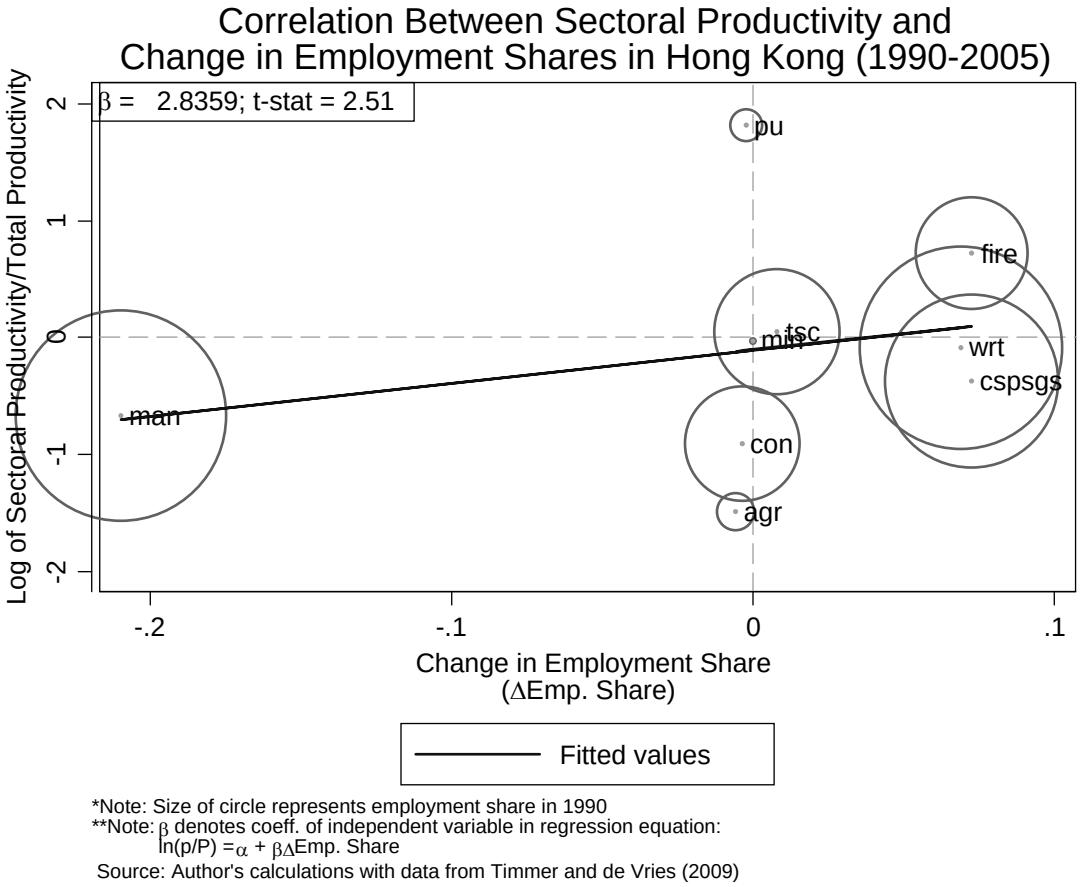

Figure 4: Structural change in Hong Kong

Source: McMillan and Rodrik (2011).

In principle, then, structural transformation can play a potent positive role both during the early stages of development when there is "excess supplies of labor" in agriculture and informal economic activities, and during later stages when capabilities have accumulated and modern services have caught up and surpassed industrial activities. But neither of these is assured. Structural change is frequently slow, and often goes in the wrong direction. And the correspondence between market liberalization and structural change is weak, at best.

V. Prospects for structural transformation

The classic path of rapid catch-up through industrialization played out well in East Asia, as well as in Latin America and certain other countries such as Turkey during their earlier, import-substituting phase. But there are reasons to think this path will figure much less prominently in the future. As we have seen, many African countries are starting out with a much better endowment of natural resources and are less well-positioned for specialization in manufactures. The success of East Asian economies – China and its successors such as Vietnam and Cambodia – pose significant competitive challenges to newcomers in manufactures, especially in light of globalization and the reduced barriers to trade virtually everywhere. New trade rules limit to a much greater extent than previously the room for industrial policies – local content requirements, subsidies, import restrictions – which Asian countries have deployed with some success. The economic difficulties of the advanced countries make them more resistant to significant surges of manufactured imports from low cost sources. Then there are technological changes in manufacturing itself, which have made the sector much more capital- and skill-intensive than in the past, reducing both the advantage of poor economies in manufacturing and the scope for labor absorption in the sector. Finally, the prospect of climate change and the greater awareness of the associated risks call for green technologies that are more environment-friendly but also more costly for developing nations to deploy.

