

Chapter 7

Structural Transformation, the Quality of Growth and Employment Outcomes

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1. Introduction

The emphasis in economic growth as the main driver of economic development has been shifting in the last decade to include a more nuanced view of the characteristics of the economic growth process. As a result, more attention is being paid to understanding the “quality” of economic growth in terms of facilitating development outcomes. Chief among these elements is the impact of economic growth on the quality of employment.

Traditional economic development models *a-la-Lewis* (1954) link the process of economic development to the type of economic growth experienced, which translates into changes in standards of living through a process of structural change. In these models, economic development can be characterized by the reallocation of employment from low productivity “traditional” sectors, such as agriculture, to high productivity “modern” sectors, such as manufacturing. As productivity growth in agriculture accelerates, labor is transferred from agriculture to industry. Accordingly, when the share of employment in higher productivity sectors grows, more people are employed in higher wage sectors and enjoy better labor conditions. Structural change, therefore, allows the linking of economic growth to the quality of employment by looking at the type of sector productivity growth and reallocation of factors of production that drives the economic growth process.

One critical driver of economic growth in the last decade in developing countries, especially in Africa and Latin America, has been the large export boom in primary commodities. This has resulted in further specialization

1. I would like to thank Antonio Martuscelli for superb research assistantship, an anonymous referee for useful comments, and JICA and AFD for financial assistance.

of the production base of these countries in natural resources and agriculture. One risk of this pattern of growth is that it potentially locks employment in some of the poorer countries into low productivity sectors, minimizing the transformational potential of employment growth in reducing poverty and vulnerability. This type of “negative” structural change has been documented empirically by some authors (see for example McMillan and Rodrik 2011 for Latin America and Africa).

The objective of this paper is to shed some light on the link between structural change and employment outcomes, such as unemployment and some indicators of the quality of employment. We complement the existing literature by analyzing structural change beyond the reallocation of employment across sectors and investigate the impact of structural change on different labor outcomes. Specifically, we focus on two key elements. First, we test whether the pattern of growth in developing countries is one of “jobless” growth. Second we analyze one dimension of labor quality where there is data available, security of tenure and career prospects (UNECE 2010), using indicators such as unemployment, informality of employment or vulnerability of the labor force.

The paper is structured as follows: Section 2 briefly summarizes some of the literature on structural change and the links to labor outcomes. Section 3 describes the dataset used. Section 4 describes the evolution of several indicators of employment quality and based on the results, estimates a measure of structural change. Section 5 empirically analyzes the link between the type of growth pattern and employment quality indicators. The last section provides some brief conclusions.

2. Structural transformation, economic growth and labor outcomes

Several studies have analyzed the process of structural change in developing countries. These are mainly motivated by a concern about the patterns of production common in some developing countries that are based on primary commodities and low sophistication/technological intensity products. Key among these concerns is the continuous decline in the importance of the manufacturing sectors in the economy in some countries.

Growth in the manufacturing sector is credited with having significant positive economic and social spillover effects into other sectors and the

entire economy. Kaldor (1967) stated through his “growth laws” that growth in the industrial and manufacturing sector is correlated with larger economy-wide growth. Increasing returns to scale and learning by doing imply that growth in the manufacturing and industrial sector translates into significant productivity growth (Kaldor 1967). In addition, other authors have suggested that manufacturing employment growth helps to create a middle class that forces institutional improvements, resulting in further growth and better living standards. As a result, a strand of the development economics literature has emphasized the importance of the manufacturing sector as the critical element for structural change and a key engine for the improvement of labor standards and institutions.

