ECONOMY AND FINANCE

GROWTH AND STRUCTURAL CHANGE

Implications for Income Inequality in Developing Countries

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Since the 1950s, it has been accepted that income inequality may increase in the early phases of economic development, when growth is achieved through movement away from agriculture and toward manufacturing.

In the later phases of development this inequality gap is expected to narrow as more workers enter industrialized sectors. However, recent studies on developing countries do not support this expectation.

This Study asks whether structural transformation observed in developing countries differs from this traditional transformation-and-growth path, and if so, what are the implications for inequality in developing countries?

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INTRODUCTION

Kuznets found early empirical evidence to suggest that inequality increased in the early phases of economic development and declined thereafter. He suggested that this pattern of inequality was consistent with growth achieved through the structural transformation process of labor in an economy moving away from low-productivity agriculture toward a higher-productivity manufacturing sector. This process, as Kuznets famously argued, would result in an initial increase in inequality in economies undergoing this change, but later the gap would dissipate as workers were absorbed into the higher-productivity industrial sector (Kuznets 1955).

Recent cross-country studies on developing economies however note that growth rates among developing countries in general remain uncorrelated with changes in inequality. In this paper we consider whether, in the absence of a growth-inequality relationship in developing countries, there may instead be a relationship between the structural shifts that have accompanied growth and inequality in these countries. Specifically, we consider how the types of structural transformation observed in developing countries differ from what was traditionally understood to be the structural transformation (and growth) path associated with development when initial evidence was found for the growth-inequality relationship, and whether this has any implications for inequality in developing countries.

It is well established today that developing countries do not seem to possess the same economic features in their current development trajectory as was found in the trajectory followed by today's high-income countries. Two key trends have been noted in this regard. Firstly, despite the countries concerned being in the early stages of industrialization, the manufacturing sector in many low-income countries has been shrinking. Rodrik (2016) has used the term ›premature deindustrialization‹ to describe this phenomenon whereby developing countries do not realize their full manufacturing potential. Secondly, unemployed workers who could not find jobs in manufacturing have apparently moved into low-productivity service-sector jobs.

We suggest that, to the extent that these changes differ across developing countries and lead to varied growth outcomes, varying inequality outcomes associated with growth across the developing countries will be observed. It follows that if not all countries develop in the linear industrialization manner considered by Kuznets, it should not be expected that the development-inequality relationship as described by Kuznets should be observed everywhere. Indeed, it may even suggest that there is no systematic pattern in the inequality-growth relationship to be observed across the developing world. However, we would argue – and we attempt to elucidate on this in greater detail below – that there may be examples of specific, sub-group patterns of inequality shifts that are found in clusters of economies that yield similar patterns of structural transformation. Hence, while an aggregate growth-inequality relationship may not hold for the developing world, it is entirely feasible that patterns of inequality may be observed for specific sub-groups of economies.

Using data from the World Development Indicators and the Groningen Growth and Development Center (GGDC) 10-sector database, we thus consider the structural changes underlying growth for a sample of 20 developing countries over the period 1990 to 2010 as well as the inequality outcomes that have been observed in these countries over the same period. Our aim is to consider whether there seems to be any relationship between these structural changes and observed inequality within the developing country sample.

The paper is structured as follows: Section 2 lays out the available evidence and literature regarding growth and inequality in developing countries. Section 3 considers how structural change has occurred in a sample of 20 developing countries between the years 1990 and 2010. Section 4 groups the sample of countries into three groups in line with how their structural transformation path deviates from the linear industrialization path and then considers the inequality outcomes for these groups of countries over the period under review. Specifically, through a preliminary descriptive analysis, we consider whether, in the absence of a growth-inequality relationship in developing countries, there seems to be any sort of relationship between structural transformation and inequality, and the extent to which this relationship can be generalized. Section 5 concludes the paper.

2

GROWTH AND INEQUALITY IN THE DEVELOPING WORLD

Global inequality is based on a calculation of inequality across the distribution of all individuals in the world, regardless of country, and is made up of two components (World Bank 2006). Between-country inequality measures differences in inequality across countries, while within-country inequality measures the average inequality level within countries.

Globally, there was a secular trend of increasing inequality between 1820 and 1970. Thereafter, following a period of relative stability, a sharp decline in inequality was observed from the early-1990s onward (Bourguignon 2011). Within-country statistics from the World Bank (2016) showed that South Africa was the most unequal country globally, with Haiti being a close second. Seven Latin American and Caribbean countries were included in the ten most unequal countries in the world – examples here being Brazil and Mexico. In terms of Africa, more than half of the countries on the continent yielded Gini coefficients above 0.40, with the main contributors being South Africa and Rwanda. Furthermore, Bourguignon (2017) provides additional country-specific data on inequality from the mid-1980s to the early 2010s. Firstly, inequality levels decreased for a number of Latin American countries, most notably Brazil and Colombia. Secondly, shortly after the disbanding of the Soviet Union, the Russian Federation also witnessed a decline in inequality, which was followed by a dramatic increase in the 1990s and then stabilization (Bourguignon 2018; Novokmet, Piketty & Zucman 2018). Thirdly, the rise in inequality in India contributed to the increase in inequality in the South Asian region. Finally, inequality in China increased steadily up until the early 2000s after the reform and opening up policy was adopted in 1979, which had a dampening effect on decreases in inequality experienced throughout the East Asia and Pacific region. Collectively, this evidence points to heterogeneity in the patterns of inequality across developing countries over the last two decades.

Having established the diverse nature of the evolution of within-country inequality worldwide, Table 1 includes both economic growth and changes in inequality between 1993 and 2013, aggregated by region.[1]

Table 1
GDP Per Capita and Gini Coefficients by Region: 1993–2013

Region	Annualized % change in GDP per capita 1993–2013	Gini coefficient			Growth elasticity of inequality
		1993	2013	Annualized % change 1993–2013	
East Asia and Pacific	3.16	0.38	0.37	-0.13	-0.04
Europe and Central Asia	1.63	0.34	0.31	-0.44	-0.27
Latin America and the Caribbean	1.66	0.49	0.48	-0.10	-0.06
Middle East and North Africa	1.72	0.40	0.33	-0.91	-0.53
South Asia	4.07	0.31	0.36	0.71	0.18
Sub-Saharan Africa	1.61	0.48	0.44	-0.41	-0.26
World	1.60	0.40	0.37	-0.37	-0.23

1. GDP per capita in constant 2010 US dollars.
2. Within-country inequality.
3. Gini coefficients are not weighted by population size.

Source: World Bank (2016, 2018).

1 Throughout this paper, annualized growth rates refer to average annual rates calculated based on the geometric average of the change in value from the start to the end of the period.

As noted above, the period since the 1990s has been characterized by the reversal of a pattern of increasing global inequality, and hence the global Gini coefficient has fallen from 0.40 in 1993 to 0.37 in 2013. Over the same period, of course, global growth rates in the aggregate have risen as emerging economies, despite significant country-level variation and volatility, have begun to follow the growth trajectory of developed countries (Bourguignon 2011).

The Middle East and North Africa region (MENA) followed this global trend as the region's inequality levels declined while growth in GDP per capita accelerated. During this period, MENA exhibited a moderate GDP per capita growth rate of 1.72 per cent per annum, which was in line with those of the Europe and Central Asia region and sub-Saharan Africa. MENA is characterized as a low-inequality region, being one of the few regions to have reduced income inequality in the earlier period between 1980 and 1990 (Adams & Page 2003). Unsurprisingly, MENA displayed the largest improvement in the Gini coefficient for the 20-year period, with a reduction of 0.91 per cent per annum from 0.4 to 0.33. As a region experiencing growth comparable to the world average, this remarkable improvement in inequality is suggestive of a Gini coefficient that is sensitive to changes in GDP per capita. A measure of the growth elasticity of inequality has been calculated to capture this effect, specifically the responsiveness of inequality levels to economic growth and the direction of this relationship. MENA has a growth elasticity of inequality of -0.53, which is the highest of all regions and is indicative of a moderate increase in GDP per capita being related to a relatively large decrease in inequality.

Latin America and the Caribbean (LAC) and East Asia and Pacific (EAP) have demonstrated a similar trend in terms of the changes in inequality levels relative to the pace of economic growth. However, these regions have taken fairly different routes to achieve this outcome. EAP experienced growth in per capita GDP per annum of 3.16 per cent, most of which can be attributed to growth in China which averaged 8.66 per cent per annum for the period (World Bank 2018). This was approximately 3 times greater than the world average (World Bank 2018). As a whole, EAP had an initial Gini coefficient of 0.38, which was 2 Gini points below the world average and, although this value decreased to 0.37 in 2013, this aggregated measure is somewhat misleading. Countries such as China and Indonesia have experienced systematic increases in inequality over the period (Alvaredo & Gasparini 2015). In other cases, reductions in the Gini coefficient have been attributed to cyclical patterns for countries including Cambodia and Vietnam, where 2010 inequality levels mirrored those in the 1990s (Atkinson & Bourguignon 2014).

In comparison to EAP, LAC had a moderate growth rate of per capita GDP of 1.66 per cent per annum for the period. In terms of the income distribution, between the 1980s and early 2000s LAC experienced frequent bouts of high inflation, which resulted in increased inequality, whereby market-orientated adjustment policies put in place to curb inflationary forces had a disproportionately negative impact on the poorest households (Alvaredo & Gasparini 2015). Predictably, LAC exhibited the highest initial Gini of the sample at 0.49. Improved macroeconomic conditions had a positive impact on job creation, resulting in a period of declining inequality in all LAC countries (Gasparini & Lustig 2011). Regardless of this, progress was slow, and the Gini coefficient only decreased by one Gini point, or 0.10 per cent per annum, between 1993 and 2013. Notwithstanding the differences between LAC and EAP it is evident that in both cases, changes in the level of inequality over the period are not as sensitive to growth in GDP as was the case in MENA. Specifically, LAC and EAP exhibited the lowest growth elasticities of inequality, with values of -0.06 and -0.04 respectively.

Sub-Saharan Africa (SSA) is another region with moderate growth of GDP per capita, at 1.61 per cent per year, and exhibits the second highest level of inequality across all regions. Specifically, in 2013 South Africa was the most unequal country in the world, with Rwanda also in the top 10 most unequal countries (World Bank 2016). The Gini coefficient for the region declined from 0.48 to 0.44 over the period. However, approximately half of the countries in the region experienced an increase in inequality over the period, while there was a decrease in inequality for the other half (World Bank 2016). The resultant regional growth elasticity of inequality of -0.26 sits between that for MENA and both the LAC and EAP regions.

Since the early 1990s, South Asia (SA) has been characterized by low levels of inequality compared to the developing world (Alvaredo & Gasparini 2015), with the lowest regional Gini coefficient of 0.31 in 1993. In sharp contrast to the global mean, the region experienced both increasing growth and inequality between 1993 and 2013. The region exhibited unprecedented growth of 4.07 per cent per annum over the 20-year period, while inequality increased by a considerable 0.71 per cent per annum. The positive growth elasticity of inequality of 0.18 for the period suggests that changes in the income distribution in South Asia were negatively related to economic growth, albeit only marginally.

Ultimately then, the above evidence suggests that in all cases for the period 1993 to 2013, with the exception of South Asia, growth in GDP per capita has coincided with reduced inequality. In terms of the significance of the relationship between GDP and inequality changes by region, however, recent evidence suggests that growth and inequality do not exhibit any significant correlation in the short- or medium-term (Bruno, Ravallion & Squire 1998; Ravallion, 2001; Alvaredo & Gasparini 2015; Dollar, Kleineberg & Kraay 2016). This is particularly relevant when considering Bourguignon's (2017) notion that growth-inequality dynamics underlying regional trends can create a false sense of cohesiveness across regions. However, this is not to say that country-level analysis (or group-level analysis, which considers countries that exhibit similarity in respect of factors which may be expected to influence inequality outcomes) will not lead to significant findings.

2.1 THE KUZNETS CURVE: ECONOMIC DEVELOPMENT AND INEQUALITY

The early work of Kuznets (1955) used cross-sectional data from a sample of developed countries and found empirical evidence to suggest that inequality increased in the early phases of economic growth and declined thereafter. Later work by Kuznets (1963) characterised this relationship as having an inverted U-shape, termed the Kuznets curve.

According to Kuznets (1963), in the initial phase of economic growth the income distribution for developing countries was much the same as it was for developed countries when they were in the early stages of industrialization. Considering this relationship in the long run for a cross-section of developing countries, Paukert (1973) confirmed Kuznets' (1955) original hypothesis that the later phases of economic development were accompanied by a narrowing gap in the income distribution. Conversely, Adelman's and Morris's (1973), Robinson's (1976) and Ahluwalia's (1976) studies of developing countries in the later stages of growth showed that if the government did not implement pro-poor fiscal policies then inequality would not decline in the long run as predicted by the Kuznets curve.

One of the forces underlying the Kuznets process was the migration of labor from agriculture to the manufacturing sector. The effect of this shift toward industrialization was an initial increase in inequality, as inequality was higher in manufacturing than in agriculture. However, this process also entailed a move from low-productivity activities, such as agriculture, to high-productivity industrial sectors, with the result being an aggregate increase in productivity (McMillan & Rodrik 2011). McMillan and Rodrik (2011) used the term ›structural transformation‹ to explain this shift and it has been shown that rapid structural transformation was a feature observed in many countries that experienced economic growth.

However, according to Kuznets (1955), while industrialization initially increased inequality, this gap in the distribution of income dissipated in the later stages of structural transformation as workers were absorbed into the industrial sector. The conclusion reached was that this sectoral shift must have been offset by an increase in the income share of the poorest workers in the industrial sector. Kuznets (1955) explained that the advent of democracy in a country would be accompanied by a rise in the political influence of lower-income groups, resulting in protective legislation aimed at redistributing wealth within these growing economies. Therefore, at the later stages of development structural transformation resulted in increased productivity, which was growth-enhancing and ultimately inequality-reducing.

2.2 BEYOND KUZNETS: TWO KEY CRITIQUES

In terms of the critiques of Kuznets' work, there are two distinct groups of dissenters in the literature. The first denies that the Kuznets Curve exists at all, stating that there is no relationship between inequality and growth, while the other group focuses on the flaws in the underlying structural transformation rhetoric.

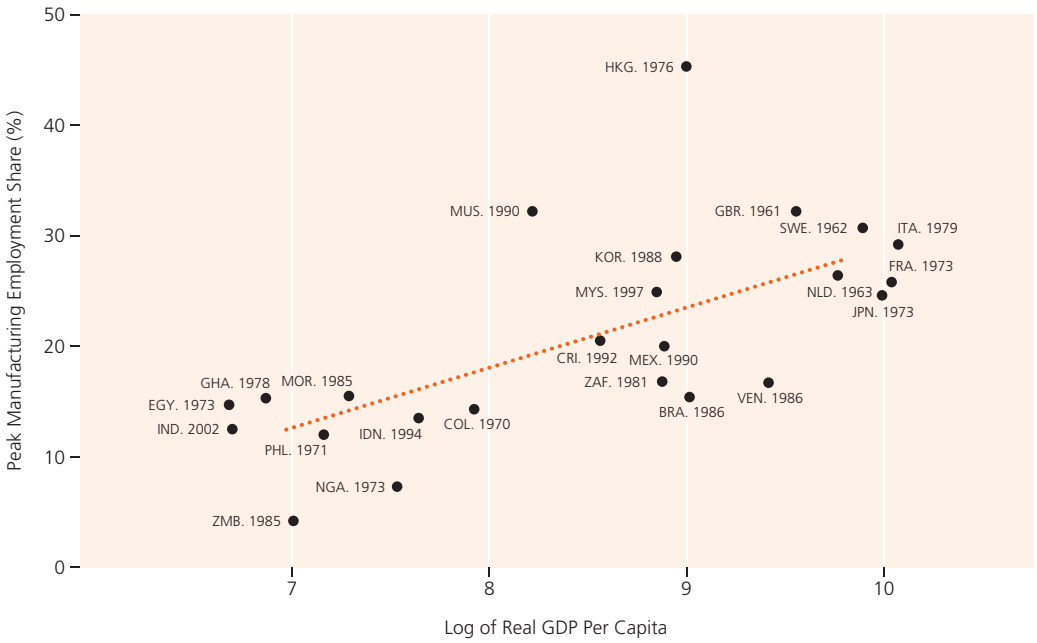
In the case of the ›Kuznets denialists,‹ more recent research using intertemporal data from a sample of developing countries showed that there was no systematic relationship between economic growth and a rise in inequality (Fields 1989; Deininger & Squire 1997; Bruno, Ravallion & Squire 1998; Ravallion 2001). Instead, an increase or a decrease in inequality was equally likely. This result was consistent with Dollar, Kleineberg and Kraay's (2016) recent study of 121 countries between 1967 and 2011, which found that there was no correlation between growth in income per capita and the share of income for the bottom 40 per cent of the distribution. Bourguignon (2004) stated that such findings should not be taken to mean that the relationship between growth and inequality was insignificant, but rather that disaggregation of the data at country level was required to draw robust conclusions. Therefore, case studies that focus on specific countries rather than cross-country analysis should be favored when identifying changes in the income distribution that arise as a result of growth.

Later work has challenged the original Kuznets proposition chiefly on the basis that the type of growth that has been observed in today's developing countries is not the same as what was observed for the now developed countries when they were industrializing. These criticisms and the centrality of structural transformation to them are considered below.

The second cohort of disbelievers in the Kuznets process was skeptical of the structural transformation explanation for the U-shaped Kuznets curve. Later research on this subject applied the constructs of the Kuznets process to developing countries, and two main issues arose. Firstly, despite being in the early stages of industrialization, the manufacturing sector in many low-income countries was shrinking. Rodrik (2016) used the term ›premature deindustrialization‹ to describe this phenomenon whereby developing countries did not realize their full manufacturing potential. Secondly, the unemployed workers that could not find jobs in manufacturing moved to the unproductive services sector, which entailed a decrease in overall productivity and in stunted economic growth, and which resulted in an unambiguous increase in inequality (Rodrik 2016). The effects of these country-level deviations from the Kuznets process on inequality and growth will be the focus of this section.

Figure 1 indicates the peak manufacturing share of employment across various countries by log of GDP per capita. The first wave of industrializers (notably, Great Britain, Sweden, and Italy) witnessed peak manufacturing employment of about 30 per cent of total employment. The next

Figure 1
GDP Per Capita at Peak Manufacturing Levels, By Country



Source: Bhorat et al. (2017). Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

wave of industrialization – mainly East Asian countries (e. g., South Korea) – saw peak manufacturing employment well below 30 per cent. None of the developing countries in our sample has a manufacturing sector that contributes more than 20 per cent of total employment in 2010. Finally, most Latin American and African countries began experiencing deindustrialization when peak manufacturing employment was between 13 and 17 per cent of total employment (e. g., Brazil and South Africa). Nigeria and Zambia both experienced deindustrialization before manufacturing even reached 10 per cent of total employment.

The decline in manufacturing activities in many developing countries was attributed to advances in both technology and globalization. Hallward-Driemeier and Nayyar (2017) discuss two predominant ways in which technology-led changes in manufacturing can negatively impact low- to middle-income countries. Firstly, the emergence of advanced manufactured goods, such as wearable tech and autonomous vehicles, is most likely to have a positive impact on manufacturing activities in high-income countries, as they have the R&D capabilities to develop these products. While the assembly of high-tech manufactured goods has largely moved to low- and middle-income countries, such a shift is currently improbable for advanced manufactured goods owing to an underqualified labor force and inadequate infrastructure. This will widen the existing skills gap as lower-skilled workers are even less able to participate in manufacturing activities, thereby inducing higher levels of inequality (Bourguignon 2017). Secondly, advances in the manufacturing process of traditional manufactured goods will reduce the efficiency of developing economies that are unable to adopt these technologies fast enough. The resultant decrease in comparative advantage for developing countries will have a negative effect on the manufacturing sectors of these economies, further weakening their position in terms of global trade.

Bhorat, Naidoo and Pillay (2016) highlighted the specific case of a burgeoning tertiary (services) sector in Africa. This was an example of a negative structural transformation, whereby much of the labor force shifted from more productive to less productive activities, such as services and informal businesses (McMillan and Rodrik 2011). Baymul and Sen (2017) showed that for those developing countries that followed this path the ultimate consequence was high levels of inequality. In addition, McMillan, Rodrik and Verduzco-Gallo (2014) found that economic growth was stunted in many countries in both sub-Saharan Africa and Latin America due to a decrease in the relatively low productivity of services when compared to agriculture.

Exacerbating the problem in Africa was the shift of labor across sectors from agricultural activities reliant on labor to more capital-intensive mining operations (Naiya & Manap 2013; Bhorat, Naidoo & Pillay 2016). Leamer and Schott (1999) found a similar trend for Latin American countries and stated that the investment of capital into natural resources postponed the establishment of the manufacturing sector. McMillan, Rodrik and Verduzco-Gallo (2014) found that this form of structural transformation improved productivity but failed to create jobs for workers moving away from the agricultural sector. In addition, these resources were often controlled by a select group that reaped the benefits at the cost of the country's poor, thereby adding to already high levels of inequality. Using Nigeria as a case study, Naiya and Manap (2013) showed that the lack of structural transformation in the country in the last few

decades could be attributed to the oil industry, which drove growth in the country, but was not labor-intensive. This was a contributing factor to the high levels of poverty and inequality in Nigeria.

In sum, an economy's path of structural transformation centres around its ability to adopt technological advances both in products and in manufacturing processes. The lack of skilled labor and infrastructure in smaller emerging economies, such as those in sub-Saharan Africa and Latin America, has been to their detriment whilst simultaneously advantaging larger, well-resourced South Asian countries. However, the manufacturing sector's contribution to global GDP is declining on average. This speaks to a process of deindustrialization, whereby the services sector is beginning to outpace the shrinking manufacturing sector and provide jobs for lower-skilled workers in smaller emerging economies, specifically those in Latin America and sub-Saharan Africa. We will explore the extent to which this is the case for a sample of 20 developing countries across Latin America, sub-Saharan Africa, and Asia in this paper and consider whether the varied forms of structural changes occurring across developing countries have any relationship with the inequality outcomes observed for those countries.