There are counter-arguments that one can deploy. Diversification into manufacturing can sometimes be facilitated by the presence of natural resources; Ethiopia, for example, can deploy its high-quality livestock to turn itself into an exporter of designer shoes. Chinese manufacturers are now looking for low-cost suppliers themselves, not the least in Africa. Even if the world economy stagnates, there are sizable domestic (Nigeria) and regional markets in Africa. There are glimmers of hope in all of these directions in the data. But they remain glimmers for the time being.

It is also true, as Baldwin (2011) has emphasized, that the spread of global supply chains – what Baldwin calls "globalization's second unbundling" – has facilitated the spread of industry from the advanced countries to the periphery. New entrants do not have to build entire supply chains – from intermediate inputs to final products – at home; they can simply join existing global ones by producing a narrow range of components. But by the same token, industrialization remains limited and fleeting, even when a country can overcome global is successful in plugging into global supply chains.

Taken together, these trends imply that even the most successful countries of the future are likely to fall far short of the industrialization levels that have been the norm in economic history. The available data indicate that de-industrialization is now beginning to happen at lower levels of income. Manufacturing's share of employment peaked at above 30 percent in the United Kingdom and Germany, and at around 25 percent in Japan and South Korea. In China, manufacturing employment rose to just under 15 percent in the mid-1990s before it started to come down gradually. Vietnam, Cambodia, and other smaller countries will likely not surpass such levels.

The apparent failure of African countries to industrialize to date and the de-industrialization of Latin America have to be seen against such a global context. The industrialization-led growth model may have run its course. The question is what will take its place.

Natural resource booms can fuel growth, but has all the problems mentioned earlier: capital-intensity, low labor absorption, and the politics of rents. Tradable services can substitute to some extent for manufacturing, but the evidence to date on that has not been encouraging either. Most high productivity services, such as finance and business services, are skill intensive and ill-suited to the factor endowments of poor countries. And labor-intensive tradable services such as tourism have typically spawned few linkages to the rest of the economy and have not produced much diversification. Non-traditional agricultural products – horticulture, aquaculture, floriculture, and so on – could well act as an

intermediate stepping stone out of traditional farm products, but here too the record with labor absorption is not terribly encouraging.

All of this suggests that we should not be surprised if broad patterns of inter-sectoral structural change play a more muted role in the future. Development will have to happen the hard way for the most part, through the steady accumulation of skills and human capital and improvements in governance and institutions. In terms of the central growth-decomposition equation used in McMillan and Rodrik (2011) and the papers that follow, growth will come predominantly from the "within" component of productivity change rather than the "structural change" component.[5]

A corollary is that sustained rapid growth, of the type experienced in South Korea, Taiwan, China, Vietnam and other East Asian cases, will be out of reach for most developing countries. It has proved significantly more complicated and time-consuming to upgrade a country's health system, tertiary education, or judiciary, to name just a few examples of non-tradable sectors, to first-world standards than to ride the wave of global competitiveness in a narrow, but expanding range of standardized manufacturing industries. There is no automatic escalator in non-manufacturing parts of the economy.

One reason is that "human capital" and "institutions" entail in practice a wide range of reforms and investments that are both highly context-specific and complementary to each other. Context-specificity has the implication that off-the-shelf imported blueprints are not very useful. Local experimentation and expertise are needed to get systems to cohere and work well. Complementarity

---

[5] Following McMillan and Rodrik (2011), the change in aggregate labor productivity in an economy can be decomposed into the following two terms:

$$\Delta Y_t = \sum_{i=n} \theta_{i,t-k} \Delta y_{i,t} + \sum_{i=n} y_{i,t} \Delta \theta_{i,t}$$

where Y_t and $y_{i,t}$ refer to economy-wide and sectoral labor productivity levels, respectively, and $\theta_{i,t}$ is the share of employment in sector i. The Δ operator denotes the change in productivity or employment shares between t-k and t. The first term in the decomposition is the weighted sum of productivity growth within individual sectors, where the weights are the employment share of each sector at the beginning of the time period. This is the "within" component of productivity growth. The second term captures the productivity effect of labor re-allocations across different sectors. It is the summation of the product of productivity levels (at the end of the time period) with the change in employment shares across sectors. This second term is the "structural change" component.

means investments on a broad front are required for any of them to pay off. Together these imply an S-shaped relationship between "fundamentals" and growth (see Rodrik 2013a): investments in human capital and institutions produce at best moderate growth until they (and income) accumulate and reach a certain threshold. The downside of this mode of growth is that it can easily produce reform fatigue. Growth payoffs will appear as disappointing despite substantial efforts at reform.