Szirmai (2012), for example, looks at the issue of structural change across regions. The author suggests that Africa and some Latin American countries have become an exception in terms of structural change. While between 1980 and 2005 the share of manufacturing in total output continued to increase in many Asian economies, there has been a process of deindustrialization in Latin America and Africa. Concretely, in the 22 African countries for which data was available, manufacturing output ranged between 8.5% and 13.3% of GDP, with an 11% average for the continent. Memedovic and Lapadre (2010), focusing mainly on sub-Saharan countries, identified three different periods of structural change. The first, in the 1970s, corresponded to strong increases in value added, extractive industries. The second occurred in the period 1980-1995 with a large expansion of the services sector, which was later negated after 1995, as regional specialization in raw material production deepened, to the detriment of manufacturing and services.

In a recent study McMillan and Rodrik (2011) have empirically analyzed the issue of structural change for a sample of developing countries. The authors calculate labor productivity changes for a set of countries with available information for the period 1990-2005. The authors follow the standard decomposition of aggregate labor productivity growth in two components (see Section 3 for a detailed explanation). The first component is the growth that is accounted for within-sector productivity growth, which is related to increases in sector efficiency over time and rationalization of productive units as countries face, for example, more competition from opening up markets and integration into the world economy.

The second component, between-sector growth, is related to the contribution of labor productivity growth that corresponds to labor shifting to higher productivity sectors – the structural change component. This labor reallocation measure is the critical element in understanding the direction of labor flows and the potential impact on labor outcomes. McMillan and Rodrik (2011) find a negative contribution of the structural change component - the between-sector measure- to average labor productivity growth in Latin America and Africa, while this relationship is found to be positive in Asia. This would suggest that labor reallocations in the Latin American and African regions are mainly directed to less productive sectors. The authors show that the main factors that determine this “negative” structural change pattern are high commodity prices and the pattern of comparative advantage in these regions.

These findings are, however, contested by other authors. While there is a significant amount of evidence indicating the loss of importance of the manufacturing sector in most economies, other studies suggest that the structural change component is positive, although small, in most developing countries. Regional aggregate results mask significant differences across countries. For example, the estimated structural change component in McMillan and Rodrik (2011) for Africa is positive in four out of the nine countries of the sample. More recently, Kucera and Roncolato (2012) estimate the structural change decomposition for a sample of countries and find that the structural change component has contributed positively to labor productivity growth in most countries. A similar result is reached in the World Development Report (World Bank 2013), which implies that some of the regional average results might be driven by a few large countries. Kucera and Roncolato (2012) re-estimate the labor productivity growth decomposition with the McMillan and Rodrik (2011) dataset adding an interactive term, “within*between” components, to capture whether the reallocation of labor happens to sectors with declining or growing labor productivity. The results suggest that with the interaction term, the negative structural change finding in McMillan and Rodrik (2011) is significantly reduced.

In addition to whether the structural change component is positive or negative, it is important to compare its contribution to the within-sector growth component. This is especially important when considering potential labor outcomes. Kucera and Roncolato (2012) emphasize that the within-sector component tends to be larger for most countries than the

structural change component. This finding is also corroborated empirically by Ocampo et al. (2009) as well as Timmer and de Vries (2009). The relevance of these results is related to the fact that often within-sector productivity growth is explained by a significant adjustment of operating firms in the sector. More productive firms expand and less productive firms exit the market (Foster et al. 2008). This is translated into significant reallocation of workers, with some exiting the labor market or becoming employed elsewhere. The total net effect is unclear, and when employment creation is low in most productive firms, the resultant pattern of productivity growth is one of potential “jobless” growth.

The hypothesis of “jobless” growth has been analyzed in the literature, but it does not appear to be supported by the evidence, which finds a positive correlation between output growth and employment growth. Nevertheless, Kucera and Roncolato (2012) find a weaker relationship between output growth and employment growth and a negative relationship between productivity growth and employment growth in developing countries. The authors suggest that “jobless” growth may be a problem for some developing countries, especially in Asia.