We build specifically on the second critique of Kuznets related to varied forms of structural change across countries and note that, while there seems to be no evidence for a Kuznets relationship (or indeed any relationship) between growth and inequality for developing countries, there may be a relationship between the varied forms of structural changes occurring in these countries and the inequality in these countries. This would actually be in line with the underlying structural change forces Kuznets had posited would lead to the growth-inequality relationship he suggested. Developing countries today are not developing in the linear manner considered by Kuznets. These deviations from the structural change Kuznets had considered in the form of differing forms of structural transformation can thus be expected to have differing impacts on inequality from those that Kuznets had explained as developing countries grow today. We expect varied inequality outcomes due to varied structural changes across developing countries and attempt to understand the extent to which a structural change-inequality relationship may be generalized, based on these varied structural changes observed.

3

STRUCTURAL TRANSFORMATION ACROSS DEVELOPING COUNTRIES

3.1 DATA

Data is sourced from the World Bank's World Development Indicators database as well as the Groningen Growth and Development Centre (GGDC) and UNU-WIDER databases. The UNU-WIDER dataset provides inequality statistics, including Gini coefficient estimates, as well as various distributional measures of income inequality such as decile and quantile shares of total national income. The GGDC variables include employment and real value-added statistics for a number of countries disaggregated into ten sectors covering the period up to 2010. Our sample of 20 developing countries is chosen on the basis of the availability of both structural information (from the GGDC) and inequality data (from the UNU-WIDER) for the period 1990 to 2010. If data was not available for these two years, an approximation was made using both the earliest and latest available periods for a particular country.[2] In instances where five-year sub-periods are used, averages are calculated on the basis of the number of observations for each time slot for a given country.

Income per capita is calculated by converting the net national income per capita in current US dollars from the WDI database into constant 2010 US dollars using the Consumer Price Index in US dollars with a base year of 2010. This is consistent with the measure of GDP per capita, which is provided in constant 2010 US dollars. If a given database has multiple sources, the criteria for selection are area and age coverage, data quality, and unit of measure. Preference is given to data covering both rural and urban areas, the widest age range and a person per household unit of measure. Due to these restrictions, most of the inequality, income, and GDP data was collected by the World Bank.

The sample includes nine countries from the Latin American region, six Asian countries and five sub-Saharan African countries. The countries, as well as their per capita levels of income and inequality (as measured by the Gini coefficient) for the latest year in the period of consideration, are shown in Table 2 below. These countries comprise a sizable portion of the population both globally (52 per cent), and for middle-income countries (70 per cent). In addition, 22 per cent of worldwide GDP was accounted for by this sample and 75 per cent of the GDP for middle income countries can be attributed to these countries. Therefore, this set of countries is representative of developing economies, both geographically (across regions) and in terms of population size and GDP.

As a first consideration of the relationship between growth and inequality across this sample of developing countries, Table 3 below shows the annualized change in GDP per capita and inequality (as measured by the Gini coefficient) over the period 1990 to 2010.

What is evident from our sample of countries for the period 1990 to 2010 is that there is no clear systematic relationship between growth and inequality, with a number of countries exhibiting both growth and an increase in inequality, while others have experienced a decline in inequality along with growth. The wide range of growth elasticity of inequality measures provides corroborating evidence of this lack of a clear cross-country trend, while the large deviations of certain countries when regressing inequality on economic growth further suggests that there is no obvious relationship between these two variables.

Regionally, though, there seem to be some commonalities. China has both the highest increase in per capita GDP and the highest positive change in inequality. India has also experienced high growth as well as a considerable increase in inequality. It is therefore not surprising that on average the Asia Pacific region has the highest growth elasticity of inequality of the sample at 0.03, with both GDP per capita and inequality increasing at a rapid pace. South Africa, Ghana, and Tanzania have also seen considerable increases

2 Note: Where GGDC data is not available for the years 1990 and 2010, period difference are between the earliest and latest years for which data is available in the 1990 to 2010 period. For the following countries, 1991 is the earliest year in the period for which data is available: Colombia, Ghana, Peru, Philippines, Senegal, and Tanzania. For the following countries, 1992 is the earliest year in the period for which data is available: Mexico. For the following countries, 1993 is the earliest year in the period for which data is available: Botswana, South Africa and India. For the following countries, 2005 is the latest year in the period for which data is available: Ghana and Senegal. For the following countries, 2007 is the latest year in the period for which data is available: Tanzania. For the following countries, 2009 is the latest year in the period for which data is available: Bolivia, Brazil, Botswana, Chile, India, Malaysia, Philippines. The data for all other countries are for the years 1990 and 2010. For the share of GDP figures, the latest available data for Venezuela was from 2014.

Table 2
Country Sample: Key Representativeness Statistics, 2017

Country / Region	Per Capita Income	Gini Coefficient	Share of Global GDP	Share of Middle-Income GDP	Share of Global Pop.	Share of Middle-Income Pop.
Latin America and Caribbean	**7017.95**	**48.60**	**6.70**	**19.37**	**7.04**	**9.55**
Argentina	8766.28	44.50	0.57	1.66	0.59	0.80
Brazil	8848.54	53.87	2.85	8.23	2.78	3.77
Bolivia	1504.61	49.65	0.03	0.10	0.15	0.20
Chile	7550.40	52.00	0.34	0.98	0.24	0.33
Colombia	4986.85	55.50	0.47	1.35	0.65	0.88
Costa Rica	7369.29	48.10	0.06	0.17	0.07	0.09
Mexico	7698.95	48.13	1.60	4.64	1.72	2.33
Peru	4003.45	46.21	0.25	0.72	0.43	0.58
Venezuela	12433.18	39.40	0.53	1.52	0.42	0.58
Sub-Saharan Africa	**2326.55**	**49.77**	**0.71**	**2.05**	**2.14**	**2.90**
Botswana	3908.56	60.46	0.02	0.06	0.03	0.04
Ghana	449.80	42.77	0.06	0.18	0.38	0.52
Senegal	856.99	39.22	0.03	0.08	0.21	0.29
South Africa	5849.01	66.10	0.53	1.54	0.75	1.02
Tanzania	568.40	40.28	0.06	0.18	0.76	1.03
Asia and Pacific	**3417.80**	**40.31**	**18.69**	**54.06**	**42.43**	**57.58**
China	3463.04	35.74	12.69	36.68	18.41	24.99
India	1079.34	39.35	3.28	9.50	17.78	24.13
Indonesia	2749.07	38.20	1.36	3.94	3.51	4.76
Malaysia	6798.91	46.26	0.46	1.32	0.42	0.57
Philippines	2417.21	42.91	0.38	1.10	1.39	1.89
Thailand	3999.22	39.40	0.53	1.53	0.92	1.24
Total	**4765.06**	**46.40**	**26.10**	**75.48**	**51.61**	**70.03**

For Ghana and Senegal, 2005 is the latest year in the period for which data is available:. For Tanzania, 2007 is the latest year in the period for which data is available:. For the following countries, 2009 is the latest year in the period for which data is available: Bolivia, Brazil, Botswana, Chile, India, Malaysia, the Philippines. The data for all other countries are for the year 2010, in constant 2010 US dollar prices.

Source: World Bank (2018).

in inequality, but with lower GDP per capita growth, with positive, low elasticity measures between 0.37 and 0.45. Bolivia is an outlier for the Latin American region with low growth combined with a significant rise in inequality, as indicated by a positive elasticity of 0.47. The other Latin American countries in the sample all exhibit a lower Gini coefficient over the period. Growth in three of these (Venezuela, Brazil, and Mexico) however has been low. Among countries that seem to exhibit declining inequality with not insignificant growth are Thailand, Chile, and Argentina. Malaysia and the Philippines have experienced increased GDP per capita with a minor fall in inequality. Botswana has achieved considerable per capita GDP growth, however, with no significant change in inequality. Finally, Senegal is an outlier for the sub-Saharan African region, experiencing minor growth but a considerable decline in inequality resulting in the largest negative growth elasticity of inequality of -2.29.

3.2 STRUCTURAL TRANSFORMATION TRENDS IN DEVELOPING COUNTRIES

Table 4 below shows overall growth rates for employment in all 20 developing countries in our sample, as well as the ratio of sectoral employment growth to total employment growth for the three sectors of agriculture, manufacturing and services. Where this ratio is less than one, it indicates a declining share of employment of that sector, and where it is greater than one, it indicates a sector that has grown in respect of its share of total employment. Note that we distinguish further between traditional and modern services. We explain the distinction in more detail later.

We can immediately note a shift away from agriculture and a shift towards services across all countries with agricultural employment having increased on average at just 10 per cent the rate of total employment growth, while services

Table 3
Country Sample: GDP Per Capita and Gini Growth, 1990–2010

Country / Region	GDP per capita (Annualized % Change)	Gini Coefficient (Earliest)	Gini Coefficient (Latest)	Gini Coefficient (Annualized % Change)	Growth Elasticity of Inequality
Latin America and Caribbean	**2.06**	**49.82**	**48.60**	**-0.11**	**-0.17**
Argentina	2.64	50.10	44.50	-0.56	-0.21
Brazil	1.40	60.49	53.87	-0.58	-0.41
Bolivia	1.78	42.04	49.65	0.84	0.47
Chile	3.69	57.25	52.00	-0.48	-0.13
Colombia	1.84	51.32	55.50	0.39	0.21
Costa Rica	2.47	45.30	48.10	0.29	0.12
Mexico	0.92	50.95	48.13	-0.30	-0.33
Peru	3.18	43.80	46.21	0.27	0.08
Venezuela	0.65	47.10	39.40	-0.85	-1.31
Sub-Saharan Africa	**1.67**	**49.60**	**49.77**	**-0.01**	**-0.21**
Botswana	2.35	60.79	60.46	-0.03	-0.01
Ghana	1.72	38.44	42.77	0.71	0.41
Senegal	0.93	54.14	39.22	-2.13	-2.29
South Africa	1.65	59.33	66.10	0.60	0.37
Tanzania	1.72	35.29	40.28	0.78	0.45
Asia and Pacific	**4.12**	**38.57**	**40.31**	**0.32**	**0.03**
China	9.11	25.59	35.74	1.60	0.18
India	4.73	34.39	39.35	0.80	0.17
Indonesia	2.90	34.66	38.20	0.46	0.16
Malaysia	2.93	47.65	46.26	-0.16	-0.06
Philippines	1.63	43.80	42.91	-0.11	-0.07
Thailand	3.42	45.30	39.40	-0.66	-0.19
Average	**2.58**	**46.39**	**46.40**	**0.04**	**-0.12**

Source: Calculated using World Bank World Development Indicators (2018).

employment has grown, on average, 1.7 times faster than overall employment growth.

Agricultural employment has declined, on average, for countries in the Latin American and Asian countries in the sample. It is only in the sub-Saharan African countries in the sample that employment in the sector has continued to grow, with employment growing on average at around 0.7 per cent per year across these countries. However, in this region too, there has been a shift away from agriculture with the average ratio of agricultural employment growth to total employment growth being 0.36.

Services employment has grown faster than overall employment across the countries in all three regions. This is true for all countries in the sample, with the highest sectoral growth relative to overall growth being seen in China (with services employment growing close to five times faster than overall employment) and the lowest rate seen for Venezuela (with services employment growing at a rate just 1.2 times higher than overall employment). On average, the services employment increase relative to total employment increase is lowest for countries in the Latin American region (1.4). The average ratio is 1.9 for the Sub-saharan African countries and 2.6 for the Asian countries.

On average, manufacturing employment has grown only slightly slower than overall employment across the sample. The manufacturing shift is however varied across the sample, with employment growth in the sector outpacing total employment growth in eight of the 20 countries. In the Latin American region in particular, however, manufacturing employment has grown on average slower than total employment with an average rate of growth less than half (0.48) that of total employment growth in these countries.

We explore these shifts in more detail below.

3.2.1 Agriculture in Decline

The sectoral to total employment growth ratio is less than one in all countries, and even negative in eight cases, indi-

Table 4
Employment Growth by Sector: 1990–2010

Country / Region	Annualized total Employment Growth (%)	Ratio: Sectoral employment to Total employment Growth Rate		
		Agriculture	Manufacturing	Services
Latin America and Caribbean	**2.48**	**-0.05**	**0.48**	**1.44**
Argentina	1.95	-0.33	0.02	1.37
Brazil	2.93	-0.25	1.83	1.52
Bolivia	1.54	-0.37	0.52	1.67
Chile	2.08	-0.58	-0.12	1.61
Colombia	2.66	0.21	0.63	1.33
Costa Rica	3.23	0.00	0.36	1.62
Mexico	2.47	0.13	0.50	1.36
Peru	2.75	0.44	0.40	1.26
Venezuela	2.74	0.31	0.21	1.20
Sub-Saharan Africa	**1.95**	**0.36**	**1.60**	**1.91**
Botswana	2.02	0.91	1.78	1.61
Ghana	1.92	0.5	0.79	1.76
Senegal	2.02	0.28	2.57	1.88
South Africa	1.09	-0.6	0.37	2.01
Tanzania	2.68	0.69	2.48	2.28
Asia and Pacific	**1.56**	**-0.47**	**1.53**	**2.59**
China	0.77	-2.03	2.58	4.95
India	1.34	0.11	1.87	2.07
Indonesia	1.43	0.04	1.15	1.99
Malaysia	2.23	-0.28	0.59	1.45
Philippines	2.43	0.46	0.40	1.59
Thailand	1.14	-1.1	2.56	3.47
Average annualized growth	**2.07**	**0.11**	**2.02**	**3.56**
Ratio Average sectoral employment to Total employment growth		**0.05**	**0.98**	**1.72**

For this table and all tables that follow, the period 1990 to 2010 and any calculations for the period 1990 to 2010 refer to the earliest and latest years for which data were available for each particular country within the period 1990 to 2010.

Source: World Bank (2018).

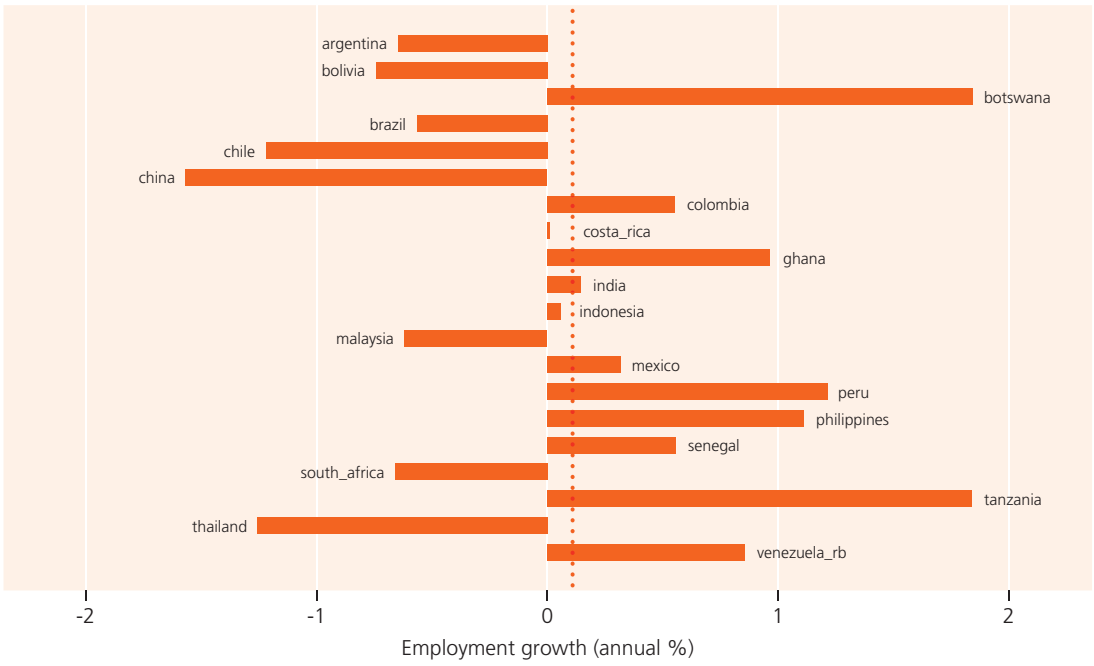
cating not just a relative shift away from agriculture for all countries in the sample, but an absolute one for some.

Figure 2 shows that in eight countries in the sample the number of people employed in the agriculture sector has declined over the period. The decline over the period is highest in China, Thailand and Chile. In China, agricultural employment declined by 28 per cent over the period, a decline of 1.6 per cent per annum over the period. In Thailand and Chile, employment declined by 23 and 22 per cent over the period, declines of around 1.2 per cent per annum over the period.

Of the twelve countries that have seen an increase in employment in agriculture over the period. Botswana and Tanzania have experienced the highest increase, with agricultural employment still growing at close to two per cent per year in those countries. In both Botswana and Tanzania, employment in agriculture grew by 36 per cent over the period, constituting a 1.55 per annum growth rate over the period. Peru, the Philippines, and Ghana have also seen notable increases (with average growth of around one per cent year-on-year). However, the rate of growth in employment in the sector for these twelve countries has been lower than total employment growth and thus, as shown in Figure 3, the share of the sector in total employment has also declined in these countries.

From Figure 3, it is clear that there has been a clear relative shift away from agriculture in all countries in the sample, with the share declining considerably in most of the countries. It should be noted however that agriculture remains important in many of these countries, with agriculture accounting for more than one in four jobs in nine countries in the sample in the latest year.

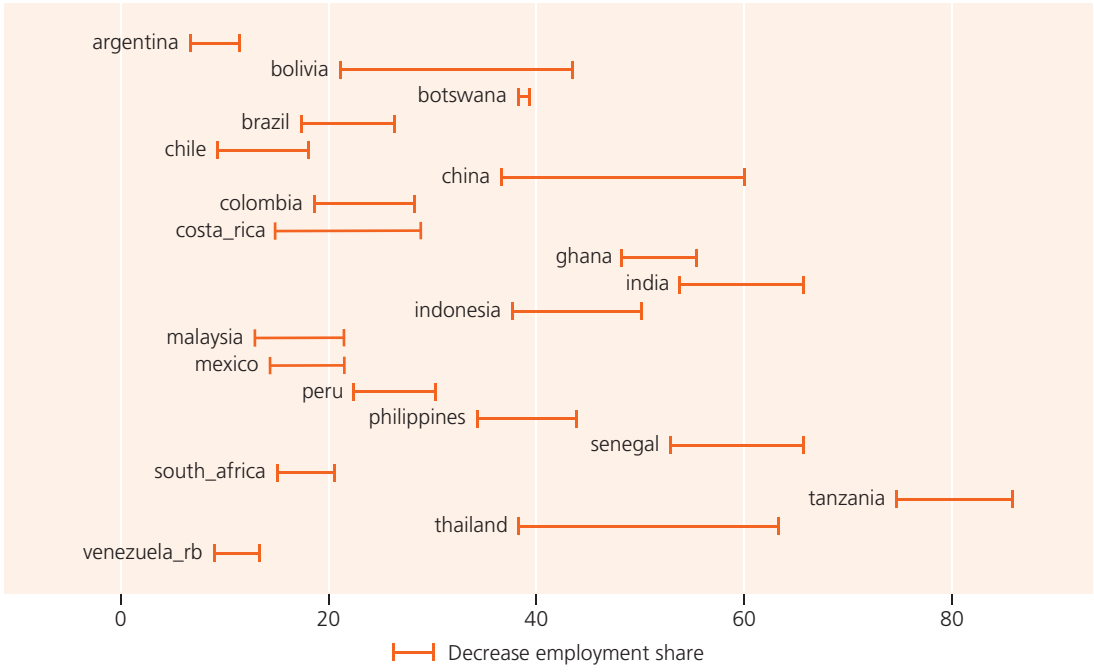
Figure 2
Annualized Agriculture Employment Growth: 1990–2010



1. Dotted line represents simple average for the sample of countries.
2. For this figure and all figures that follow, the period 1990 to 2010 refers to the earliest and latest years for which data was available for each particular country within the period 1990 to 2010.