One interpretation of recent growth in Latin America and Africa is that investments in education and improvements in macroeconomic stability and governance are finally paying off (see McMillan 2013 on Africa). An important test of this idea will be whether growth is sustained beyond the upswing in the commodity cycle.

VI. Concluding comments

Economic growth happens as a result of both movement of labor from low- to high-productivity sectors and productivity improvements within sectors. In manufacturing, the within effect has a strong convergence property, as discussed above. Growth based on industrialization is therefore the relatively easy kind of growth, which can be accomplished without placing too great demands on an economy's fundamental capabilities.

As the country studies that follow demonstrate, however, even this "easy" type of growth has been the exception around the world rather than the rule. This uneven record cannot be explained easily by drawing on the standard list of policy recipes, emphasizing economic liberalization and the costs of "doing business." Furthermore, the scope for industrialization appears to have shrunk, for reasons I have discussed above. The balance of forces going forward appear less favorable to rapid structural change than has been the case during the last six decades. We may well need to moderate the optimism which the recent experience of high growth across the developing world has spawned.

REFERENCES

Adeyinka, Adedeji, Sheu Salau, and Dietrich Vollrath, "Structural Change and the Possibilities for Future Growth in Nigeria," July 2013.

Aghion, Philippe, and Peter Howitt, "A Model of Growth Through Creative Destruction," Econometrica, vol. 60, 1992, 323-351.

Ahsan, Reshad N., and Devashish Mitra, "Can the Whole Actually Be Greater Than the Sum of Its Parts? Lessons from India's Growing Economy and Its Evolving Structure," June 2013.

Baldwin, Richard, "Trade And Industrialisation After Globalisation's 2nd Unbundling: How Building And Joining A Supply Chain Are Different And Why It Matters," NBER Working Paper No. 17716, December 2011.

Firpo, Sergio, and Renan Pieri, "Structural Change, Productivity Growth and Trade Policy in Brazil," June 2013.

Grossman, Gene, and Elhanan Helpman, Innovation and Growth in the Global Economy, MIT Press, Cambridge, MA 1991.

Lewis, William Arthur, "Economic Development with Unlimited Supplies of Labor," Manchester School of Economic and Social Studies, vol. 22, 1954, 139-191.

McCaig, Brian, and Nina Pavcnik, "Moving out of Agriculture: Structural Change in Vietnam," August 2013.

McCaig, Brian, Margaret McMillan, Inigo Verduzco Gallo, and Keith Jefferis, "Trade Liberalization and Structural Change in Botswana: Evidence from an Unusual Experiment," June 2013.

McMillan, Margaret, "The Changing Structure of African Economies," unpublished paper, June 4, 2013.

McMillan, Margaret, and Dani Rodrik, "Globalization, Structural Change, and Economic Growth," in M. Bachetta and M. Jansen, eds., Making Globalization Socially Sustainable, International Labor Organization and World Trade Organization, Geneva, 2011.

Osei, Robert Darko, and Remi Jedwab, "Is Structural Change in Sub-Saharan Africa Different? New Historical Evidence from Ghana in 1960-2010," June 2013.

Ranis, Gustav, and John C. Fei, "A Theory of Economic Development," American Economic Review, vol. 51, September 1961, 533-558.

Resnick, Danielle, and James Thurlow, "The Political Economy of Zambia's Recovery: Structural Change without Transformation?" June 2013.

Solow, Robert M., "A Contribution to the Theory Economic Growth," Quarterly Journal of Economics, vol. 70, 1956, 65-94.

Rodrik, Dani, "The Past, Present, and Future of Economic Growth," Global Citizen Foundation Working Paper 1, June 2013 (http://www.sss.ias.edu/files/pdfs/Rodrik/Research/GCF_Rodrik-working-paper-1_-6-24-13.pdf). (2013a)

Rodrik, Dani, "Unconditional Convergence in Manufacturing," Quarterly Journal of Economics, vol. 128, 2013, 165-204. (2013b)