One problem with some of this literature is the fact that the dichotomy between manufacturing, modern sectors, and agriculture, natural resources assumed in some studies, has become blurred in the last decades with the emergence of services. The services sector is the largest sector in terms of creating added value and employment in almost all developed and developing countries, and only in some countries with large agriculture and natural resource sectors such as DRC, Ethiopia or Liberia, does the services sector not dominate. In addition, the services trade has expanded significantly in recent years in line with the emergence of global production fragmentation. This implies that when analyzing structural change, rather than looking at manufacturing shares only as the “modern” or high productive sector, one must consider more generally the reallocation of employment from low to high productivity sectors. Including services makes the analysis challenging, because some knowledge services are highly productive while some other sector services are likely to have low productivity.

Overall, this literature suggests that there is a link between the pattern of economic and productivity growth and labor outcomes. Most of the studies, however, focus on the impacts on employment creation. One

assumption when it comes to considering the quality of employment is that employing more people in higher productivity sectors not only creates employment and raises wages but also reduces vulnerability or informality by strengthening labor market institutions. In addition, employing more people in natural resource-related sectors might increase worker vulnerability and adversely affect labor institutions in the medium run by for example increasing income inequality and reducing the size of the middle class. The final labor outcome, however, depends on the interaction between labor sector changes and labor institutions.

When thinking about labor outcomes it is important to consider quality attributes. Employment changes can have different implications depending on whether they are based on bad working conditions, lack of security or child labor. Therefore, it is important to analyze whether the impacts on labor outcomes from structural change translate into better or worse labor quality indicators.

Defining labor quality, however, is a complex task since it has many dimensions. UNECE (2010) defines seven dimensions of the quality of employment: 1) safety and ethics of employment, 2) income and benefits from employment, 3) working hours and balancing work and nonworking, 4) security of employment and social protection, 5) social dialogue, 6) skills development and training, and 7) workplace relationships and work motivation. Although, including most of the potential dimensions are necessary in providing an overall picture of employment quality, the main difficulty of implementing this framework is the lack of available indicators, especially for developing countries. In addition, one additional dimension of quality that also needs to be considered is the (lack of) opportunities in the labor market for new entrants.

In this paper we operationalize the concept of labor quality by using a set of available indicators for developing countries produced by the ILO: specifically youth unemployment, informal employment and vulnerable employment. These correspond mainly to elements of job security and job opportunities, although they also have embedded some elements such as social protection. In the next sections we look empirically at this issue and analyze the impact of different growth patterns on labor outcomes associated to unemployment and these quality of employment indicators.

3. Data and evolution of labor outcomes indicators

3.1 Data sources

We use two main sources of data for the empirical analysis. Labor outcomes data is from the ILO Key Labor Market Indicators (KLMI) available at LABORSTAT.² We focus on four main indicators: unemployment, youth unemployment, employment in the informal sector and vulnerability of employment.

The first indicator measures the unemployment rate and helps to test the hypothesis of “jobless” growth: whether the impact of productivity growth is mainly in reducing labor intensity with an overall zero or negative effect on employment. The second indicator is the youth unemployment rate, those unemployed between 15 and 24 years old, which we use to analyze whether certain patterns of economic growth are more conducive to allowing entry for younger people into the labor market. The third indicator, which we use to analyze the impact on the quality of employment, is the number of people employed in the informal sector.³ This allows us to analyze the effect of growth on reallocating labor from the informal to the formal sector. The last indicator used to measuring the quality of employment is the share of vulnerable employment in total employment. Vulnerable employment is defined as those self-employed without employees and those contributing to family labor. Although self-employment should not necessarily be considered a more vulnerable category of employment, especially in developed countries, the evidence suggest that as countries develop, fewer people are self-employed in traditional activities or employed in helping with family activities, and more are employed in industry and services.⁴ As discussed above, while this set of indicators is not a comprehensive list of proxies that could capture all dimensions of the quality of employment, they measure some of the most important dimensions around the quality of employment, and more importantly, provide enough data to allow some empirical analysis.