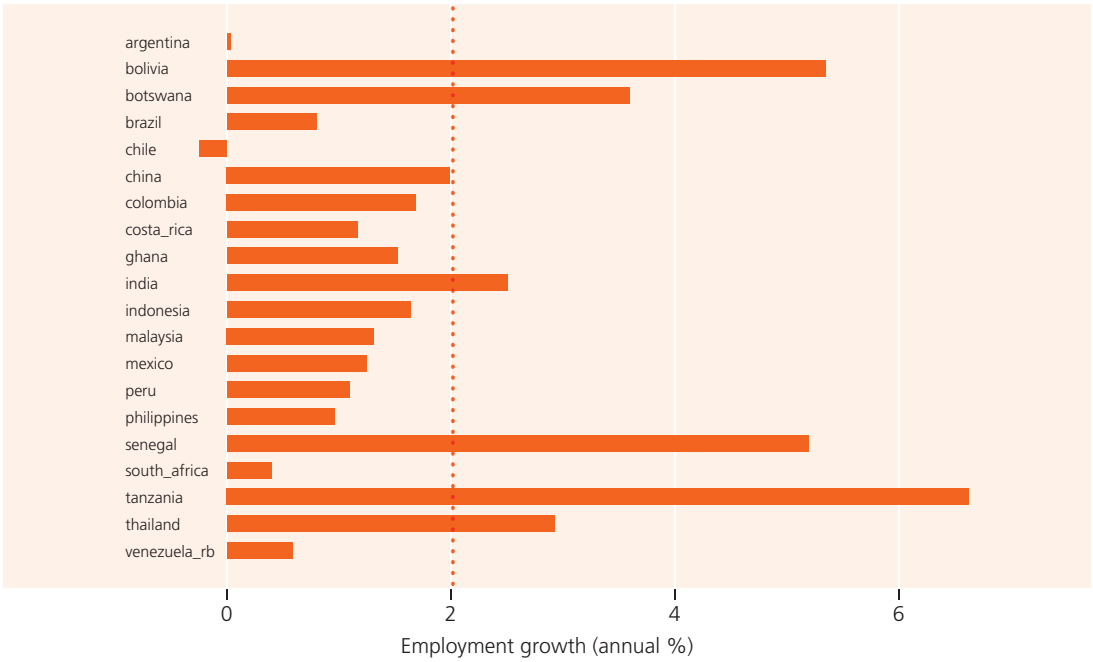
Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015)

Figure 3
Agriculture Share of Employment: 1990–2010



Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

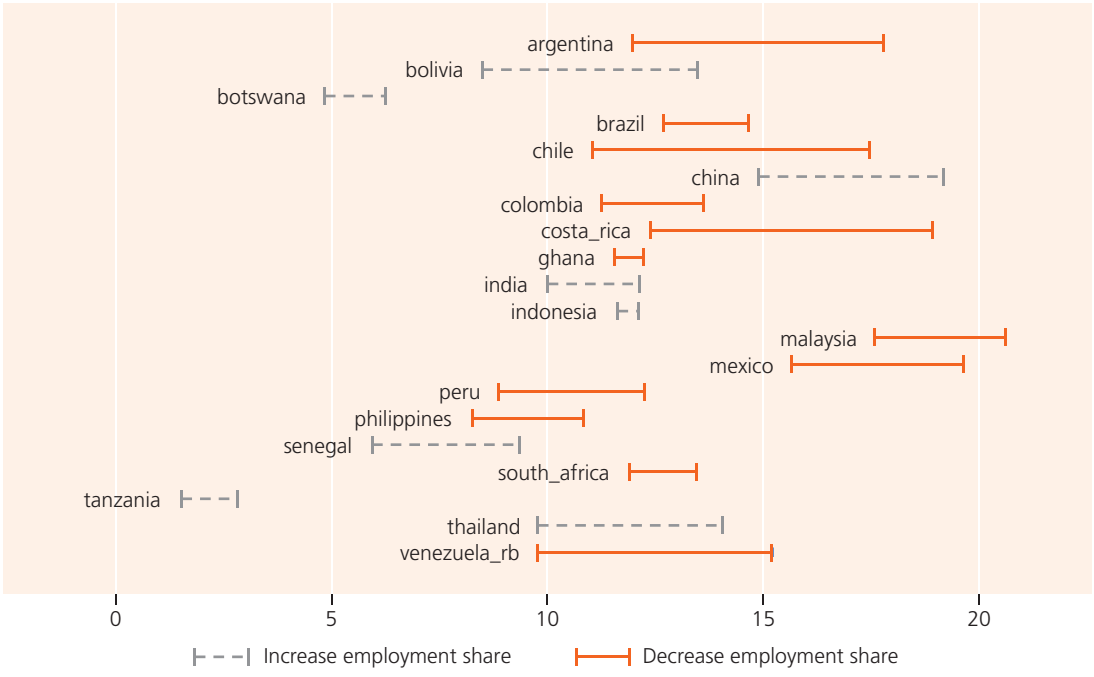
Figure 4
Annualized Manufacturing Employment Growth: 1990–2010



Dotted line represents simple average for the sample of countries.

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Figure 5
Manufacturing Share of Employment: 1990–2010



Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

3.2.2 Heterogeneity in Manufacturing Employment Shifts

Figure 4 makes clear that manufacturing employment has increased in all but one of the countries in the sample. Chile is the only country in which the number of individuals employed in manufacturing has declined, with a decrease in employment of around five per cent, or 0.26 per cent per annum, over the period.

Growth in employment has been highest for Tanzania, Bolivia, and Senegal. In Tanzania, manufacturing employment has almost trebled (an increase of 198 per cent, or 5.6 per cent per annum). In Bolivia, manufacturing employment has increased by 183 per cent, constituting a 5.3 per cent rise per annum, and in Senegal, employment in the sector has increased by 113 per cent over the period, an increase of 3.85 per cent per year. However, the increases for Tanzania and Senegal come off very low bases, with the manufacturing share of employment being just 1.5 per cent and 5.9 per cent respectively for these countries at the beginning of the period.

Figure 5 shows how manufacturing employment share has changed across the sample over the period. As we have shown in Table 3 above, despite positive employment growth in almost all of the countries, overall employment growth has outpaced manufacturing employment growth in twelve countries, leading to a decline in the sector's share of employment in those countries. Of the eight countries in which the manufacturing employment share has grown, however, for three of them (Senegal, Botswana, and Tanzania), the share of employment remains less than ten per cent, indicating that, despite an increase in employment share, the sector remains a limited source of jobs and cannot be said to be driving structural transformation in those countries.

Manufacturing employment can be considered to have increased to a sizeable share in only five countries in the sample – China (where the share has increased from 15 per cent to 19 per cent), India (ten to twelve per cent), Thailand (ten to 14 per cent), Bolivia (nine to 14 per cent) and Indonesia (increasing slightly to around twelve per cent).

Perhaps, most striking, is that, of the 17 countries in the sample in which manufacturing employment accounted for more than ten per cent of employment at the beginning of the period, only five experienced an increase in the manufacturing share of employment by the end of the period. For twelve of the 17 economies, there has been a decline in manufacturing, and in most of these countries the decline has not been minor, with the share of manufacturing employment declining by an average of 3.7 percentage points across these twelve countries (see Table 23 in the Appendix).

It is therefore clear that the traditional model of economic development in which labor shifted away from agriculture and towards manufacturing is not, in the current global economic environment, evident in a significant number of developing countries. While labor has been continuing to shift away from agriculture, the shift has not been into the manufacturing sector, notably so for those economies in which there was an existing sizeable manufacturing base. This is suggestive of the contemporary limitation and inability of the manufacturing sector to play its previous role as the key job-creating portal for rural workers moving to urban areas in search of wage labor.

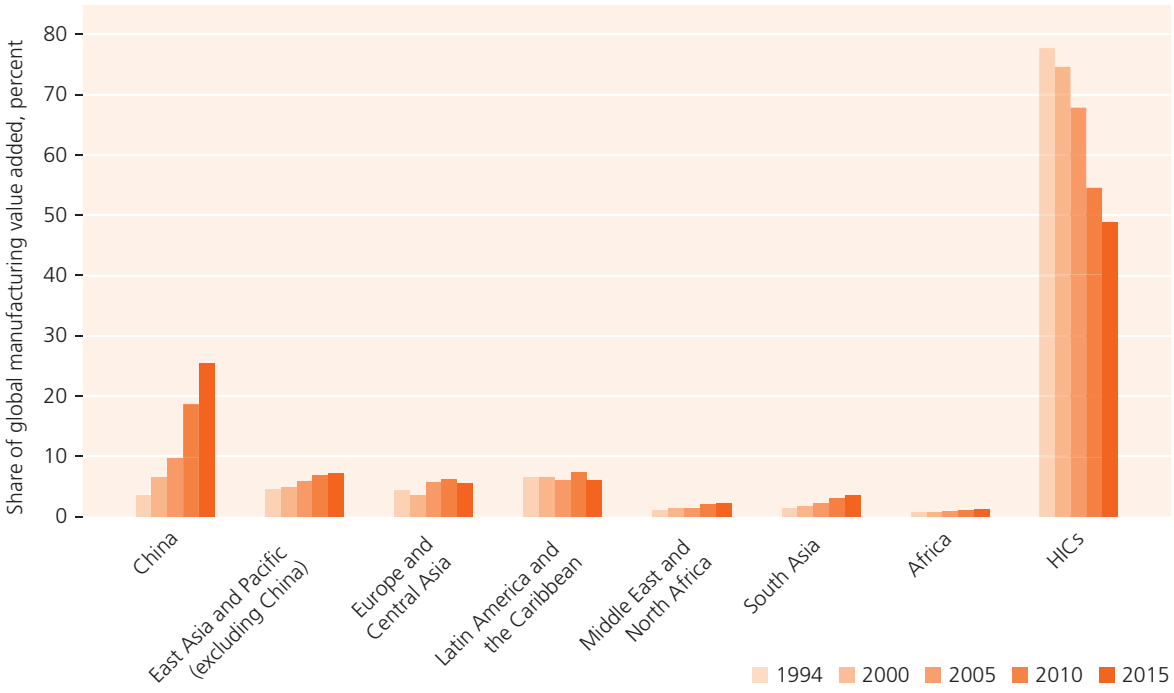
In line with what is observed here, Hallward-Driemeier & Nayyar (2017) note that this phenomenon of a decline in manufacturing output in many countries has been observed across the world in both large and small low- to middle-income countries.

There has, though, notably been a gradual shift in the share of global manufacturing value added from high-income countries to China over the last two decades (Hallward-Driemeier & Nayyar 2017). With the availability of inexpensive labor and cheaper overheads, multinationals are finding it profitable to outsource their manufacturing operations to Asian economies, China in particular. In Figure 6, Hallward-Driemeier and Nayyar (2017) show that high-income countries' share of global manufacturing decreased between 1994 and 2015, with the USA standing out as its share of global manufacturing value added declined from 27 per cent in 1994 to 17 per cent in 2015. Conversely China's share of global manufacturing value added increased fivefold from five per cent in 1990 to 25 per cent in 2015. This growing share of global manufacturing is also evident in a number of other large emerging economies in Asia and in Central and Eastern Europe, for example India, Korea, Poland, and Thailand. In our sample, we observe this for India, Thailand, and Indonesia, albeit on a much smaller scale than in China. Bolivia is a regional exception in our sample, falling into this category as well.

However, this shift to China and a select few other economies has been to the detriment of smaller, low- to middle-income countries, such as those in Latin America and sub-Saharan Africa, which cannot compete with the growth in these larger emerging economies. This is observed in our sample of developing countries, for which twelve out of 20 countries, mostly in Latin America, have experienced a decline in the share of manufacturing in employment. Furthermore, three countries (Botswana, Tanzania and Senegal) which have seen growth in manufacturing employment, all of which are in sub-Saharan African, have failed to increase manufacturing employment to a sizeable proportion of employment, with manufacturing still contributing less than ten per cent of all employment in those countries.

Hallward-Driemeier and Nayyar (2017) evaluate the growth of this share of manufacturing value-added in global GDP, as well as that of services for a sample of 199 countries between 1997 and 2015. Manufacturing's share has decreased from approximately 19.7 per cent in 1997 to 15.3 per cent in 2015. At a country level, 107 countries out of this sample exhibited declining global manufacturing shares, a phenomenon which was reflected in decreasing

Figure 6
Share of Global Manufacturing Value Added in China, Global Regions, and High-income Countries



Source: Hallward-Driemeier and Nayyar (2017)

domestic shares of manufacturing in GDP. Of the 92 countries that showed rising global shares of manufacturing, approximately half were also experiencing declining domestic manufacturing shares. Surprisingly, China is included here, suggesting that a decline in manufacturing employment may follow in the future even in those countries in our sample for which we have observed increased employment.

In terms of growth in the services share in global GDP, there has been an increase between 1997 and 2015 from 62.8 per cent to 69 per cent, indicating that this is where employment is shifting towards, rather than to manufacturing. We explore this in more detail for our selected sample of developing countries below.

3.2.3 Shifts Toward Varied Services

Table 4 above shows that employment growth in the services sector has been greater than overall employment growth for all countries in the sample, and greater than the employment growth rate in the manufacturing sector for 16 of the 20 countries. Furthermore, for all 20 countries in the sample the number of jobs created in the services sector over the period has been higher than the number of jobs created in the manufacturing sector. It is clear that it is a shift towards services rather than towards manufacturing that defines structural transformation in developing countries today.

However, while this shift toward services is common across all countries in the sample, the nature of the services shift varies considerably across developing countries.

We distinguish here between two types of services: traditional services and modern services. Traditional services include retail and trade, government and community, and social and personal services. This is typically a lower-productivity sector and may include what is often termed the informal sector in developing countries.

Modern services, on the other hand, include transport, communications, storage, and financial and professional services. These services are typically more capital-intensive and high-productivity than the other services and are more likely to be located in the formal sector of a country's economy.

Table 5 shows the productivities of these two services sectors for the sample of developing countries in both the earliest and latest years for which we have data in the period of consideration and makes clear the productivity differences between the two sectors, with traditional services being less productive than modern services across all 20 countries in the sample.

This sectoral and productivity distinction is important as shifts to lower-productivity services will have different implications for inequality than shifts to high-productivity services.

Kuznets (1955) considered the implications of structural transformation with specific reference to the shift from agriculture to industry. Anand and Kanbur (1985) refer to this as the Kuznets process:

»The income distribution of the total population, in the simplest model, may therefore be viewed as a combination

Table 5
Relative Productivities In Traditional and Modern Services: 1990–2010

Country / Region	Earliest year		Latest year	
	Traditional	Modern	Traditional	Modern
Latin America and Caribbean	**0.89**	**1.90**	**0.72**	**1.44**
Argentina	0.73	1.11	0.6	1.19
Brazil	1.04	2.35	0.72	1.79
Bolivia	0.93	2.37	0.82	1.69
Chile	0.75	1.9	0.59	1.46
Colombia	0.78	1.72	0.75	1.37
Costa Rica	1.32	2.17	0.82	1.4
Mexico	0.89	2.82	0.77	2.02
Peru	0.98	1.98	0.84	1.34
Venezuela	0.55	0.66	0.57	0.74
Sub-Saharan Africa	**1.47**	**5.70**	**1.13**	**3.85**
Botswana	0.89	1.7	1.12	1.86
Ghana	0.91	5.54	0.79	4.41
Senegal	1.73	5.98	1.22	5.96
South Africa	2.8	13.76	1.7	5.28
Tanzania	1.02	1.53	0.8	1.74
Asia and Pacific	**1.27**	**2.51**	**0.93**	**2.22**
China	1.51	3.49	0.8	2.97
India	0.92	2.22	0.72	2.21
Indonesia	1.63	3.26	1.69	2.95
Malaysia	0.63	1.21	0.63	1.5
Philippines	0.92	2.04	0.8	1.88
Thailand	1.98	2.86	0.92	1.79
Average	**1.15**	**3.03**	**0.88**	**2.28**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

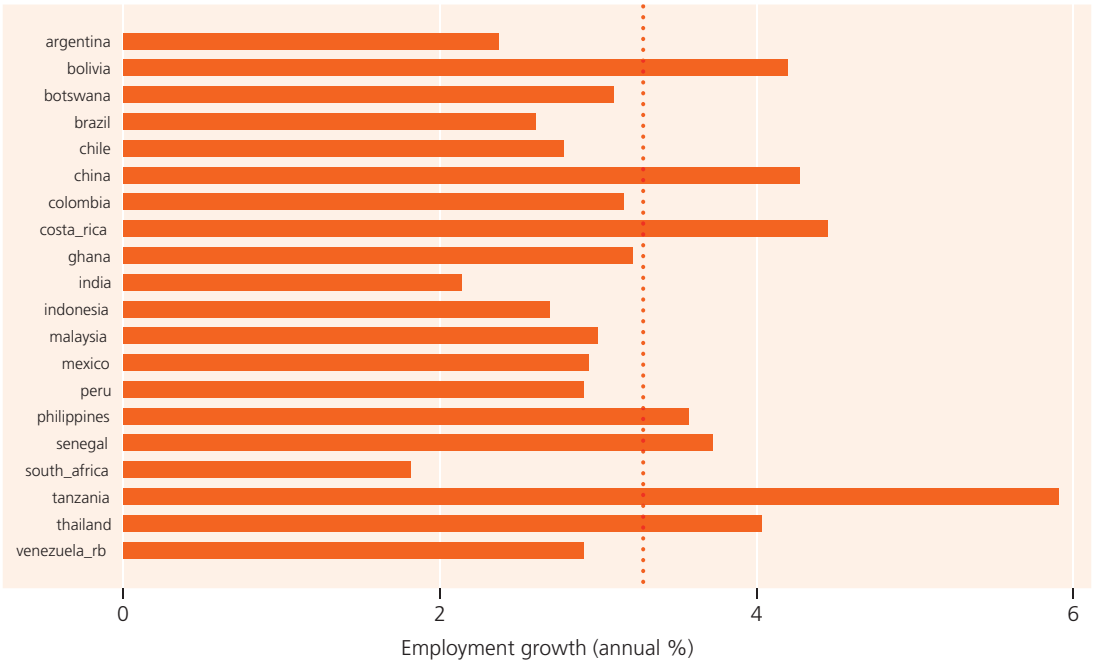
of the income distributions of the rural and of the urban populations. What little we know of the structures of these two component income distributions reveals that: (a) the average per capita income of the rural population is usually lower than that of the urban; (b) inequality in the percentage shares within the distribution for the rural population is somewhat narrower than in that for the urban population [……] Operating with this simple model, what conclusions do we reach? First, all other conditions being equal, the increasing weight of urban population means an increasing share for the more unequal of the two component distributions. Second, the relative difference in per capita income between the rural and urban populations […] .tends to widen [……] If this is so, inequality in the total income distribution should increase….« (Kuznets 1955: 7-8).

Kanbur (2017) notes that the »central analytical frame of the Kuznets exposition is that the national income distribution can be broken down into a population weighted sum of sectoral distributions.« Overall income distribution can be decomposed into the evolution of its components and the shift in populations of these components. Within-country inequality can be seen as a function of the inequality in each sector, the mean wage in each sector, and the population share of each sector.

While structural transformation does not seem to be happening in developing countries in the manner envisaged by Kuznets (1955), the underlying process that relates structural transformation to inequality considered by Kuznets is still valid and provides a framework in which we can think about how we expect the sectoral shift towards varying services can be expected to have an impact on inequality within countries.

We expect capital-intensive high-productivity services to be associated with higher wages and greater intra-sectoral inequality and low-productivity services to be associated with lower wages generally and lower intra-sectoral inequality. Based on this assumption, we may expect that a shift toward higher-productivity sectors would have the effect of increasing overall inequality through an increased weighting toward a higher-inequality sector as well as through an increase in the inter-sectoral wage gap between the high- and low-productivity sectors. The nature

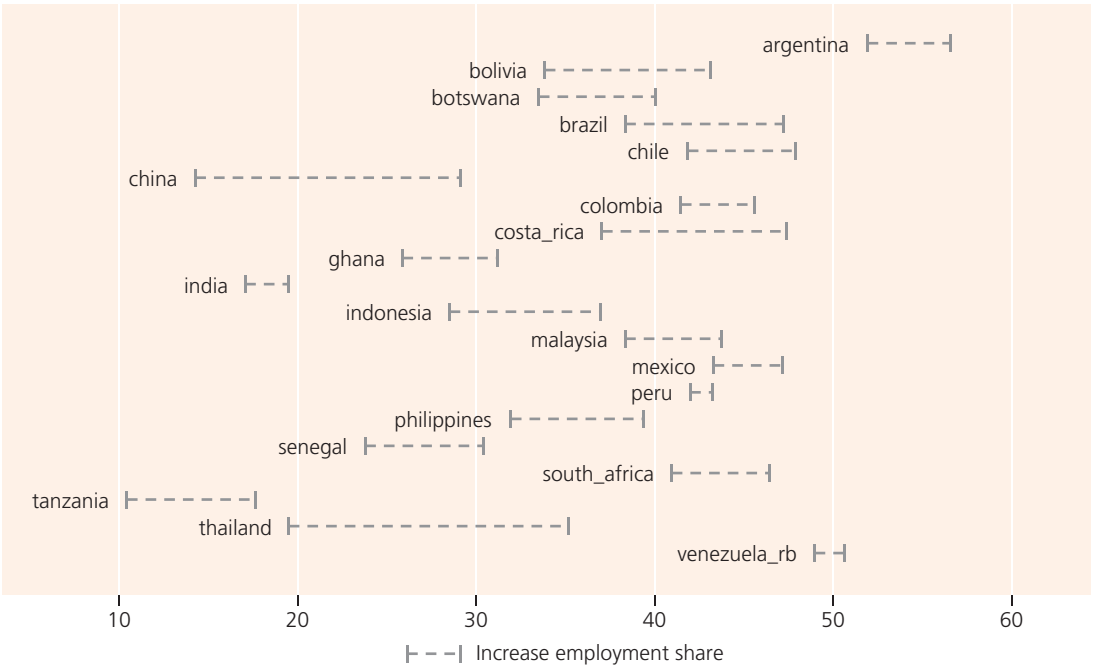
Figure 7
Traditional Services Employment Growth, Annualized: 1990 – 2010



Dotted line represents simple average for the sample of countries.

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Figure 8
Traditional Services Employment Share: 1990–2010



Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

of the services shift thus matters for inequality, as shifts to higher-productivity services will have different inequality implications from shifts to lower-productivity services.

We proceed now to consider the shifts toward both traditional and modern services across the sample.

TRADITIONAL SERVICES AS A DOMINANT SECTOR OF EMPLOYMENT

The disaggregated services data shows that the shift towards services has predominantly been a shift toward traditional services. As shown in Figure 7, in absolute terms, traditional service employment has increased in all of the

Table 6
Traditional Services Employment Growth by Services Type: 1990–2010

Country / Region	WRT		Government and CSP services	
	Annualized Growth	Contribution to Total Change in Traditional Services Employment	Annualized Growth	Contribution to Total Change in Traditional Services Employment
Latin America and Caribbean	**4.02**	**56 %**	**2.47**	**44 %**
Argentina	2.06	33 %	2.56	67 %
Brazil	7.60	69 %	2.16	31 %
Bolivia	2.61	43 %	2.60	57 %
Chile	3.54	56 %	2.19	44 %
Colombia	3.61	69 %	2.48	31 %
Costa Rica	5.99	59 %	3.29	41 %
Mexico	3.35	52 %	2.60	48 %
Peru	3.52	66 %	2.18	34 %
Venezuela	3.92	56 %	2.19	44 %
Sub-Saharan Africa	**4.38**	**62 %**	**2.89**	**38 %**
Botswana	6.88	77 %	1.13	23 %
Ghana	3.63	74 %	2.45	26 %
Senegal	4.65	78 %	2.19	22 %
South Africa	1.60	39 %	1.98	61 %
Tanzania	5.13	44 %	6.72	56 %
Asia and Pacific	**3.52**	**60 %**	**2.88**	**40 %**
China	3.10	27 %	4.98	73 %
India	3.63	87 %	0.56	13 %
Indonesia	3.14	64 %	2.15	36 %
Malaysia	2.90	52 %	3.10	48 %
Philippines	4.02	61 %	3.05	39 %
Thailand	4.35	70 %	3.46	30 %
All countries	**3.96**	**59 %**	**2.70**	**41 %**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

countries over the period. In percentage terms, the annual average increase over the period ranges between just under two per cent per annum (South Africa) to almost six per cent per year (Tanzania).

When compared to the overall increase in employment (see Table 18 in the Appendix), it can be seen that employment in traditional services has grown at a higher rate than overall employment in all countries in the sample, with the average traditional services employment growth to average total employment growth for the sample being 1.59. The highest ratio is seen in China (5.5) and the lowest in Venezuela (1.06).

Overall, as shown in Figure 8, this translates into an increasing share of traditional services in total employment across all of these developing countries, with the sector accounting for between 18 and 57 per cent of all employment across the sample in 2010 (see Table 25 in the Appendix). The sector accounts for under a fifth of employment in only two countries in the sample, India (19.5 per cent) and Tanzania (18 per cent). The sector accounts for half of all employment in two countries (Argentina and Venezuela) and for over 40 per cent for employment in a further ten countries in the sample.

The average increase in the employment share of traditional services across all countries over the period is 6.8 percentage points, with the biggest increase seen in China (14.9 percentage points) and the smallest in Peru (1.3 percentage points).

Next, we consider what the key component of the shift has been: a shift towards wholesale and retail trade (WRT), or towards government and social services.[3] The wholesale and retail sector typically accounts for much work done in the informal sector and thus a shift towards this services sector in particular may be indicative of a shift toward the

3 Government and Community, Social and Personal (CSP) services are typically considered to be two different services sectors. These have however been combined here as data is unavailable for CSP and government separately in most of the Latin American countries in our sample.

lower-productivity informal services sector. A shift towards low-productivity informal retail would of course have different implications for inequality than a shift toward government services, which, while possibly not highly productive, would be associated with higher wage levels.

Table 6 above shows the annualized growth of total employment in the disaggregated traditional services categories of wholesale and retail trade and government and community, social, and personal (CSP) services.

For 16 of the 20 countries, the wholesale and retail trade services sector has been growing faster than the Government and CSP services sectors, while for 15 of the countries, the wholesale and retail trade services sector has accounted for more than half of the increase in traditional services employment.

Across all regions, growth in trade outpaced growth in Government and CSP services, with the average contribution of wholesale and retail trade to the change in traditional services employment being highest, on average, for countries in sub-Saharan Africa (62 per cent). The average contribution of wholesale and retail trade to the change in traditional service employment is however around 60 per cent across all regions, and the sample as a whole.

This confirms that the shift towards traditional services in the sample of all countries has been driven predominantly by a shift in employment toward wholesale and retail trade in all of the countries, save for five countries in which Government and CSP services has been the greater contributor to the growth seen in traditional services employment. In China particularly, the shift to traditional services has been driven by the Government and CSP services sector rather than by wholesale and retail trade, with close to three-quarters of the change in employment due to an increase in Government and CSP services employment. In Argentina and South Africa too, more than three-fifths of the increase in traditional services employment is due to Government and CSP services rather than WRT. Brazil and Tanzania are the other two countries in which the increase in traditional services has been driven more by an increase in Government and CSP services than WRT.

While the data do not indicate whether these wholesale and retail services are part of the informal sector,[4] it is likely that for many of these countries the large share of the sector in total employment is, at least in part, due to a large informal sector in these countries.

Table 7 shows the importance of the informal sector across the developing world by showing the proportion of non-agricultural employment that has been estimated to be in the informal sector across different developing regions, as estimated by Vanek et al. (2014).

Table 7
Informality Rates by Region, 2014

Region	Share of Non-Agric. Employment (%)
Latin America and the Caribbean	51
Sub-Saharan Africa	66
South Asia	82
East and South-East Asia and Pacific	65
China*	33

*Estimates for urban China based on six cities: Fuzhou, Guangzhou, Shanghai, Shenyang, Wuhan and Xian.

Source: Vanek et al. 2014, authors' own calculations.

It is therefore likely that for many of the 15 countries in which the shift has been driven by WRT, the shift to traditional services has been driven by a shift toward to trade jobs in the informal sector rather the formal sector. This is because informal trade employment represents a relatively low-barrier opportunity for entry into the labor market where other opportunities do not exist. This is particularly the case in these countries due to limited growth in the manufacturing sector, which has consequently been unable to absorb the growing working-age population in these countries.

MODERN SERVICES: GROWTH IN CAPITAL-INTENSIVE HIGHER PRODUCTIVITY SERVICES

There has also been a shift toward modern services – that is, transport, communications, storage, and financial and professional services. As we noted, these services are typically higher-productivity than other services and more likely to be located in the formal sector.

Table 8 shows the ratio of services-sector growth to overall employment growth and shows that these services have been growing considerably faster than overall employment in all countries in the sample.

In 17 of the 20 countries, growth in employment in modern services has been even faster than in the other services category of traditional services. Across all regions, average employment growth in modern services has been higher than average employment growth in traditional services. Based on the regional averages, the difference in Asian countries however does not seem to be as high as in the other countries in the sample. This average result however seems to be driven by China, where traditional services growth has been much higher than modern services growth over the period. Brazil and Thailand are the only other two countries in which traditional service growth has outpaced modern services growth.

4 Definitions of what constitutes the informal sector vary, with criteria including firms' registration status, firm size, tax status, compliance with social security legislation, availability of accounting statements, and whether the business has a permanent physical address, amongst others (Fields 2011; Benjamin and Mbaye 2012; Oosthuizen et al. 2016). Irrespective of definition, however, it is clear that informality is a defining feature of many labor markets in developing countries.

Table 8
Employment Growth by Services Sector Type: 1990–2010

Country / Region	Annualized Total Employment Growth (%)	Ratio: Sectoral employment to total employment growth		
		Services	Traditional services	Modern services
Latin America and Caribbean	**2.48**	**1.44**	**1.28**	**2.01**
Argentina	1.95	1.37	1.22	2.05
Brazil	2.93	1.52	1.43	1.86
Bolivia	1.54	1.67	1.70	1.58
Chile	2.08	1.61	1.33	2.41
Colombia	2.66	1.33	1.19	1.83
Costa Rica	3.23	1.62	1.38	2.57
Mexico	2.47	1.36	1.19	2.20
Peru	2.75	1.26	1.06	1.93
Venezuela	2.74	1.20	1.06	1.67
Sub-Saharan Africa	**1.95**	**1.91**	**1.78**	**2.51**
Botswana	2.02	1.61	1.54	1.95
Ghana	1.92	1.76	1.67	2.31
Senegal	2.02	1.88	1.84	2.27
South Africa	1.09	2.01	1.66	3.15
Tanzania	2.68	2.28	2.21	2.88
Asia and Pacific	**1.56**	**2.59**	**2.56**	**2.66**
China	0.77	4.95	5.53	2.52
India	1.34	2.07	1.60	3.81
Indonesia	1.43	1.99	1.89	2.58
Malaysia	2.23	1.45	1.34	1.80
Philippines	2.43	1.59	1.47	2.06
Thailand	1.14	3.47	3.52	3.16
Average Annualized Growth	**2.07**	**3.56**	**3.29**	**4.64**
Average Sectoral to Total Employment Growth		**1.72**	**1.59**	**2.24**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

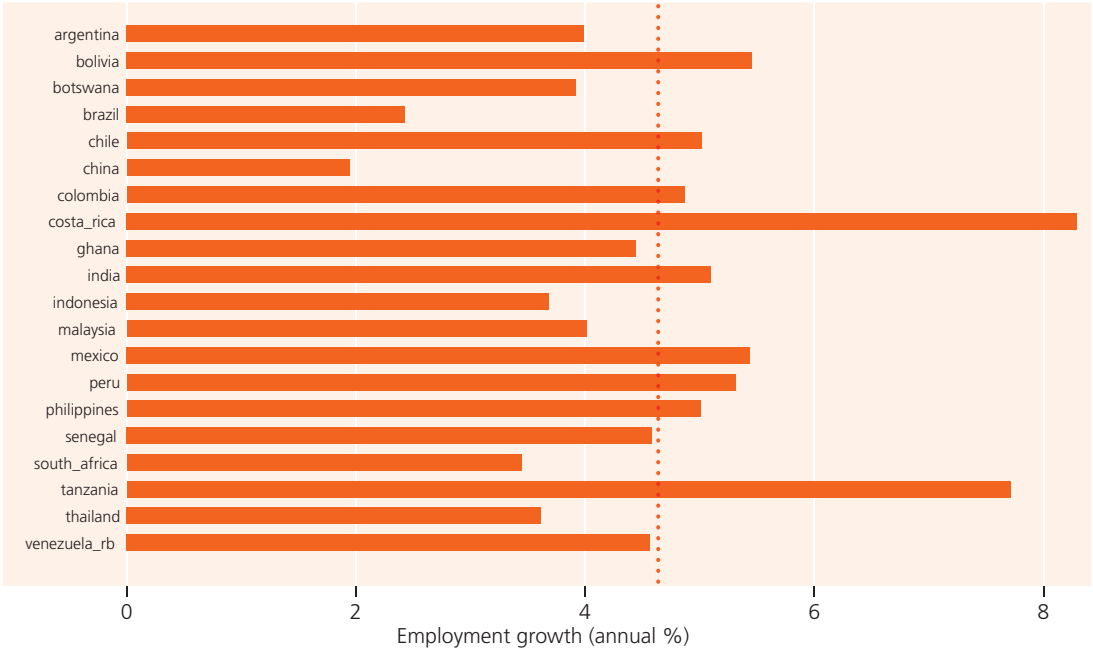
Figure 9 shows how the sector has grown over the period across the sample and makes clear that modern services employment has grown across all countries at considerable rates. On average across the sample it has grown 2.24 times faster than overall employment. In annualized percentage terms, the increase ranges between just under two per cent per annum for China to over eight per cent per annum for Chile.

The average change in employment share across the sample of countries is 4.2 percentage points, with the highest change observed in Costa Rica (eleven percentage points) and the lowest for China (1.2 percentage points). Despite high growth, however, the sector remains relatively small across the country sample. Figure 10 shows how the employment share of the sector has changed over the period, with it accounting for an average of 11.6 per cent of employment across all countries in the sample. While the sector's share of employment has increased in all countries, it contributes less than ten per cent of total employment in eight of the 20 countries, with its share being lowest (less than five per cent) in Tanzania, Senegal, and Ghana. It contributes the largest proportion of employment in Chile (21 per cent), Costa Rica (18 per cent), Venezuela (18 per cent), and South Africa (17 per cent).

Despite its relatively small contribution to employment in some of the countries in the sample, it is clear that the sector is growing fast across all countries and will become an increasingly important source of employment in the future across all developing countries.

There are thus two key trends that emerge from our consideration of the disaggregation of the services sector into traditional and modern services. The first is that the services shift in developing countries has been predominantly been led by a shift to traditional services (and in most cases wholesale and retail trade). Table 9 below shows this by indicating the contribution to the total change in services employment for the three services categories of WRT, Government and CSP services, and modern services In 14 of the 20 countries, WRT has contributed the highest

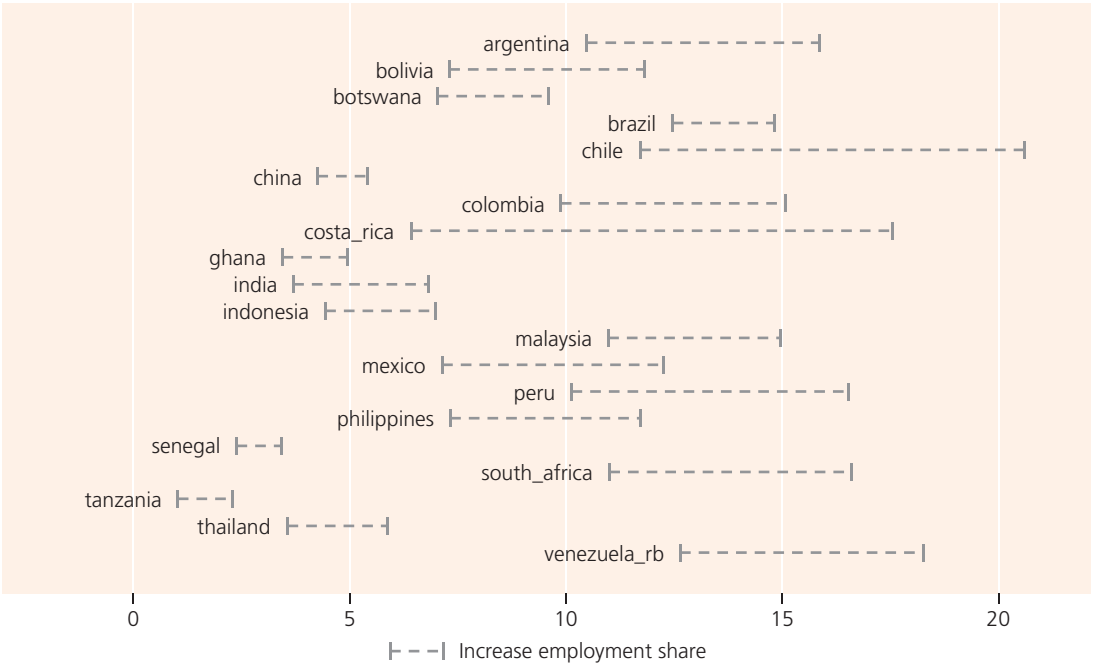
Figure 9
Modern Services Employment Growth, Annualized: 1990–2010



Dotted line represents simple average for the sample of countries.

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries 2015).

Figure 10
Modern Services Employment Share: 1990–2010



Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

share of the overall increase in services jobs. In five, the Government and CSP services sector was the highest contributor. It is only in Chile that the modern services sector is the highest contributor to the overall change in services employment. On average across the sample, WRT has contributed 43 per cent to the total services employment change, Government and CSP services 31 per cent, and modern services 26 per cent.

Table 9
Share of Total Services Employment Change by Services Type: 1990–2010

Country / Region	WRT	Modern	Gov+CSP services
Latin America and Caribbean	**39 %**	**31 %**	**31%**
Argentina	24 %	29 %	47%
Brazil	52 %	24 %	23%
Bolivia	33 %	23 %	44%
Chile	34 %	39 %	27%
Colombia	48 %	30 %	22%
Costa Rica	39 %	33 %	27%
Mexico	37 %	28 %	35%
Peru	42 %	36 %	22%
Venezuela	38 %	33 %	29%
Sub-Saharan Africa	**50 %**	**20 %**	**29%**
Botswana	60 %	22 %	18%
Ghana	61 %	17 %	22%
Senegal	69 %	12 %	19%
South Africa	38 %	13 %	49%
Tanzania	24 %	37 %	39%
Asia and Pacific	**45 %**	**23 %**	**32 %**
China	24 %	10 %	66 %
India	52 %	19 %	29 %
Indonesia	53 %	40 %	8 %
Malaysia	37 %	30 %	34 %
Philippines	44 %	27 %	29 %
Thailand	60 %	13 %	26 %
Average	**43 %**	**26 %**	**31 %**

Highlighted cells indicate highest contributing sector to services employment change.

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

The second key result is that, despite the highest share of services employment accruing to WRT, modern services employment is growing rapidly in our sample of developing countries. While the contribution to the total change in employment is currently lowest for modern services, its growth rate is highest out of the three services categories in 14 of the 20 countries (Table 10 below). This is an important nuance in our results, as it is suggestive of an important new feature of structural transformation in the global economy, namely that the modern services sector is becoming an increasingly important employing sector in developing countries. WRT employment is the fastest growing services employment sector in just five countries in the sample, while Government and CSP services is growing faster than the other services sectors only in China.

The services shift is thus currently predominantly a traditional services shift, in most cases to WRT, but also to Government and CSP services in some others, but rapid growth in modern services suggests that the services shift could actually be towards these higher-productivity services in the future.

In the next section, we consider whether there seems to be any relationship between these structural changes observed across the country sample and the inequality outcomes observed in these countries over the period. We start first by categorizing the sample of countries according to the sectoral shifts observed for these countries.

Table 10
Services Employment Growth by Services Type, . Annualized: 1990–2010

Country / Region	WRT	Modern	Gov+CSP services
Latin America and Caribbean	**4.02**	**5.04**	**2.47**
Argentina	2.06	3.99	2.56
Brazil	7.60	5.46	2.16
Bolivia	2.61	2.43	2.60
Chile	3.54	5.01	2.19
Colombia	3.61	4.87	2.48
Costa Rica	5.99	8.29	3.29
Mexico	3.35	5.44	2.60
Peru	3.52	5.31	2.18
Venezuela	3.92	4.57	2.19
Sub-Saharan Africa	**4.38**	**4.82**	**2.89**
Botswana	6.88	3.92	1.13
Ghana	3.63	4.44	2.45
Senegal	4.65	4.58	2.19
South Africa	5.13	7.71	6.72
Tanzania	1.60	3.44	1.98
Asia and Pacific	**3.52**	**3.89**	**2.89**
China	3.10	1.94	4.98
India	3.14	3.69	2.15
Indonesia	3.63	5.10	0.56
Malaysia	2.90	4.01	3.10
Philippines	4.02	5.01	3.05
Thailand	4.35	3.61	3.46
Average	**3.96**	**4.64**	**2.70**

Highlighted cells indicate fastest growing services sector.

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

4

STRUCTURAL TRANSFORMATION ACROSS DEVELOPING COUNTRIES

We have noted in the empirical overview, above, that labor has been shifting away from agriculture in all countries in our sample, but also away from manufacturing in some of these countries. We have also noted across the country sample, that labor has been shifting predominantly towards services, though with some countries displaying a shift toward manufacturing.[5]

The results indicate a clear break from the agriculture-manufacturing structural transformation and development model for developing countries. Shifts toward manufacturing are no longer the dominant form of structural transformation taking place across developing countries, with services employment now accounting for most of the increased employment in developing countries. Our sample seems to suggest, however, that the services shift means that structural transformation in developing countries is now more heterogeneous and unpredictable due to the different services sectors that drive structural transformation.

Based on the varied shifts observed in individual countries in the sample, we can categorize the countries according to the sectors from which employment has shifted away (agriculture only or agriculture and manufacturing) and the sectors towards which employment has shifted (traditional services only, a mix of manufacturing and varied services, and a mix of modern and traditional services). The categorization is shown in Table 11 below.

It is clear that we can broadly identify three groups within our sample of developing countries for which different types of structural change paths are being experienced:

1. The first group is one in which labor has shifted away from agriculture and predominantly toward traditional services, but for which agriculture remains an important component of the economy despite its declining share
2. The second is one in which employment has shifted away from agriculture toward both manufacturing and services, with the services shift, however, outweighing the manufacturing shift
3. The third and final group, which the majority of the countries in the developing country sample fall into, is one for which there has been shift not only away from agriculture but also from manufacturing. Again, for this group, as for the first two, the shift has been toward services – although the types of services shifts observed vary greatly among this group.

These three groups can be seen as representing three different deviations from the traditional industrialization growth path that Kuznets had considered when he found early evidence for an growth-inequality relationship. The first is one in which industrialization has not proceeded and traditional services and agriculture, rather than the manufacturing sector, continue to absorb labor. The second is one in which there has been some industrialization, but this has been outweighed by a shift toward services. The third is one in which there can be said to be deindustrialization along with a shift towards varied services.

Here we note that Hallward-Driemeier and Nayyar (2017) point to the global evidence suggesting a global process of deindustrialization, whereby the share of services in GDP globally is increasing relatively faster than the share of manufacturing output. However, we suggest a two-tiered approach to identifying countries as deindustrializers: The first group is one in which deindustrialization can be understood as services merely outpacing manufacturing growth, while manufacturing remains an important contributor to the economy and still shows increases in employment. The second is one in which manufacturing itself is declining along with agriculture, while services employment increases. While both groups of countries can be understood to be deindustrializing in the sense that services are becoming increasingly dominant, the wage distribution and hence inequality implications will differ between these two groups of deindustrializing countries as the one group exhibits a shift which is still somewhat in

5 We note here that we consider employment to be shifting toward a sector only if employment in that sector contributed more than ten per cent to the total change in employment over the period and if the sector's share of employment had grown and was sizeable (greater than ten per cent) in the latest period. This means that, for example, Senegal and Tanzania are not considered to be shifting toward manufacturing even though an increase in manufacturing is observed, as manufacturing still accounts for less than ten per cent of employment in those countries and did not generate considerable employment in these countries. The same applied for movements away from a sector – employment was not considered to be shifting away from manufacturing if the manufacturing base in that country was not well established and very small (less than five per cent of total employment) to start off with.

Table 11
Structural Change Across Developing Country Sample: 1990–2010

FROM / TO	Traditional services	Mix of manufacturing, modern and traditional services	Mix of modern and traditional services
Agriculture	Botswana, Ghana, Senegal, Tanzania	China, Thailand, India, Bolivia, Indonesia	
Agriculture and manufacturing			Brazil, Chile, Colombia, Costa Rica, Malaysia, Mexico, Peru, Philippines, South Africa, Argentina, Venezuela

Table 12
Sectoral Contributions to Total Change in Employment, Percentage share (1990–2010): Cohort One

	Botswana	Ghana	Senegal	Tanzania	Average
Agriculture	**35**	**26**	**16**	**55**	**33**
Manufacturing	**10**	**9**	**19**	**5**	**11**
Services	**72**	**58**	**56**	**35**	**55**
WRT	43	35	39	13	33
Gov+CSP services	13	13	11	17	14
Modern	16	10	6	5	9
Other sectors	**-17**	**7**	**10**	**4**	**1**
Other primary: Mining	-1	2	0	2	1
Other secondary: Utilities	-1	0	-2	1	0
Other secondary: Construction	-16	5	10	2	0
Total	**100**	**100**	**100**	**100**	**100**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

line with the traditional industrialization growth path, while the other exhibits a completely different structural change path in which manufacturing is in absolute decline.