Table 1 tabulates basic statistics for unemployment and the quality of employment variables in the dataset by income group as determined in

2. www.ilo.org/kilm

3. The ILO defines informal employment as “the estimated number of persons in informal employment to the total number of employed persons in the non-agricultural sector”. http://laborsta.ilo.org/informal_economy_E.html

4. www.ilo.org/kilm

2010. The most complete series for a larger number of countries are unemployment rates, followed by youth unemployment. Data for vulnerable employment is available for 162 countries. In the case of informal employment, data is scarce and only available for 41 countries, 15 of which have more than one observation over time and only three of which are high-income countries. Some of the data for low-income countries is rarely available and in some cases presents quality problems. As a result, in the empirical analysis we use one low-income group that includes low- and low-middle income countries. Also, one important element to clarify is the need to contextualize some definitions of the variables. For example, low unemployment rates in low-income countries are more the result of having fewer people satisfying the definition of being formally unemployed, while being underemployed in rural areas. While unemployment is not likely to be a good measure of underemployment, it is a critical measure to test the hypothesis of “jobless” growth and the transition of employment to the formal sector.

Table 1. Basic statistics on quality of employment variables

Income group	Stats	unemployment	Youth unemployment	Informal employment	Vulnerable employment
High income	Mean	7.69	16.62	32.96	12.07
	N	1046	932	15	778
	std. Dev	4.26	8.81	10.98	7.05
Low income	Mean	4.95	10.06	67.08	79.30
	N	78	42	6	51
	std. Dev	4.25	9.46	10.50	13.83
Low middle income	Mean	10.57	20.82	56.27	49.36
	N	403	241	41	287
	std. Dev	9.13	13.98	13.68	15.78
Upper middle income	Mean	11.29	23.43	46.49	30.46
	N	635	449	85	448
	std. Dev	7.21	13.37	12.85	13.12
All	Mean	9.19	18.90	48.67	26.37
	N	2162	1664	147	1564
	std. Dev	6.60	11.53	14.83	20.51

Source: Author's own elaboration from KILM (ILO 2013)

Data on value added, labor shares, GDP, population, endowment and sector shares has been obtained from the World Development Indicators (World Bank 2013). We use data for the period 1990-2011, covering a period of more than two decades and all countries. Data on employment shares by aggregate sector is very limited to a few observations and not

for all countries, which makes estimating measures of structural change very challenging. All GDP variables are in 2005 US\$ prices. In order to capture endowments we use population, for labor endowments, and natural resource rents as a percentage of GDP, for natural resource endowments.

Since labor market outcomes also depend on labor regulations, we use the rigidity of the labor market regulations index developed by the Fraser Institute as part of the Economic Freedom Indicators (Gwartney et al. 2012). This indicator ranges from 0 to 10, with higher scores indicating less rigidity of labor regulations. The index is a composite that includes rigidity in hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, working hour regulations, mandated cost of worker dismissal and conscription. Unfortunately the dataset is available year by year only from 2000. Therefore, the empirical analysis using this variable uses mainly data from 2000 onwards.

3.2 Evolution of labour outcome indicators

Table 2 shows the incidence of the quality of labor indicators in terms of top and bottom countries, while Table 3 shows the evolution over time of these indicators by income level group. Regarding unemployment rates, these appear above 30% in a few developing countries from all regions. However, when looking at countries with the lowest unemployment rates the data indicates that Gulf States and some low-income SSA countries have rates close to zero. While this is likely to reflect the reality for Gulf States; for low-income SSA countries this suggests the extent of unemployment discussed earlier. This makes comparisons between countries in this region difficult, suggesting a need to focus on changes over time of these indicators. When looking at evolution over time, we find that unemployment rates are larger in the last five-year period than in the first five-year period for high-income and upper-middle countries. This is largely related to the impact of the 2008 financial crisis, but it also shows significant weaknesses of the growth pattern in these countries in relation to employment creation.