Our expectation is that, all else being equal, should any growth-inequality relationship exist, it would be seen in different ways through different structural transformation paths, rather than in the same manner across all countries, as Kuznets had suggested. That is, we might expect to see different inequality outcomes depending on the type of structural transformation path seen in different countries. While Kuznets considered the case of a shift from low-productivity agriculture to higher-productivity manufacturing through industrialization, here we present and consider three different paths with differing economy-wide productivity and inequality implications.

We note upfront, however, that such an expectation would be warranted only if there were no other inequality pull- or push-factors that may have affected inequality in the countries other than structural transformation, such as any redistribution measures taken.

4.1 INEQUALITY OUTCOMES BY TYPES OF STRUCTURAL TRANSFORMATION

We now proceed to consider the inequality outcomes of these three cohorts and the nature of structural transformation in these identified structural transformation cohorts in more detail to see whether there seems to be any relationship between the structural and inequality changes observed for these country cohorts.

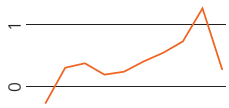
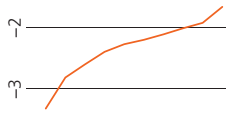
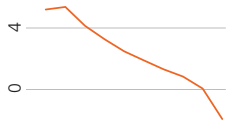
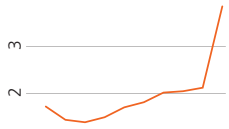
4.1.1 Cohort One: Agriculture To Traditional Services

This group of countries consists of countries for which manufacturing remains a relatively small contributor of jobs and there has been a shift predominantly from agriculture to traditional services (that is either, Government and CSP services, wholesale and retail trade, or a combination of these).

Table 12 above sets out the contribution of each of agriculture, manufacturing, traditional services (WRT and Government and CSP services), and modern services to the total change in employment in the countries over time.

While, in terms of employment growth, there has been a shift toward services in all of these countries, the countries seem to be at different stages of the transition. In Tanza-

Table 13
Growth Incidence Curve and Gini Changes (1990 – 2010): Cohort One

Country	Growth Incidence Curve (GIC)	GIC implied inequality change	Gini change
Botswana		Unclear	No change
Ghana		Unambiguously inequality increasing	Increase
Senegal		Unambiguously inequality decreasing	Decrease
Tanzania		Unambiguously inequality increasing	Increase

Source: Calculated using World Bank World Development Indicators data (World Bank, 2018).

nia, agriculture still produced more than half of all jobs (55 per cent) over the period (and in fact still accounts for three-quarters of all employment). In the other three countries, it is services, driven by WRT services, that have accounted for more than half of the change in employment over the period. In Botswana, services accounts for over 70 per cent of the total change, higher than in the other countries, and there is also a considerably higher proportion of jobs generated in the modern services sector, suggesting that the services shift may be at a later stage compared to those in the other three countries.

Table 13 shows the Growth Incidence Curves[6] and Gini coefficient changes for each country in the group and shows that we observe varied outcomes.

Tanzania, still predominantly agriculture-based and only beginning to shift toward traditional services, has seen higher per capita growth for the richest in the country and an increase in its Gini coefficient. There seem to be no major differences in income growth rates at the lower end of the distribution, with a slight decline for the second and third deciles and then a slight increase for the fourth and fifth deciles before income gains increase considerably. This is consistent with labor remaining in agriculture and shifting to lower-productivity services at the lower end. That is, there has been a lack of transformation that would exert any major inequality-increasing effect among wage income earners. However, the higher growth rates for the top deciles that drive the overall inequality change do not seem to be related to the economy's lack of structural change, as there has been no major shift to higher-productivity activities.

In the other three countries in the group, there has been more of a shift toward services, predominantly WRT, as we have already noted. However, we observe three very different inequality patterns for these countries. In Ghana, there has been an increase in inequality; in Botswana there has been no discernible change in overall inequality; and in Senegal there has been a decline in inequality.

In Ghana, the growth in per capita income has increased consistently across the income distribution. This is suggestive of an inequality effect arising from the shift to services, as this may be what is being reflected across the middle of the income distribution with incomes growing faster for those in services that are higher-productivity or better-paid in comparison to those still engaged in agricultural activity and who have shifted to lower-tier services.

In Botswana, however, there has been no overall change in the Gini coefficient over the period, although there has been varied income growth across the income distribution. Across the income distribution, we observe higher growth rates from the middle of the distribution up to the ninth decile, which may reflect changes in the structure of employment, with greater incomes for the few who have accessed jobs in modern services, Government and CSP services, and man-

6 The Growth Incidence Curve (GIC) represents graphically the annualized growth rate of per capita income for every decile of the income distribution over the period 1990 to 2010. Only the shapes of the curves are shown in these figures in the table, as this alone allow us to consider how the income distribution has shifted over the period. The full growth incidence curves for each country along with the growth rates on the y-axis can be found in the appendix.

Table 14
Sectoral Contributions to Total Change in Employment (1990–2010), Percentage share: Cohort Two

	China	Thailand	India	Bolivia	Indonesia	Average
Agriculture	**-97**	**-55**	**6**	**-8**	**2**	**-30**
Manufacturing	**44**	**30**	**21**	**20**	**14**	**26**
Services	**127**	**108**	**48**	**73**	**76**	**86**
WRT	31	65	25	38	40	40
Gov+CSP services	84	28	4	17	22	31
Modern	12	15	19	18	14	16
Other sectors	**27**	**17**	**24**	**15**	**9**	**18**
Other primary: Mining	-1	0	0	-1	1	0
Other secondary: Utilities	2	0	0	0	0	0
Other secondary: Construction	27	17	24	16	7	18
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

ufacturing. Similar growth rates between the second to fifth deciles may also be reflective of the shift from low-productivity agriculture to low-productivity services not having a major impact on inequality in this part of the distribution. There has also been a considerable decline in construction employment in Botswana, which may be reflected in the distribution here.

For Senegal, however, there has been a decline in inequality, with the highest income growth being seen in the lowest deciles of the income distribution. This does not seem to be related to the structural change happening in the country as there has been a shift to services (and WRT particularly) here as well. We would again not expect this change to alter the income distribution in a major way, particularly at the lower end of the distribution, as labor shifts from one low-productivity activity to another. In this regard, we note that Bigsten (2016) has noted that, for many African countries in particular, the current pattern of structural change in Africa is such that it does not contribute much to income distribution change because it takes the form of people leaving low-productivity activities to move into other low-productivity and low-paid activities. There is thus actually no reason to expect that the type of structural shift observed for this cohort would result in any considerable change in income distribution, and hence in inequality.

Overall, for this group of countries we can not conclude that there seems to be any particular general relationship between the structural shift to services and observed changes in inequality. While in Tanzania, Ghana, and Botswana, we can identify some shifts in income distribution that may be linked to the structural changes in those countries, for Senegal there seems to be no link at all. Furthermore, for the three countries in this group where we can link differing growth rates along the income distribution to structural changes in those countries, we observe very different inequality changes, both overall and across the income distribution. We also note that shifts between agriculture, a low-productivity activity, and other low-productivity traditional services activities, as is the case for countries in this cohort, would not be expected to lead to any particular income distribution changes given the nature of the shift.

4.1.2 Cohort Two: Agriculture To Manufacturing and Services

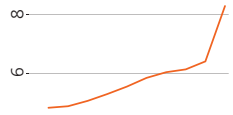
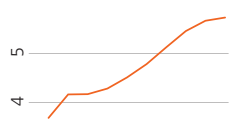
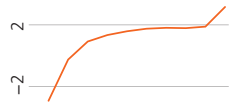
This group of countries has exhibited a shift away from agriculture toward a mix of manufacturing and services. There is of course, much heterogeneity between the countries as far as this mix is concerned.

Table 14 shows the contributions of different sectors to the overall change in employment in countries in this cohort over time. On average, the cohort displays an absolute decline in agricultural employment, a predominant shift to services, and a secondary shift to manufacturing. Mining and utilities employment have seen no major changes across this cohort. Construction, however, has contributed between seven and 27 per cent to the overall change in employment across these countries.

While the services shift is dominant, with services accounting for 86 per cent, on average, of the total change in employment for the cohort, the composition of this shift varies considerably across the group. For Thailand, Bolivia, and Indonesia, WRT has contributed the most to employment. For China, the Government and CSP services have been driving the services shift. For India, the shift has been driven by both trade and modern services.

Table 15 shows the Growth Incidence Curves and Gini coefficient changes for each country in the group. Despite the varying nature of the dominant services shift, four of five countries in this group have seen an overall increase in inequality, suggesting that a shift from agriculture to a mix of manufacturing and varied services (with the services shift being more dominant) is associated with an increase in inequality.

Table 15
Growth Incidence Curve and Gini Changes (1990–2010): Cohort Two

Country	Growth Incidence Curve (GIC)	GIC implied inequality change	Nature of services shift	Gini change
Increase in inequality				
China		Unambiguously inequality increasing	Dominant shift to Gov+CSP services; Services shift significantly outweighs manufacturing shift	Increase
India		Unambiguously inequality increasing	Mix of WRT and Modern services; Services shift outweighs (but not as significantly as in the other countries) manufacturing shift	Increase
Indonesia		Unambiguously inequality increasing	Dominant shift to WRT: Services shift significantly outweighs manufacturing shift	Increase
Bolivia		Unambiguously inequality increasing	Dominant shift to WRT; Services shift significantly outweighs manufacturing shift	Increase
Decrease in inequality				
Thailand		Unclear	Dominant shift to WRT; Services shift significantly outweighs manufacturing shift	Decrease

Source: Calculated using World Bank World Development Indicators data (World Bank, 2018).

We note however the varying GICs for the four countries for which the increase in inequality is observed. China and India have GICs that are almost the same in terms of how different income deciles have benefited from growth in those countries, with the richest deciles having higher growth rates in both countries. This is despite the fact that the services shift has been very different for the two countries. As we noted, China's services rise has been driven by an increase in Government and CSP services while India's has been driven by a mix of WRT and modern services. Further the services shift has not been as dominant for India as it has been for China, and India has not seen an absolute reduction in agricultural employment, as China has. Overall, however, the income distribution outcomes observed for both are consistent with shifts to higher-productivity activities in an economy.

There is also an unambiguous increase in inequality for Indonesia, with income growth rates increasing all along the income distribution, apart from between the second and fourth deciles, where growth rates are similar. For Bolivia, there is also an increase in inequality. However, the increase in income growth rates is more moderate at the middle of the distribution, with similar growth rates being observed between the fifth and ninth deciles. Both countries, however, have GICs that are consistent with sectoral shifts away from agriculture and toward higher-productivity activities.

Thailand is, however, a complete outlier in this group of countries. There is a sharp increase in income growth for the second decile, but then a consistently lower income growth rate for each subsequent decile, resulting in lower inequality in the country. It seems that this particular income distribution pattern is not related to structural change, as we would expect Thailand to exhibit similar inequality changes to those in the other countries in this group due to the similar changes in employment over the period.

Inequality outcomes observed for this group of countries thus suggest that, overall, we can broadly expect countries exhibiting a shift from agriculture to a mix of manufacturing and varied services to experience an increase in inequality as employment shifts from a low-productivity activity to a variety of different and mostly higher-productivity activities. This, of course, is in line with what Kuznets had explained for the simple case of a shift from low-productivity agriculture to higher-productivity manufacturing.

Table 16
Sectoral Contributions to Total Change in Employment (1990 – 2010), Percentage share: Cohort Three

	Brazil	Chile	Colombia	Costa Rica	Malaysia	Mexico	Peru	Philip-pines	South Africa	Argentina	Venezuela	Average
Agriculture	**-8**	**-8**	**5**	**0**	**-5**	**2**	**11**	**18**	**-11**	**-3**	**3**	**0**
Manufacturing	**7**	**-2**	**8**	**5**	**11**	**9**	**4**	**4**	**5**	**0**	**3**	**5**
Services	**94**	**98**	**75**	**87**	**78**	**75**	**70**	**72**	**115**	**93**	**79**	**85**
WRT	31	34	36	34	29	28	30	32	28	22	30	30
Gov+CSP services	41	26	16	24	26	26	15	21	44	44	23	28
Modern	22	38	23	29	23	21	25	19	43	27	26	27
Other sectors	**7**	**11**	**13**	**7**	**15**	**14**	**14**	**7**	**-9**	**10**	**15**	**10**
Other primary: Mining	0	-1	4	0	1	0	1	0	-21	1	6	-1
Other secondary: Utilities	0	1	0	3	1	0	1	0	-2	0	0	0
Other secondary: Construction	7	12	9	3	13	14	12	6	14	9	10	10
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

4.1.3 Cohort Three: Agriculture-Manufacturing To Services

This group of countries has exhibited a shift away from both agriculture and manufacturing toward a mixture of services in output and employment terms. There is, however, again much heterogeneity among these countries with respect to the nature of the services shift.

Table 16 shows the contribution of the different sectors to the overall change in employment in countries in this cohort over time. On average, services account for 85 per cent of the total change in employment for this group of countries. Construction (ten per cent average across all countries) and manufacturing (five per cent average across all countries) make up the remainder of the change in employment for this group.

The WRT services sector is the largest contributor to employment change in seven of the 11 countries. Government and CSP services is the largest contributor for Brazil, South Africa, and Argentina. The modern services sector is the largest contributor to the services employment change only in the case of Chile. Overall, though, for most countries in the group the services shift is well-balanced, with each of these three services sectors accounting for at least 15 per cent of the total change in employment in all countries in the group.

As we have noted, differing services shifts can be expected to have differing wage distribution and hence income-inequality effects. For this group of countries, the income distribution outcomes expected from structural shifts is further complicated by the fact that there is a shift not only away from agriculture but also from manufacturing. This means that there are shifts happening between a number of different sectors, all with different productivities and wages, for this cohort of countries, making it difficult to generalize any expected inequality effect.

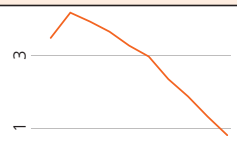
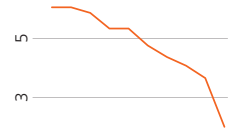
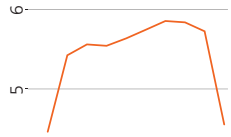
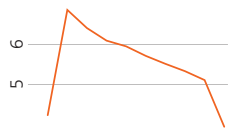
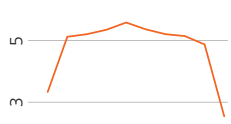
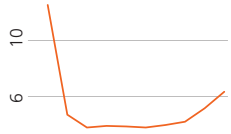
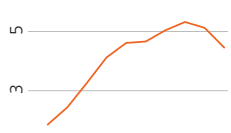
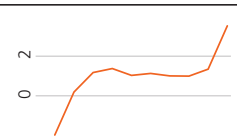
Table 17 below shows the Growth Incidence Curves and Gini coefficient changes for each country in the group, and reflects what we have noted above. Inequality outcomes for this group of countries vary considerably.

Five of the eleven countries experienced an overall decline in inequality over the period, three experienced an overall increase, and there was no overall change in inequality, but there were differing income growth rates, across the income distribution in three countries.

For those economies in which inequality declined over the period, in four of these five countries the change in inequality was unambiguously a decline, with the lowest deciles in each of these countries experiencing income growth higher than the income growth in richer deciles. These four countries are Brazil, Chile, Mexico, and Venezuela, all countries in Latin America. However, the fifth country in which there has been a decline, Malaysia, displays a vastly different GIC. While overall inequality has declined due to the lower growth at the very top end, within the middle eight deciles there has been an increase in inequality, with higher-deciles income having grown at a higher rate than in the lower deciles.

It is not clear that the overall decline in inequality in any of these five countries is directly linked to the structural shifts observed in them. It is more likely that redistributive measures in these countries explain the decline in inequality.

Table 17
Growth Incidence Curve and Gini Changes (1990–2010): Cohort Three

Country	Growth Incidence Curve (GIC)	GIC implied inequality change	Nature of services shift	Gini change
Decrease in inequality				
Brazil		Unambiguously inequality decreasing	Gov+CSP services shift more dominant than WRT shift. Modern services least dominant.	Decrease
Chile		Unambiguously inequality decreasing	Similar shifts to WRT and Modern services. Greatest shift to modern services. Gov+CSP services shift significant as well	Decrease
Mexico		Unambiguously inequality decreasing	Similar shifts to WRT and Gov+CSP services. Lowest shift to modern services but shift still significant.	Decrease
Venezuela		Unambiguously inequality decreasing	Similar shifts to WRT, modern services and Gov+CSP services.	Decrease
Malaysia		Unclear	Similar shifts to WRT, Gov+CSP services and modern services.	Decrease
No (overall) change in inequality				
Colombia		Unclear	Dominant shift to WRT. Significant shift to modern services as well.	No change
Philippines		Unclear	Dominant shift to WRT. Similar shifts to Gov+CSP services and modern services.	No change
Argentina		Unclear	Dominant shift to Gov+CSP services. Similar shifts to WRT and modern services.	No change
Increase in income inequality				
Costa Rica		Unclear	WRT shift most dominant. Significant shifts to Modern services and Gov+CSP services as well.	Increase
Peru		Inequality increasing	Significant shifts to WRT and modern services.	Increase
South Africa		Unambiguously inequality increasing	Shifts to modern services and Gov+CSP services dominant. Significant shift to WRT as well.	Increase

Source: Calculated using World Bank World Development Indicators data (World Bank, 2018).

Table 16 shows that the services contribution to the total change in employment over the period is not overwhelmingly dominated by any one type of service activity for these countries. There is thus no one services shift which would be expected to have the greatest impact on wage redistribution, and which would ultimately be seen in the income distribution over time. In other words, the shift to varied services may not be inducing any significant overall inequality effects as employment shifts from a mix of low- and high-productivity activities (agriculture and manufacturing) to a further mix of low- and high-productivity services that is not dominated by any activity in particular. This would suggest that any overall change in inequality for these countries would be driven by other redistributive measures as varied sectoral shifts exert differing effects on the wage distribution that together do not result in any identifiable shift in the income distribution.

In three countries there has been an overall increase in inequality as measured by the Gini coefficient: South Africa, Peru, and Costa Rica. The GICs differ considerably among these three, and thus do not suggest any generalizable relationship between the type of structural change and income-inequality changes. We can, however, identify certain income distribution changes in all three of these countries that are consistent with the structural changes observed in them.

For Peru, the initial increase in income growth at the lower deciles may be related to a shift to WRT if WRT is higher-productivity than agriculture in the country, while the greater income growth seen at the higher end of the distribution may be due, in part at least, to the shift to higher-productivity services. The similar growth rates at the middle of the distribution may represent shifts between manufacturing and similar-productivity services. In South Africa, the services shift has been driven by a shift to modern services and Government and CSP services more than a shift to WRT. The middle of the distribution for which income growth rates are similar may represent a shift towards these as services with similar wages compensate for the decline in employment in manufacturing. The higher growth at the top end of the distribution would be consistent with a shift to modern services. The higher growth for the poorest decile in Costa Rica is likely related to another redistributive measure rather than structural change, given that the services shift is driven by WRT, which would not be expected to result in greater income growth for the poorest in the country. The higher growth at the top end of the distribution may, however, be related to the increase in modern services employment in the country.

The three remaining countries (Argentina, the Philippines, and Colombia) show no overall change in Gini coefficient over the period. There are dominant shifts to WRT in the Philippines and Colombia and a dominant shift to Government and CSP services in Argentina. There are also secondary shifts to the other services sectors in all three of these countries. It is not clear, however, that these structural shifts are represented in the inequality outcomes observed. The lack of overall inequality change may be the result of the different wage-distribution-altering effects that result from varied shifts between different productivity sectors. We cannot, however, be certain that this is what is being observed in the GICs and overall inequality changes in these three countries.

Ultimately, the above results lead to the clear conclusion that there is no generalizable link between inequality and structural transformation in those economies where there has been a shift from an agriculture-manufacturing GDP mix to one more dominated by various segments of the services sector. Within the subsample of eleven countries, five have experienced a decline in inequality, three have seen inequality remain unchanged overall, and three have seen an increase in inequality. These differing results can be attributed, once again, to three key factors: the nature of the services shift, the stage of transformation a country is in (whether it is at the beginning of the services shift or in the more developed services shift phase), and finally the impact of complementary economic factors, most notably redistributive fiscal policies, on the country's distribution of income.

However, this is not to say there is no link between structural transformation and inequality. We have noted that changes across the income distribution are broadly consistent with the specific structural changes observed in many of the countries, and when there are no other major income-affecting factors in any country, a specific structural change can be expected to produce a particular change in inequality. However, the specific nature of the services shift is important in this regard and makes it difficult to generalize any specific structural change-inequality relationship for this group of countries, due to the varied mix of services in these countries where there is a shift to services.

Given the above, we have considered inequality changes for each of the three structural transformation groups of countries we have identified. Based on our descriptive analysis, we find the following with respect to whether there seems to be any identifiable relationship between structural transformation and inequality: Firstly, an increase in inequality is likely (but not certain) where there is a shift is from agriculture to both manufacturing and services (or more generally where there is a shift from a low-productivity activities to predominantly higher-productivity activities). Secondly, where the country-level shift is from manufacturing and agriculture to varied services it is difficult to derive common distributional results. We argue that this is due to three factors: the nature of the services shift; the stage of transformation a country is in; and other determinants which have a bearing on the income distribution. The specific sectoral mix in the shift to services, in particular, thus renders it difficult derive a common structural change:inequality relationship for this group of countries. Thirdly, it is not clear that any specific change in inequality should be observed where the extent of structural transformation in a country has been predominantly a shift from agriculture to traditional services. In particular,

where the shift is to the informal services sector, it is not expected that the shift should result in any major changes in inequality, because the shift is between low-productivity activities – a result echoed in the work of Bigsten (2016) for Africa.

Ultimately then, the varied nature of structural transformation across all countries and the relevant country-specific redistributive factors make it difficult to derive a clear and common relationship between structural change and inequality across the sample of developing countries presented here. This is exemplified by the varied inequality outcomes observed for the four countries in our first structural change cohort, Thailand as an outlier in the second group, and the different inequality changes for the third group of countries that we considered.

We emphasize, however, that, despite the lack of a generalizable relationship between structural transformation and inequality changes in developing countries, structural changes in a country do have an impact on inequality in that country. This is evidenced by the changes along income distributions that align with specific structural changes observed. Our results, though, do allude to the fact that an increase in inequality can be expected in countries which exhibit unilateral shifts from low-productivity activities to high-productivity activities and where there are no other redistributive interventions in the country. This, of course, is in line with what Kuznets suggested when he explained the initial increase in inequality being due to a shift from low-productivity agriculture to high-productivity manufacturing. However, it is unclear in our analysis here whether the decline in inequality will materialize in those countries where higher productivity activities include varied services, and, if so, what the extent of this decline will be.

5

CONCLUSION

In this paper we have concerned ourselves with whether, in the absence of a growth-inequality relationship in developing countries, there may be a relationship between the structural sources of growth and inequality in developing countries.

Kuznets' proposition was that growth would lead to increasing and then declining inequality (Kuznets, 1955) in the case of a specific type of structural transformation that occurred as a country industrialized with labor shifting away from lower-productivity agriculture to higher-productivity manufacturing. We proceeded to consider what type of structural changes were taking place in developing countries with the aim of considering how inequality outcomes were related to these changes that are not necessarily in line with a linear agriculture-industrialization growth path.

We looked at how structural change has occurred across a sample of 20 developing countries over the period between 1990 and 2010. We observed a number of key patterns. First, as expected, there has been a shift away from agriculture. However, there also has been a shift away from manufacturing in many countries where there was a manufacturing base in 1990, as well as a lack of major shifts in manufacturing in most countries. China is the only real exception to this. There has however been a shift towards employment in services, both traditional and modern – a distinction which is important due to the varying productivities between sectors and thus a variation in potential effects on inequality associated with shifts to these very different services sectors. The traditional services sector (comprising wholesale and retail trade, government, and community and social services) accounts for the bulk of employment in most countries. While not as substantial as traditional services, there is also a shift towards modern services, typically higher-productivity transport, storage, financial, and other professional services. In all our sampled countries there has therefore been substantial growth in employment in the sector. However, the sector is still relatively small across most countries in comparison to the traditional services sector.

A majority of the countries show the same broad trend: a shift away from agriculture and manufacturing toward a mix of traditional and modern services. Only five countries in the sample show a considerable shift toward manufacturing over this period: China, India, Indonesia, Thailand, and Bolivia. In China and Thailand, this goes along mainly with a shift toward traditional services, while in India, Indonesia, and Bolivia there also appear to be shifts towards modern services. Four African countries in the sample exhibit a shift toward traditional services only, as although modern service employment is growing, this sector remains small in these countries and manufacturing, too, remains a relatively small contributor of jobs to these countries.

Overall, the overview of structural change across the sample suggests that the shift from agriculture towards manufacturing that had previously been experienced in the more developed countries – and which had certain expected inequality results – is not one that is being experienced by developing countries today. Rather, there seems to be a shift toward varying types of services both for countries in which there has traditionally been limited manufacturing and countries that have established some form of a manufacturing base.

In this regard, we proceeded to group the sample of countries into three groups based on the structural changes that have occurred in these countries and considered the inequality outcomes for these groups. The first group is one in which labor has shifted predominantly away from agriculture and toward traditional services, but for which agriculture remains an important component of the economy despite its declining share. The second is one in which employment has shifted away from agriculture toward both manufacturing and services, with the services shift, however, outweighing the manufacturing shift. The final group, which the majority of the countries in the sample fall into, is one for which there has been a shift not only away from agriculture but also away from manufacturing. For this group, as for the first two, the shift has been toward services, although the types of services shifts observed vary greatly among this group.

For the first group of four countries, we cannot conclude that any particular general relationship between the structural shift and changes in inequality has been observed. While in Tanzania, Ghana, and Botswana, we can identify some shifts along the income distribution which may be

linked to the structural changes in those countries, in Senegal there seems to be no link at all. Further, for the three countries in this group where we can link differing growth rates along the distribution to structural changes in those countries, we observe very different inequality changes, both overall and across the income distribution. This may be the result of these countries being at different stages of the structural transformation, despite undergoing similar changes, as well as other factors that affect the income distribution which are unrelated to the structural change. Furthermore, the shift to traditional services that are predominantly located in the informal sector in most countries in this category is not one that should be expected to produce any major inequality effects, as it represents a shift merely between different low-productivity activities.

For the second group of countries in which agriculture is shifting to a mix of manufacturing and services, however, there seems to be more evidence of a link between the structural shift and inequality. Inequality outcomes observed for this group of countries thus suggest that, overall, we can broadly expect countries exhibiting this shift to experience an increase in inequality as employment shifts from a low-productivity activity to a variety of different and mostly higher-productivity activities. This is in line with the initial inequality change that Kuznets had explained for the simple case of a shift from low-productivity agriculture to higher-productivity manufacturing. The outlying case of Thailand, however, cautions us against generalizing based on structural shifts alone and re-emphasizes that other forces may have greater impacts on inequality than growth and the structural changes associated with that growth.

Finally, for the third group within the subsample of eleven countries, four have experienced an decline in inequality, in three inequality has remained unchanged overall, and in another three there has been an increase in inequality. The lack of one specific inequality change pattern for this group of countries, which is perhaps representative of the path most developing countries will take in the future as services increase in importance, can be attributed again to three key factors: the nature of the services shift, the stage of transformation a country is in, and non-sectoral factors which have a bearing on the income distribution.

Overall, these findings support the available evidence that there seems to be no robust relationship between growth and inequality, as growth does not occur in the same manner in all countries – growth is instead a result of country-specific structural transformation processes (as well as other redistributive measures that may be in place in any particular country) that interact to produce country-specific inequality results. Therefore, there is no reason to expect that a generalized growth-inequality relationship exists for developing countries in which such varied underlying structural change is taking place.

Finally, we emphasize the key role that the nature of the services shift plays in determining how any employment shift will impact inequality. Where a shift occurs from agriculture to predominantly higher-productivity services or from agriculture to a mix of manufacturing and predominantly higher-productivity services the initial impact of such a shift is clear: inequality should rise, all else being equal. However, where the shift is from agriculture and manufacturing to a varied mix of low-productivity and high-productivity services in which no one services sector is dominant, it is not clear that there would be any major income-distribution-altering effects on an economy as employment shifts between activities of varied productivities rather than from low-productivity activities to high-productivity activities, as the term »structural transformation« was traditionally understood.

In line with this, the extent to which we can make any generalization regarding a structural change-growth-inequality relationship is limited to the case where employment shifts predominantly from agriculture to higher-productivity activities (either manufacturing, high-productivity services, or a mix of these). In this case, an initial increase in inequality is likely, provided no major income redistribution policies are in place to temper the wage redistributing effect of the shift across the distribution. However, even in this case, it is unclear that we will see an eventual decline in inequality as per Kuznets's growth-inequality proposition, particularly where a shift to lower-productivity services also exists, thus tempering the inequality effect of the shift to high-productivity activities.

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APPENDIX ONE

Employment Growth across All Sectors (1990–2010) by Country

Table 18
Annualized Employment Growth Rate (%), by Sector: 1990–2010

	Argentina	Bolivia	Botswana	Brazil	Chile	China	Colombia	Costa Rica	Ghana	India	Indonesia
Primary	**-0.38**	**-0.81**	**1.68**	**-0.56**	**-1.23**	**-1.54**	**0.90**	**0.04**	**1.02**	**0.15**	**0.09**
Agriculture	-0.65	-0.74	1.84	-0.56	-1.22	-1.57	0.55	0.01	0.97	0.15	0.06
Mining	4.27	-2.07	-0.79	-0.62	-1.30	-0.76	4.97	4.82	3.51	0.17	1.50
Secondary	**0.78**	**6.00**	**-1.05**	**1.03**	**1.01**	**2.39**	**2.48**	**1.66**	**1.98**	**3.78**	**1.81**
Manufacturing	0.03	5.35	3.59	0.80	-0.24	1.99	1.69	1.17	1.52	2.50	1.64
Utilities	0.96	4.50	-2.24	-0.54	2.01	2.92	1.63	5.62	1.41	0.34	-0.15
Construction	2.27	7.23	-5.04	1.59	3.11	3.50	4.23	1.64	4.78	7.33	2.37
Tertiary	**2.68**	**4.44**	**3.25**	**2.56**	**3.35**	**3.82**	**3.53**	**5.22**	**3.37**	**2.77**	**2.84**
Traditional	2.37	4.19	3.10	2.61	2.78	4.27	3.16	4.45	3.22	2.14	2.70
Trade	2.06	7.60	6.88	2.61	3.54	3.10	3.61	5.99	3.63	3.63	3.14
Gov+CSP serv.	2.56	2.16	1.13	2.60	2.19	4.98	2.48	3.29	2.45	0.56	2.15
Modern	3.99	5.46	3.92	2.43	5.01	1.94	4.87	8.29	4.44	5.10	3.69
Transport	2.65	4.56	3.66	2.36	2.42	1.70	4.74	7.26	3.13	4.13	3.04
Finance	5.03	7.89	4.06	2.46	7.30	2.71	4.96	9.04	7.78	8.04	6.17
Total employment growth	**1.95**	**2.93**	**2.02**	**1.54**	**2.08**	**0.77**	**2.66**	**3.23**	**1.92**	**1.34**	**1.43**

	Malaysia	Mexico	Peru	Philippines	Senegal	South Africa	Tanzania	Thailand	Venezuela	Average
Primary	**-0.49**	**0.29**	**1.28**	**1.11**	**0.57**	**-1.57**	**1.90**	**-1.26**	**1.85**	**0.15**
Agriculture	-0.62	0.32	1.21	1.11	0.56	-0.66	1.84	-1.26	0.86	0.11
Mining	3.72	-0.68	2.72	0.76	7.03	-5.53	7.76	-1.34	6.87	1.75
Secondary	**2.02**	**2.13**	**2.80**	**1.66**	**5.30**	**0.90**	**6.49**	**3.22**	**1.61**	**2.40**
Manufacturing	1.31	1.25	1.10	0.96	5.20	0.40	6.63	2.92	0.58	2.02
Utilities	2.79	-1.08	3.99	1.69	-10.15	-2.21	9.66	0.92	-0.51	1.08
Construction	3.60	4.19	6.17	2.96	7.91	2.30	5.49	4.12	3.43	3.66
Tertiary	**3.24**	**3.37**	**3.47**	**3.87**	**3.81**	**2.20**	**6.09**	**3.97**	**3.29**	**3.56**
Traditional	3.00	2.94	2.91	3.57	3.73	1.81	5.91	4.03	2.91	3.29
Trade	2.90	3.35	3.52	4.02	4.65	1.60	5.13	4.35	3.92	3.96
Gov+CSP serv.	3.10	2.60	2.18	3.05	2.19	1.98	6.72	3.46	2.19	2.70
Modern	4.01	5.44	5.31	5.01	4.58	3.44	7.71	3.61	4.57	4.64
Transport	3.27	2.62	5.22	4.69	4.29	1.30	7.23	2.00	5.39	3.78
Finance	4.61	8.48	5.43	5.66	6.80	4.84	9.06	6.01	3.55	5.99
Total employment growth	**2.23**	**2.47**	**2.75**	**2.43**	**2.02**	**1.09**	**2.68**	**1.14**	**2.74**	**2.07**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 19
Ratio of Sectoral to Total Employment Growth, by Sector: 1990–2010

	Argentina	Bolivia	Botswana	Brazil	Chile	China	Colombia	Costa Rica	Ghana	India	Indonesia
Primary	**-0.19**	**-0.28**	**0.83**	**-0.37**	**-0.59**	**-2.00**	**0.34**	**0.01**	**0.53**	**0.11**	**0.07**
Agriculture	-0.33	-0.25	0.91	-0.37	-0.58	-2.03	0.21	0.00	0.50	0.11	0.04
Mining	2.19	-0.71	-0.39	-0.41	-0.62	-0.98	1.86	1.49	1.83	0.12	1.05
Secondary	**0.40**	**2.05**	**-0.52**	**0.67**	**0.49**	**3.09**	**0.93**	**0.52**	**1.03**	**2.83**	**1.27**
Manufacturing	0.02	1.83	1.78	0.52	-0.12	2.58	0.63	0.36	0.79	1.87	1.15
Utilities	0.49	1.54	-1.11	-0.35	0.97	3.78	0.61	1.74	0.73	0.25	-0.10
Construction	1.16	2.47	-2.50	1.03	1.49	4.53	1.59	0.51	2.49	5.48	1.66
Tertiary	**1.37**	**1.52**	**1.61**	**1.67**	**1.61**	**4.95**	**1.33**	**1.62**	**1.76**	**2.07**	**1.99**
Traditional	1.22	1.43	1.54	1.70	1.33	5.53	1.19	1.38	1.67	1.60	1.89
Trade	1.06	2.59	3.41	1.70	1.70	4.01	1.35	1.86	1.89	2.72	2.20
Gov+CSP serv.	1.31	0.74	0.56	1.69	1.05	6.45	0.93	1.02	1.27	0.42	1.50
Modern	2.05	1.86	1.95	1.58	2.41	2.52	1.83	2.57	2.31	3.81	2.58
Transport	1.36	1.56	1.81	1.53	1.16	2.20	1.78	2.25	1.63	3.09	2.13
Finance	2.58	2.69	2.01	1.60	3.51	3.51	1.86	2.80	4.05	6.02	4.32
Total employment growth	**1.95**	**2.93**	**2.02**	**1.54**	**2.08**	**0.77**	**2.66**	**3.23**	**1.92**	**1.34**	**1.43**

	Malaysia	Mexico	Peru	Philippines	Senegal	South Africa	Tanzania	Thailand	Venezuela
Primary	**-0.22**	**0.12**	**0.47**	**0.46**	**0.28**	**-1.43**	**0.71**	**-1.10**	**0.67**
Agriculture	-0.28	0.13	0.44	0.46	0.28	-0.60	0.69	-1.10	0.31
Mining	1.67	-0.27	0.99	0.31	3.48	-5.06	2.90	-1.17	2.51
Secondary	**0.91**	**0.86**	**1.02**	**0.68**	**2.62**	**0.83**	**2.43**	**2.81**	**0.59**
Manufacturing	0.59	0.50	0.40	0.40	2.57	0.37	2.48	2.56	0.21
Utilities	1.25	-0.44	1.45	0.69	-5.02	-2.02	3.61	0.80	-0.19
Construction	1.61	1.70	2.24	1.22	3.91	2.10	2.05	3.60	1.25
Tertiary	**1.45**	**1.36**	**1.26**	**1.59**	**1.88**	**2.01**	**2.28**	**3.47**	**1.20**
Traditional	1.34	1.19	1.06	1.47	1.84	1.66	2.21	3.52	1.06
Trade	1.30	1.36	1.28	1.65	2.30	1.46	1.92	3.80	1.43
Gov+CSP serv.	1.39	1.05	0.79	1.26	1.08	1.81	2.51	3.02	0.80
Modern	1.80	2.20	1.93	2.06	2.27	3.15	2.88	3.16	1.67
Transport	1.46	1.06	1.90	1.93	2.12	1.19	2.70	1.75	1.97
Finance	2.06	3.44	1.97	2.33	3.36	4.43	3.39	5.25	1.30
Total employment growth	**2.23**	**2.47**	**2.75**	**2.43**	**2.02**	**1.09**	**2.68**	**1.14**	**2.74**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Employment Numbers and Shares (1990–2010) by Country

Table 20
Agricultural Employment: 1990–2010

Country	Sector employment at start of period (000)	Sector employment at end of period (000)	Total employment at start of period (000)	Total employment at end of period (000)	Change in sector	Change in total	Contribution towards total change
Argentina	1 339	1 168	11 695	17 543	-171	5 847	-3 %
Bolivia	1 051	905	2 417	4 305	-145	1 888	-8 %
Brazil	18 784	16 778	71 235	96 647	-2 006	25 412	-8 %
Botswana	184	251	467	656	67	189	35 %
Chile	818	641	4 524	6 833	-178	2 309	-8 %
China	389 140	279 305	647 490	761 050	-109 835	113 560	-97 %
Colombia	3 522	3 932	12 479	21 114	409	8 635	5 %
Costa Rica	298	299	1 033	2 013	1	980	0 %
Ghana	3 535	4 083	6 377	8 483	548	2 105	26 %
Indonesia	41 529	42 048	82 892	111 631	519	28 739	2 %
India	244 137	250 239	371 702	465 828	6 103	94 126	6 %
Mexico	6 699	7 118	31 198	49 584	419	18 386	2 %
Malaysia	1 587	1 419	7 400	11 013	-168	3 613	-5 %
Peru	2 345	2 985	7 736	13 316	640	5 579	11 %
Philippines	9 760	12 043	22 226	35 060	2 282	12 834	18 %
Senegal	1 789	1 945	2 725	3 680	156	954	16 %
Thailand	18 972	14 547	29 935	38 012	-4 425	8 078	-55 %
Tanzania	9 476	12 918	11 047	17 305	3 443	6 258	55 %
Venezuela	824	986	6 178	10 895	162	4 717	3 %
South Africa	2 475	2 197	12 021	14 619	-278	2 597	-11 %

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 21
Agricultural Employment: 1990–2010

Country	Sector employment at start of period	Sector employment at end of period	Percentage point change	Percentage change
Argentina	11.4 %	6.7 %	-4.79	-41.8 %
Bolivia	43.5 %	21.0 %	-22.44	-51.6 %
Brazil	26.4 %	17.4 %	-9.01	-34.2 %
Botswana	39.3 %	38.2 %	-1.11	-2.8 %
Chile	18.1 %	9.4 %	-8.72	-48.2 %
China	60.1 %	36.7 %	-23.40	-38.9 %
Colombia	28.2 %	18.6 %	-9.61	-34.0 %
Costa Rica	28.8 %	14.8 %	-14.01	-48.6 %
Ghana	55.4 %	48.1 %	-7.30	-13.2 %
Indonesia	50.1 %	37.7 %	-12.43	-24.8 %
India	65.7 %	53.7 %	-11.96	-18.2 %
Mexico	21.5 %	14.4 %	-7.12	-33.1 %
Malaysia	21.4 %	12.9 %	-8.56	-39.9 %
Peru	30.3 %	22.4 %	-7.90	-26.1 %
Philippines	43.9 %	34.3 %	-9.57	-21.8 %
Senegal	65.7 %	52.9 %	-12.79	-19.5 %
Thailand	63.4 %	38.3 %	-25.11	-39.6 %
Tanzania	85.8 %	74.7 %	-11.12	-13.0 %
Venezuela	13.3 %	9.0 %	-4.29	-32.2 %
South Africa	20.6 %	15.0 %	-5.56	-27.0 %

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 22
Manufacturing Employment: 1990–2010

Country	Sector employment at start of period (000)	Sector employment at end of period (000)	Total employment at start of period (000)	Total employment at end of period (000)	Change in sector	Change in total	Contribution towards total change
Argentina	2 082	2 097	11 695	17 543	15	5 847	0.3 %
Bolivia	205	580	2 417	4 305	376	1 888	19.9 %
Brazil	10 452	12 256	71 235	96 647	1 804	25 412	7.1 %
Botswana	23	41	467	656	19	189	9.8 %
Chile	791	753	4 524	6 833	-38	2 309	-1.6 %
China	96 398	145 898	647 490	761 050	49 500	113 560	43.6 %
Colombia	1 699	2 375	12 479	21 114	676	8 635	7.8 %
Costa Rica	196	249	1 033	2 013	54	980	5.5 %
Ghana	781	979	6 377	8 483	199	2 105	9.4 %
Indonesia	9 615	13 539	82 892	111 631	3 923	28 739	13.7 %
India	37 152	56 573	371 702	465 828	19 421	94 126	20.6 %
Mexico	6 131	7 758	31 198	49 584	1 627	18 386	8.8 %
Malaysia	1 527	1 932	7 400	11 013	405	3 613	11.2 %
Peru	949	1 180	7 736	13 316	231	5 579	4.1 %
Philippines	2 413	2 894	22 226	35 060	480	12 834	3.7 %
Senegal	161	344	2 725	3 680	183	954	19.2 %
Thailand	2 920	5 350	29 935	38 012	2 429	8 078	30.1 %
Tanzania	165	492	11 047	17 305	326	6 258	5.2 %
Venezuela	940	1 062	6 178	10 895	122	4 717	2.6 %
South Africa	1 618	1 739	12 021	14 619	121	2 597	4.6 %

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 23
Manufacturing Employment Shares: 1990–2010

Country	Sector employment at start of period	Sector employment at end of period	Percentage point change	Percentage change
Argentina	17.8 %	12.0 %	- 5.8	-32.8 %
Bolivia	8.5 %	13.5 %	5.0	59.1 %
Brazil	14.7 %	12.7 %	-2.0	-13.6 %
Botswana	4.8 %	6.3 %	1.4	29.8 %
Chile	17.5 %	11.0 %	-6.5	-36.9 %
China	14.9 %	19.2 %	4.3	28.8 %
Colombia	13.6 %	11.2 %	-2.4	-17.4 %
Costa Rica	18.9 %	12.4 %	-6.5	-34.5 %
Ghana	12.2 %	11.5 %	-0.7	-5.7 %
Indonesia	11.6 %	12.1 %	0.5	4.6 %
India	10.0 %	12.1 %	2.1	21.5 %
Mexico	19.7 %	15.6 %	-4.0	-20.4 %
Malaysia	20.6 %	17.5 %	-3.1	-15.0 %
Peru	12.3 %	8.9 %	-3.4	-27.7 %
Philippines	10.9 %	8.3 %	-2.6	-24.0 %
Senegal	5.9 %	9.4 %	3.4	58.3 %
Thailand	9.8 %	14.1 %	4.3	44.3 %
Tanzania	1.5 %	2.8 %	1.3	90.0 %
Venezuela	15.2 %	9.8 %	-5.5	-35.9 %
South Africa	13.5 %	11.9 %	-1.6	-11.6 %

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 24
Traditional Services Employment: 1990–2010

Country	Sector employment at start of period (000)	Sector employment at end of period (000)	Total employment at start of period (000)	Total employment at end of period (000)	Change in sector	Change in total	Contribution towards total change
Argentina	6 070	9 926	11 695	17 543	3 856	5 847	65.9 %
Bolivia	817	1 858	2 417	4 305	1 041	1 888	55.1 %
Brazil	27 309	45 685	71 235	96 647	18 376	25 412	72.3 %
Botswana	156	263	467	656	106	189	56.4 %
Chile	1 893	3 275	4 524	6 833	1 382	2 309	59.9 %
China	92 207	221 991	647 490	761 050	129 784	113 560	114.3 %
Colombia	5 172	9 638	12 479	21 114	4 466	8 635	51.7 %
Costa Rica	382	954	1 033	2 013	572	980	58.4 %
Ghana	1 649	2 651	6 377	8 483	1 002	2 105	47.6 %
Indonesia	23 615	41 284	82 892	111 631	17 669	28 739	61.5 %
India	63 393	90 818	371 702	465 828	27 425	94 126	29.1 %
Mexico	13 501	23 410	31 198	49 584	9 909	18 386	53.9 %
Malaysia	2 836	4 824	7 400	11 013	1 988	3 613	55.0 %
Peru	3 246	5 761	7 736	13 316	2 515	5 579	45.1 %
Philippines	7 092	13 812	22 226	35 060	6 720	12 834	52.4 %
Senegal	647	1 120	2 725	3 680	473	954	49.5 %
Thailand	5 830	13 373	29 935	38 012	7 543	8 078	93.4 %
Tanzania	1 151	3 054	11 047	17 305	1 903	6 258	30.4 %
Venezuela	3 023	5 518	6 178	10 895	2 495	4 717	52.9 %
South Africa	4 919	6 798	12 021	14 619	1 879	2 597	72.4 %

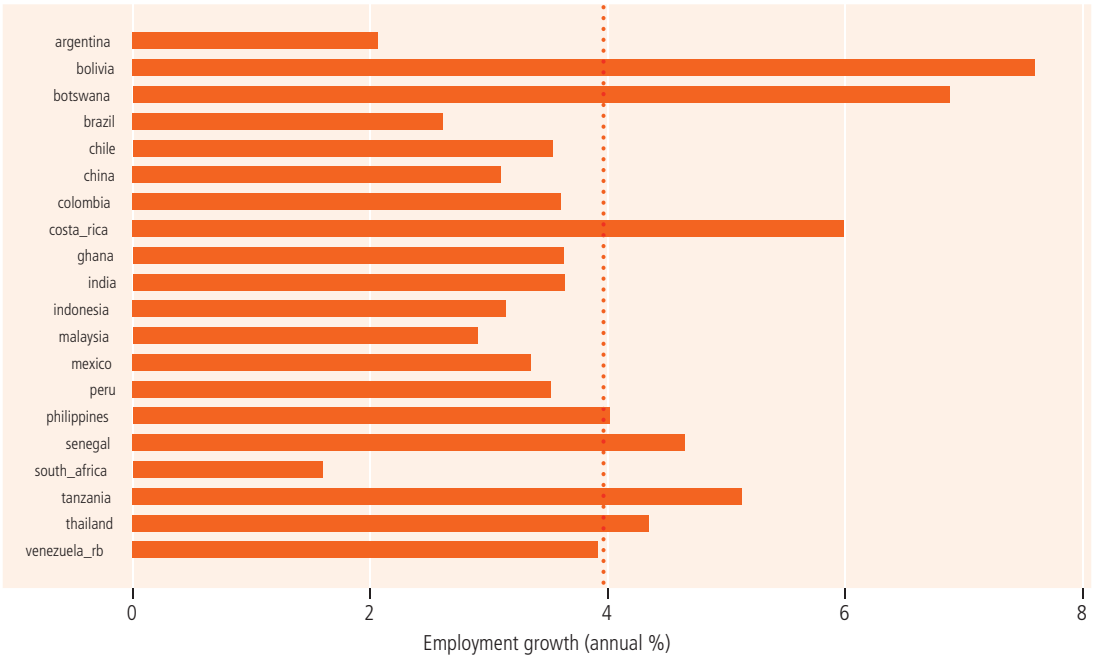
Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 25
Traditional Services Employment Shares: 1990 – 2010

Country	Sector employment at start of period	Sector employment at end of period	Percentage point change	Percentage change
Argentina	51.9 %	56.6 %	4.7	9.0 %
Bolivia	33.8 %	43.2 %	9.4	27.7 %
Brazil	38.3 %	47.3 %	8.9	23.3 %
Botswana	33.5 %	40.1 %	6.6	19.6 %
Chile	41.8 %	47.9 %	6.1	14.6 %
China	14.2 %	29.2 %	14.9	104.8 %
Colombia	41.4 %	45.6 %	4.2	10.1 %
Costa Rica	37.0 %	47.4 %	10.4	28.1 %
Ghana	25.9 %	31.3 %	5.4	20.9 %
Indonesia	28.5 %	37.0 %	8.5	29.8 %
India	17.1 %	19.5 %	2.4	14.3 %
Mexico	43.3 %	47.2 %	3.9	9.1 %
Malaysia	38.3 %	43.8 %	5.5	14.3 %
Peru	42.0 %	43.3 %	1.3	3.1 %
Philippines	31.9 %	39.4 %	7.5	23.5 %
Senegal	23.7 %	30.4 %	6.7	28.2 %
Thailand	19.5 %	35.2 %	15.7	80.6 %
Tanzania	10.4 %	17.6 %	7.2	69.4 %
Venezuela	48.9 %	50.7 %	1.7	3.5 %
South Africa	40.9 %	46.5 %	5.6	13.7 %

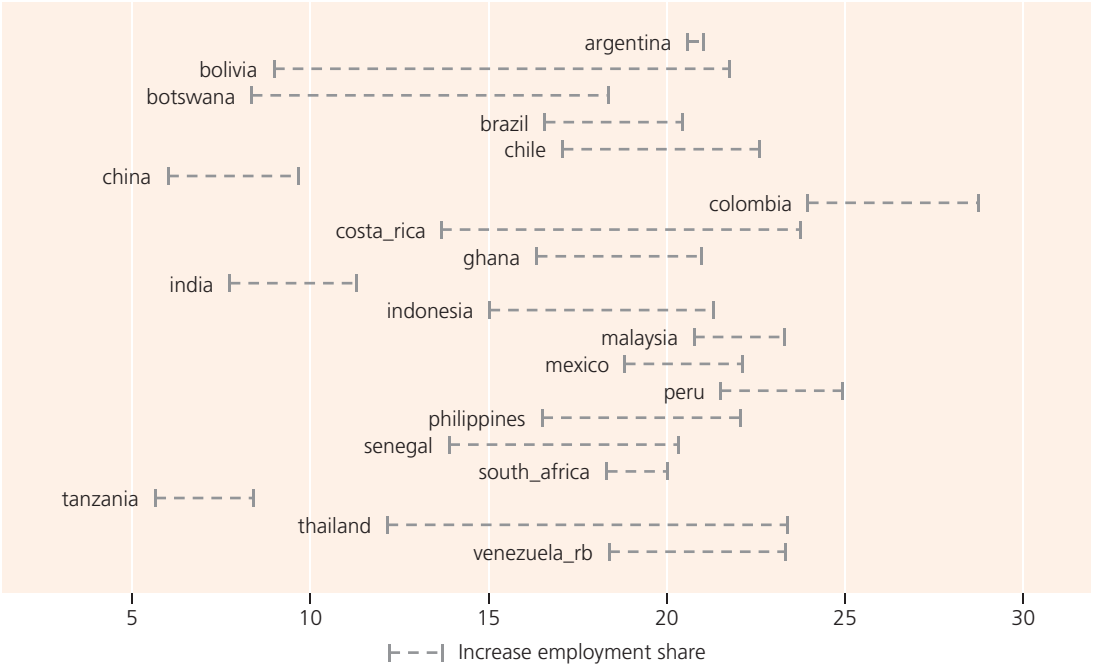
Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Figure 11
Annualized Wholesale and Retail Trade Employment Growth: 1990–2010



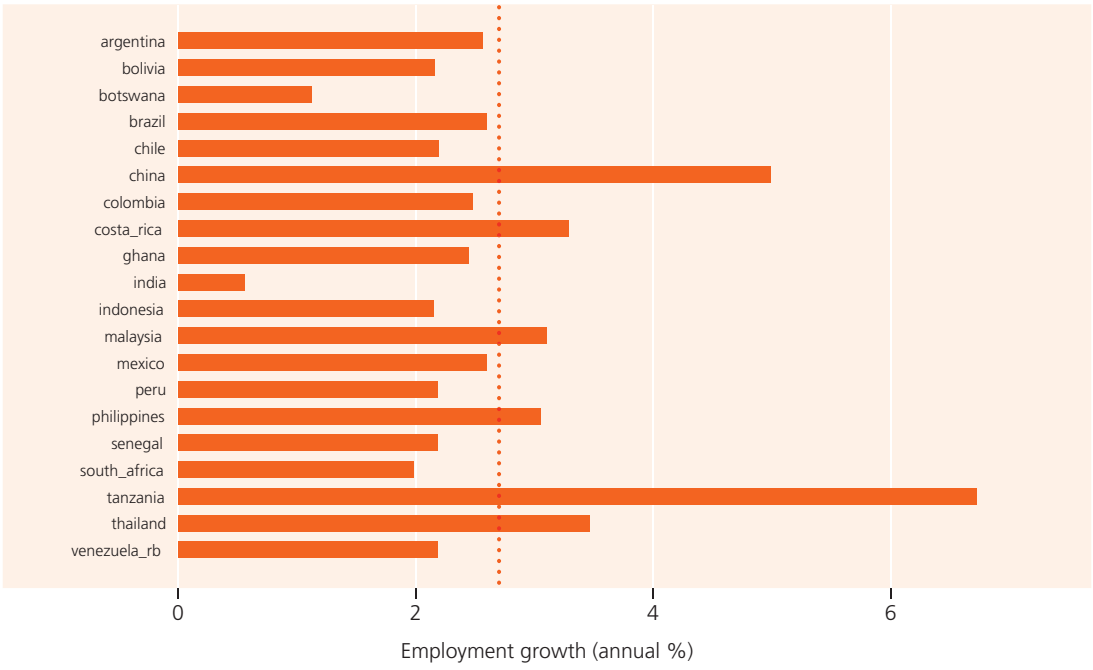
Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Figure 12
Annualized Wholesale and Retail Trade Employment Growth: 1990–2010



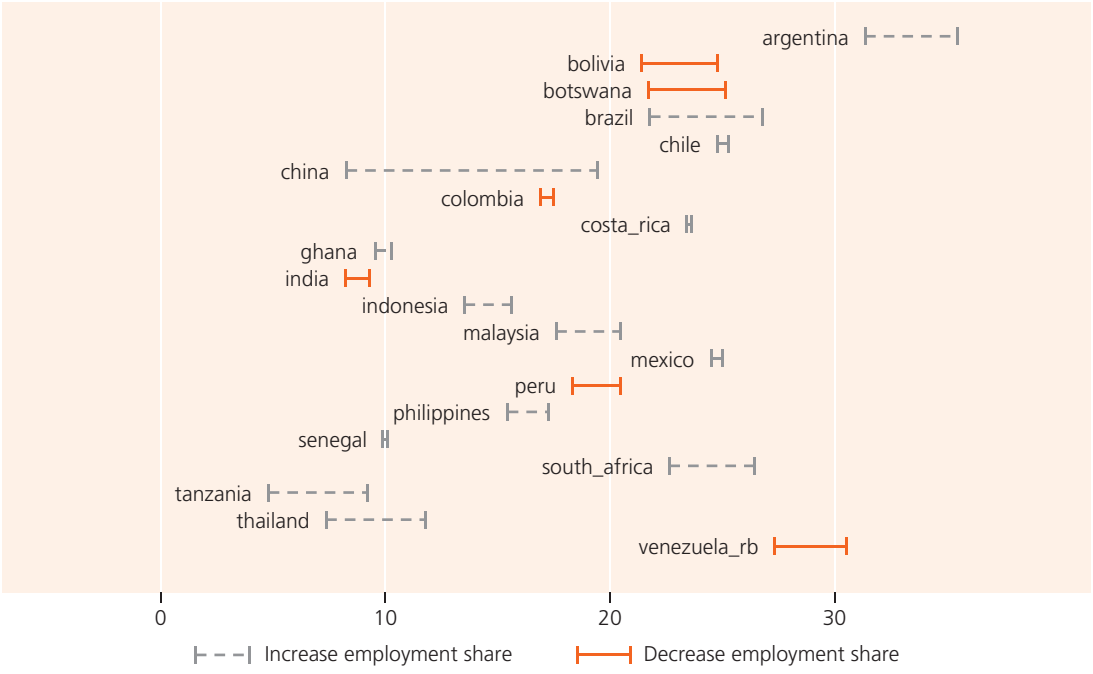
Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Figure 13
Annualized Government and CSP services Employment Growth: 1990–2010



Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Figure 14
Government and CSP services Employment Share: 1990–v2010



Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 26
Modern Services Employment: 1990–2010

Country	Sector employment at start of period (000)	Sector employment at end of period (000)	Total employment at start of period (000)	Total employment at end of period (000)	Change in sector	Change in total	Contribution towards total change
Argentina	1 224	2 784	11 695	17 543	1 559	5 847	26.7 %
Bolivia	176	510	2 417	4 305	334	1 888	17.7 %
Brazil	8 868	14 335	71 235	96 647	5 467	25 412	21.5 %
Botswana	33	63	467	656	30	189	16.0 %
Chile	529	1 408	4 524	6 833	879	2 309	38.1 %
China	27 583	41 332	647 490	761 050	13 749	113 560	12.1 %
Colombia	1 231	3 184	12 479	21 114	1 953	8 635	22.6 %
Costa Rica	66	354	1 033	2 013	287	980	29.3 %
Ghana	219	421	6 377	8 483	201	2 105	9.6 %
Indonesia	3 657	7 821	82 892	111 631	4 165	28 739	14.5 %
India	13 677	31 848	371 702	465 828	18 171	94 126	19.3 %
Mexico	2 224	6 083	31 198	49 584	3 859	18 386	21.0 %
Malaysia	812	1 648	7 400	11 013	836	3 613	23.1 %
Peru	783	2 204	7 736	13 316	1 421	5 579	25.5 %
Philippines	1 625	4 113	22 226	35 060	2 487	12 834	19.4 %
Senegal	65	127	2 725	3 680	62	954	6.5 %
Thailand	1 062	2 239	29 935	38 012	1 177	8 078	14.6 %
Tanzania	112	398	11 047	17 305	285	6 258	4.6 %
Venezuela	780	1 992	6 178	10 895	1 212	4 717	25.7 %
South Africa	1 321	2 430	12 021	14 619	1 109	2 597	42.7 %

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 27
Modern Services Employment Shares: 1990–2010

Country	Sector employment at start of period	Sector employment at end of period	Percentage point change	Percentage change
Argentina	10.5 %	15.9 %	5.4	51.6 %
Bolivia	7.3 %	11.8 %	4.6	62.5 %
Brazil	12.4 %	14.8 %	2.4	19.1 %
Botswana	7.0 %	9.6 %	2.6	37.0 %
Chile	11.7 %	20.6 %	8.9	76.2 %
China	4.3 %	5.4 %	1.2	27.5 %
Colombia	9.9 %	15.1 %	5.2	52.9 %
Costa Rica	6.4 %	17.6 %	11.1	173.4 %
Ghana	3.4 %	5.0 %	1.5	44.3 %
Indonesia	4.4 %	7.0 %	2.6	58.8 %
India	3.7 %	6.8 %	3.2	85.8 %
Mexico	7.1 %	12.3 %	5.1	72.1 %
Malaysia	11.0 %	15.0 %	4.0	36.4 %
Peru	10.1 %	16.6 %	6.4	63.6 %
Philippines	7.3 %	11.7 %	4.4	60.4 %
Senegal	2.4 %	3.4 %	1.1	45.1 %
Thailand	3.5 %	5.9 %	2.3	66.0 %
Tanzania	1.0 %	2.3 %	1.3	125.7 %
Venezuela	12.6 %	18.3 %	5.7	44.8 %
South Africa	11.0 %	16.6 %	5.6	51.3 %

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

APPENDIX TWO

Measures of Inequality (1990–2010) by Country

Gini by Country

Table 28
Gini Coefficients by Country: 1990–2010

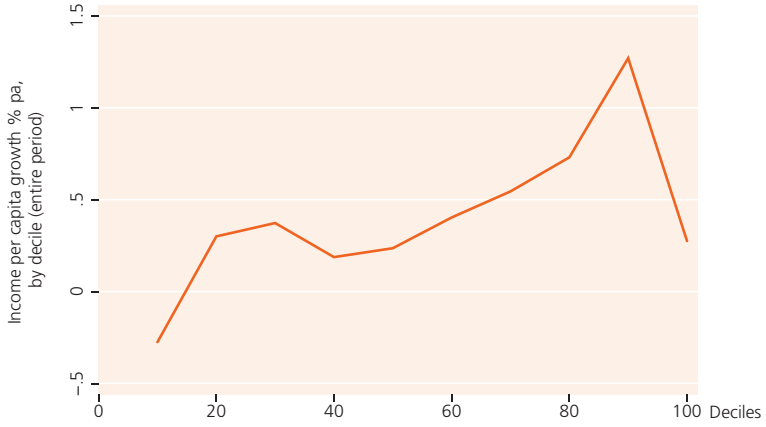
Country	Gini (1990–1995)	Gini (2005–2010)	Absolute change	Percentage change
Argentina	46.6	47.3	0.7	1 %
Bolivia	47.5	54.4	6.9	14 %
Brazil	57.9	55.2	-2.7	-5 %
Botswana	60.8	60.5	-0.3	-1 %
Chile	54.6	51.9	-2.7	-5 %
China	27.0	38.8	11.8	44 %
Colombia	55.5	55.6	0.1	0 %
Costa Rica	46.1	49.3	3.2	7 %
Ghana	38.4	42.8	4.3	11 %
Indonesia	35.0	36.1	1.1	3 %
India	34.4	43.7	9.3	27 %
Mexico	51.3	49.1	-2.2	-4 %
Malaysia	47.7	46.2	-1.5	-3 %
Peru	47.1	50.3	3.2	7 %
Philippines	43.4	43.6	0.2	0 %
Senegal	47.8	39.2	-8.6	-18 %
Thailand	45.6	40.4	-5.2	-11 %
Tanzania	35.3	40.3	5.0	14 %
Venezuela	46.1	45.0	-1.1	-2 %
South Africa	59.3	63.9	4.6	8 %

Source: Calculated using World Bank World Development Indicators data (World Bank, 2018).

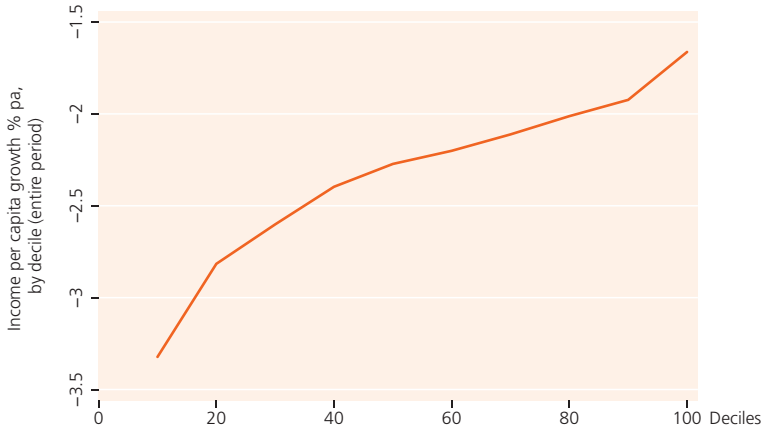
Growth Incidence Curves (1990 – 2010) by Country

Cohort One:
Agriculture to traditional services

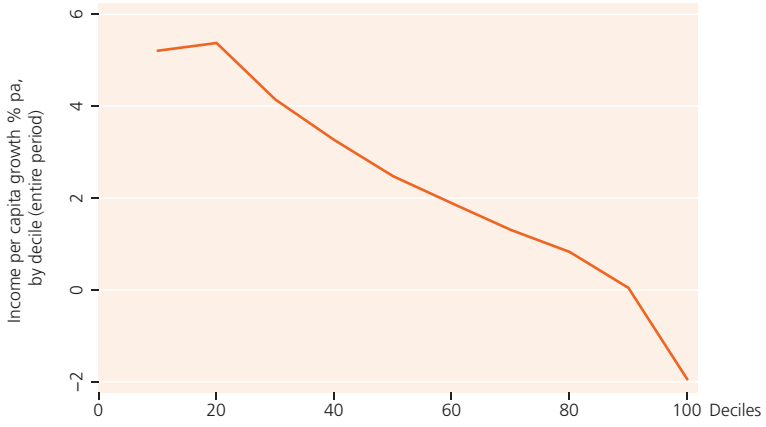
Botswana



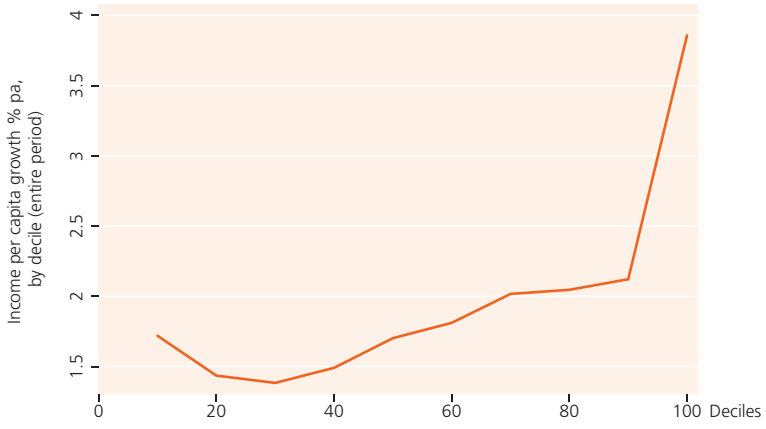
Ghana



Senegal

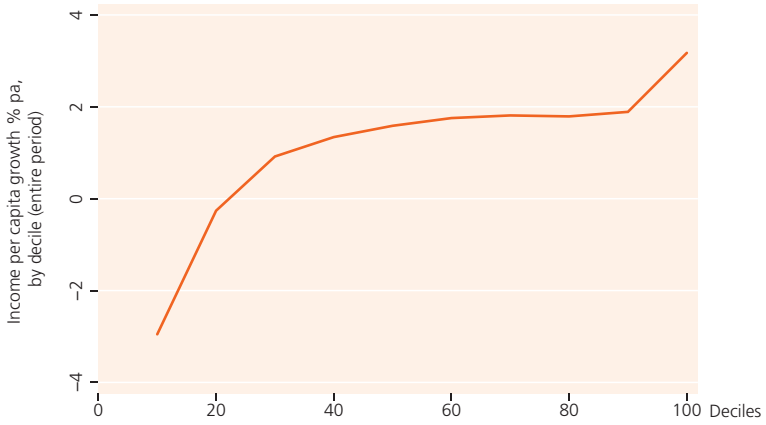


Tanzania

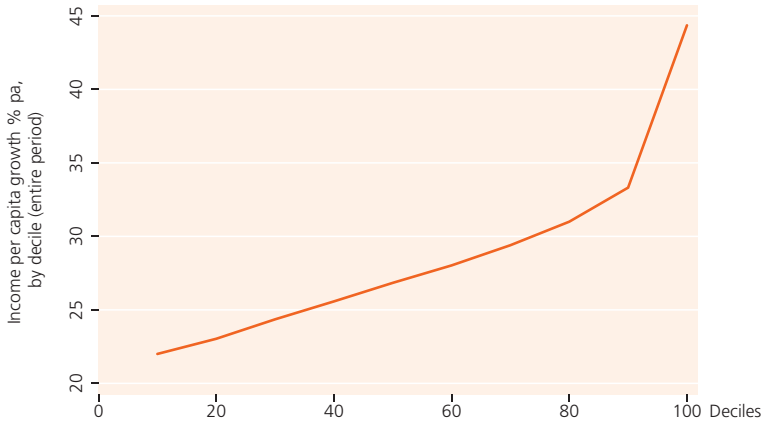


Cohort Two:
Agriculture to a mix of manufacturing and services

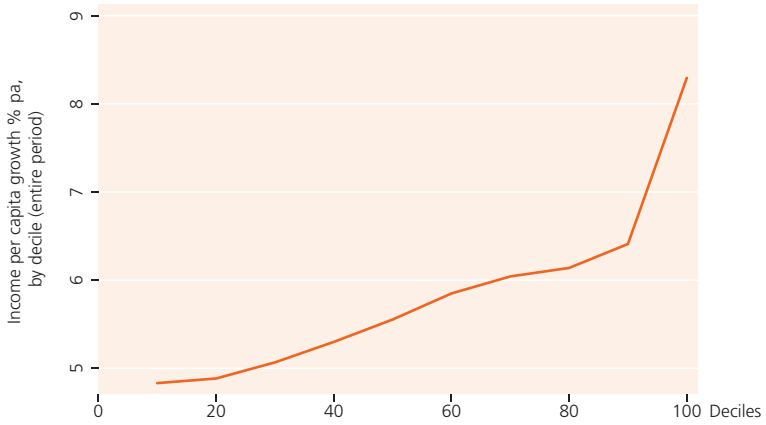
Bolivia



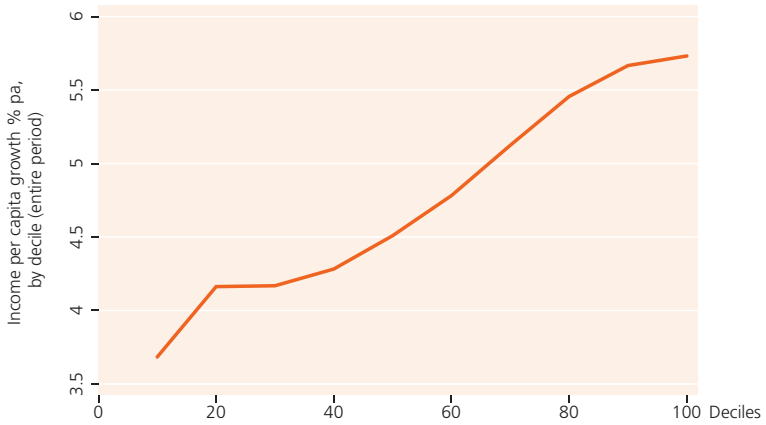
China



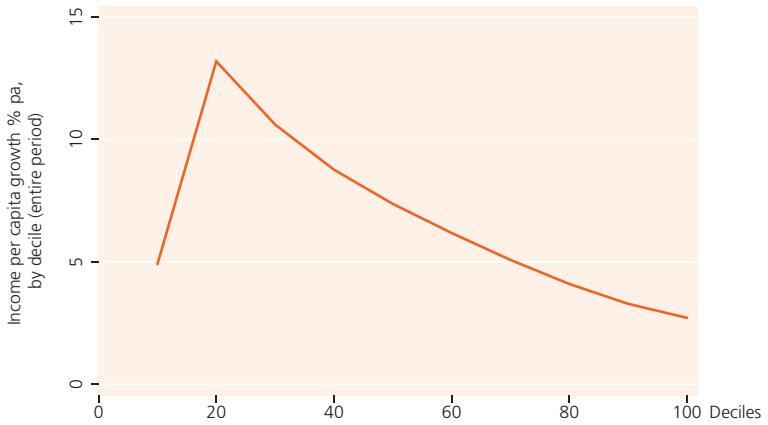
India



Indonesia

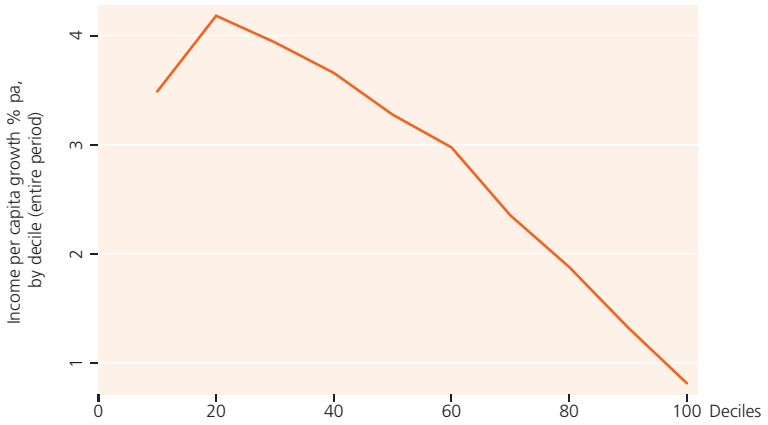


Thailand

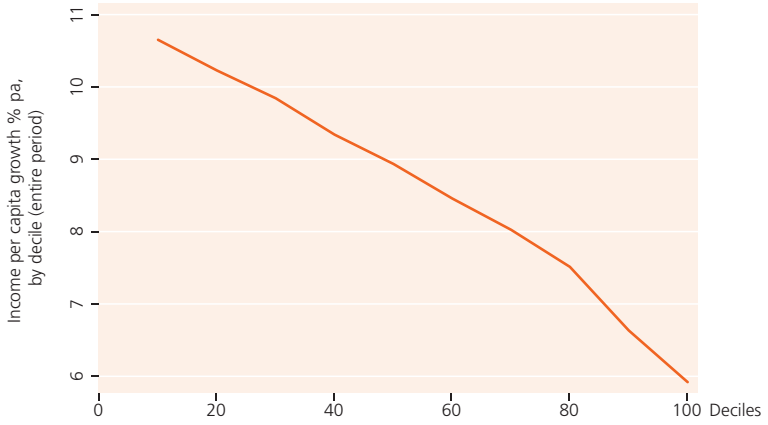


Cohort Three:
Agriculture and manufacturing to a mix of services

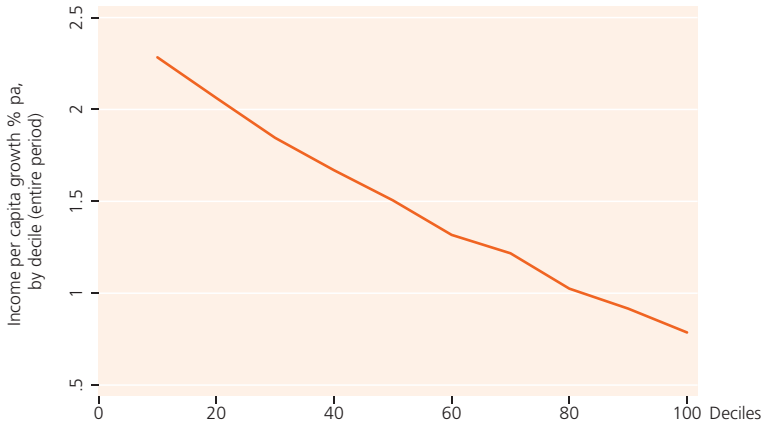
Brazil



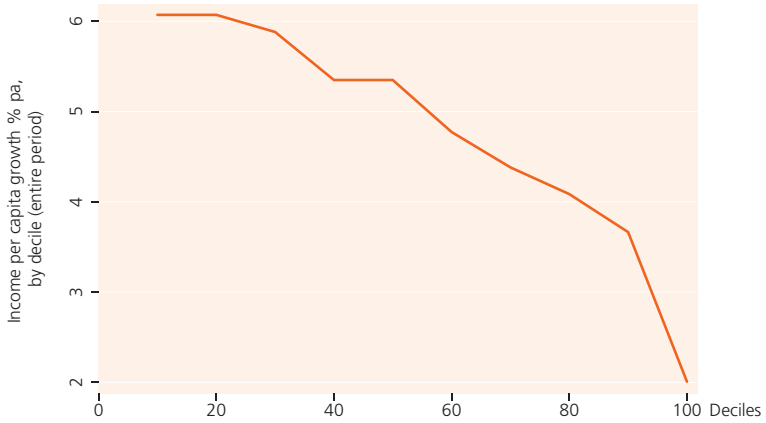
Chile



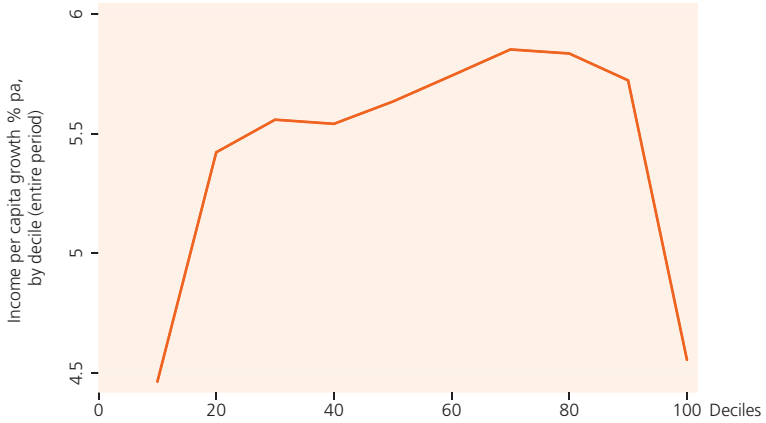
Mexico



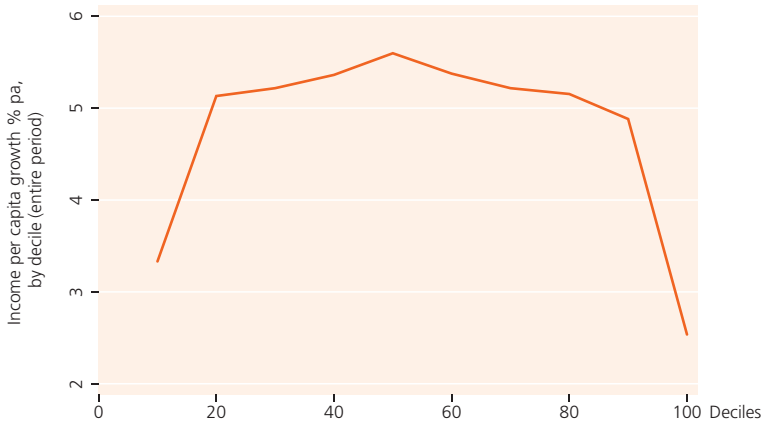
Venezuela



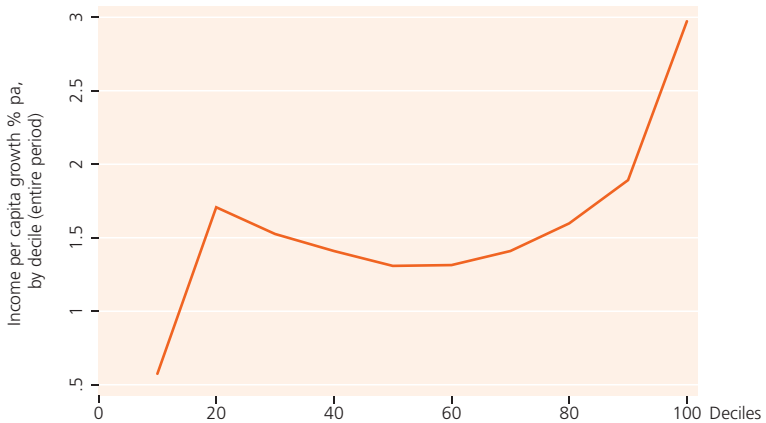
Malaysia



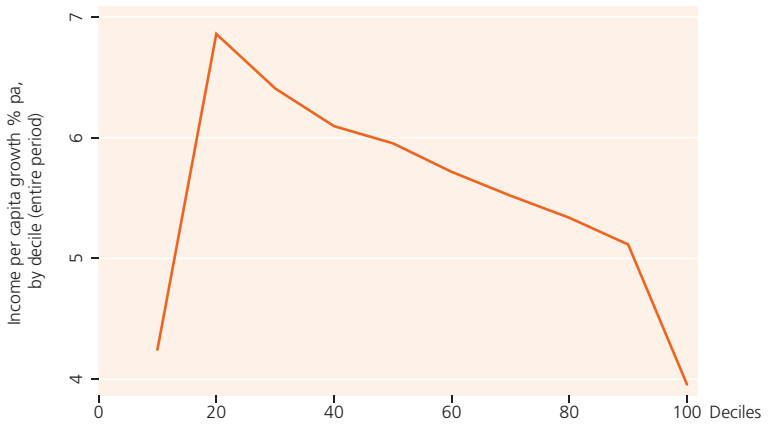
Argentina



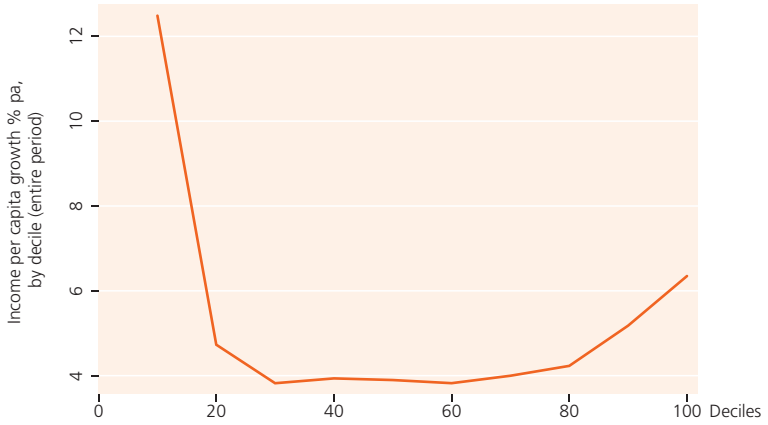
Colombia



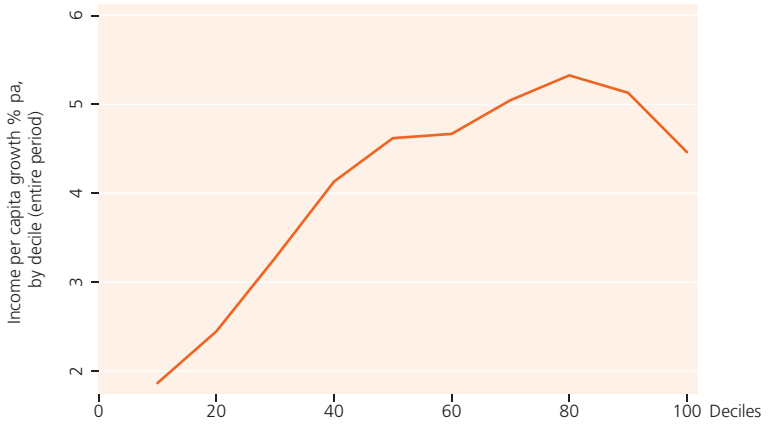
Philippines



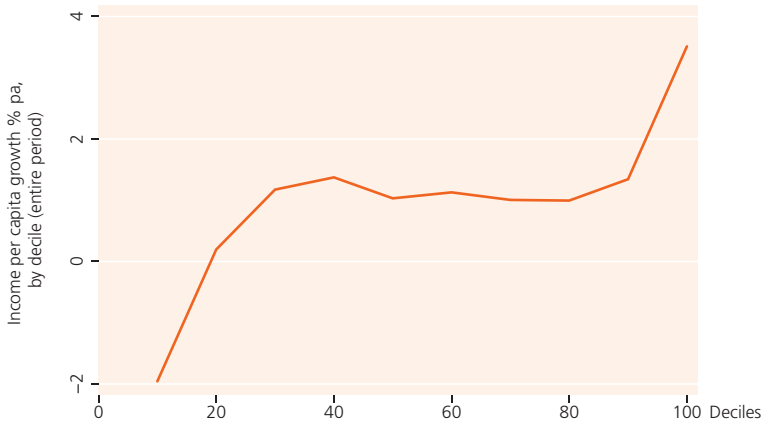
Costa Rica



Peru



South Africa



Source: Calculated using World Bank World Development Indicators data (World Bank, 2018).

APPENDIX THREE

Productivity by Country

Table 29
Relative Productivities by Sector, 1990

Country	Agriculture	Manufacturing	WRT	Gov+CSP services	Modern	Overall
Argentina	0.98	1.57	0.82	0.68	1.11	1.00
Bolivia	0.36	1.75	1.42	0.91	2.35	1.00
Brazil	0.19	1.22	0.82	1.01	2.37	1.00
Botswana	0.10	1.42	1.07	0.83	1.70	1.00
Chile	0.27	1.05	0.57	0.88	1.90	1.00
China	0.52	1.41	2.12	1.06	3.49	1.00
Colombia	0.40	1.35	0.68	0.92	1.72	1.00
Costa Rica	0.37	1.00	1.50	1.22	2.17	1.00
Ghana	0.64	0.97	0.61	1.43	5.54	1.00
Indonesia	0.33	2.10	0.95	0.89	2.22	1.00
India	0.46	1.69	1.78	1.51	3.26	1.00
Mexico	0.18	0.99	1.05	0.77	2.82	1.00
Malaysia	0.72	1.12	0.69	0.56	1.21	1.00
Peru	0.24	1.45	0.92	1.04	1.98	1.00
Philippines	0.37	2.62	1.03	0.79	2.04	1.00
Senegal	0.33	2.84	1.64	1.87	5.98	1.00
Thailand	0.21	2.66	2.15	1.68	2.86	1.00
Tanzania	0.42	5.61	2.69	2.91	13.76	1.00
Venezuela	0.34	1.34	0.73	0.44	0.66	1.00
South Africa	0.17	1.53	0.76	1.23	1.53	1.00
Average	**0.38**	**1.78**	**1.20**	**1.13**	**3.03**	**1.00**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

Table 30
Relative Productivities by Sector, 2010

Country	Agriculture	Manufacturing	WRT	Gov+CSP services	Modern	Overall
Argentina	1.38	2.14	0.81	0.48	1.19	1.00
Bolivia	0.63	1.09	0.51	0.93	1.79	1.00
Brazil	0.36	1.38	0.73	0.89	1.69	1.00
Botswana	0.07	1.28	1.12	1.13	1.86	1.00
Chile	0.52	1.42	0.52	0.66	1.46	1.00
China	0.25	1.91	1.24	0.59	2.97	1.00
Colombia	0.44	1.42	0.52	1.15	1.37	1.00
Costa Rica	0.58	1.59	0.74	0.90	1.40	1.00
Ghana	0.68	0.92	0.56	1.26	4.41	1.00
Indonesia	0.32	2.11	0.77	0.66	2.21	1.00
India	0.30	1.44	1.59	1.82	2.95	1.00
Mexico	0.26	1.20	0.96	0.60	2.02	1.00
Malaysia	0.64	1.43	0.73	0.51	1.50	1.00
Peru	0.29	1.84	0.77	0.93	1.34	1.00
Philippines	0.36	2.75	0.85	0.74	1.88	1.00
Senegal	0.33	1.69	1.06	1.53	5.96	1.00
Thailand	0.26	2.69	0.85	1.05	1.79	1.00
Tanzania	0.43	3.40	1.93	1.48	5.28	1.00
Venezuela	0.44	1.57	0.53	0.60	0.74	1.00
South Africa	0.18	1.55	0.73	0.86	1.74	1.00
Average	**0.44**	**1.74**	**0.88**	**0.94**	**2.28**	**1.00**

Source: Calculated using the Groningen Growth and Development Centre 10-sector database (Timmer, De Vries & De Vries, 2015).

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