In regard to vulnerable employment, this is concentrated mainly in low-income agriculture intensive countries in SSA, where most people do not have access to formal employment and work in subsistence agriculture. On the other hand, it is lower in Gulf States where most

people are formally employed by companies. Vulnerable employment rates are low in high-income countries and very high, more than 50% in low-income countries, suggesting that as countries develop vulnerability of employment decreases. Looking over time, vulnerable employment rates have decreased across countries at all income groups, however, this reduction has been disappointing, especially for low income countries with a modest weighted average decrease of 1.18 points. Youth unemployment follows a similar pattern to unemployment rates in terms of country incidence. Youth unemployment tends to be larger than adult unemployment. It also has increased in high-income countries as compared to the second part of the 1990s.

Table 2. Top and bottom 5 countries based on selected labor indicators

Unemployment (%)		Informality (%)		Vulnerable employment (%)		Youth unemployment (%)	
Djibouti	51.50	India	83.50	Burundi	94.40	Kosovo	72.64
Kosovo	47.43	Mali	81.80	Chad	93.70	Marshall Islands	63.40
Macedonia	33.93	Bolivia	75.10	Burkina Faso	93.03	Macedonia	60.25
Armenia	32.33	Madagascar	73.60	Rwanda	92.50	Guadeloupe	56.49
Solomon Islands	31.90	Peru	73.33	Sierra Leone	92.40	Bosnia	55.38
Benin	1.10	Timor-Leste	17.80	Bahrain	2.11	Nepal	3.00
Rwanda	1.05	Moldova	15.90	Kuwait	2.10	Qatar	1.45
Kuwait	0.98	Macedonia	12.60	Tuvalu	2.00	Benin	1.25
Chad	0.70	Poland	10.95	U. A. E.	1.40	Burundi	0.70
Burundi	0.50	Serbia	6.10	Qatar	0.43	Rwanda	0.70

Source: Author's own elaboration from KILM (ILO 2013)

Table 3. Evolution of labour indicators 1995-2010

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Difference 2007-11/ 1995-99
Unemployment																		
High income	8.24	8.74	8.07	8.06	8.21	7.63	7.56	7.87	7.90	7.55	7.12	6.45	5.76	5.76	7.97	8.66	8.35	-0.96
Low and low middle income	8.41	8.27	11.29	7.60	9.43	8.33	10.86	13.32	9.49	11.30	8.75	10.50	10.10	12.14	10.14	7.27	6.97	0.32
Upper middle income	10.56	10.85	12.27	11.81	12.78	12.00	12.42	11.99	12.98	12.26	11.14	11.16	10.56	10.92	10.85	10.81	10.76	-0.87
Youth unemployment																		
High income	17.19	17.60	16.70	17.03	17.02	15.53	16.50	17.26	17.39	16.91	15.82	14.62	13.83	13.74	18.45	19.33	19.09	-0.22
Low and low middle income	17.52	13.15	21.64	16.83	18.62	14.58	18.35	21.83	19.56	21.73	19.02	20.00	23.21	25.69	23.03	19.66	15.52	3.87
Upper middle income	19.64	22.34	22.11	23.86	26.10	23.08	25.79	25.21	24.37	24.85	24.28	24.27	22.92	22.81	23.95	25.93	24.47	1.20
Vulnerable employment																		
High income	12.07	12.79	12.00	12.53	12.73	12.30	12.39	12.29	12.35	11.68	11.50	11.68	11.07	10.82	10.82	10.84	10.73	-1.57
Low and low middle income	47.56	57.32	46.12	53.09	53.10	55.47	57.24	54.87	60.62	57.40	62.04	55.98	50.01	48.12	50.11	53.66	49.38	-1.18
Upper middle income	31.91	32.61	30.97	31.15	32.98	32.43	30.87	29.93	32.33	30.86	31.19	29.55	28.67	27.99	26.80	26.93	23.33	-5.18

Source: Author's own elaboration from KILM (ILO 2013)

Figure 1. Evolution of informality countries with data available

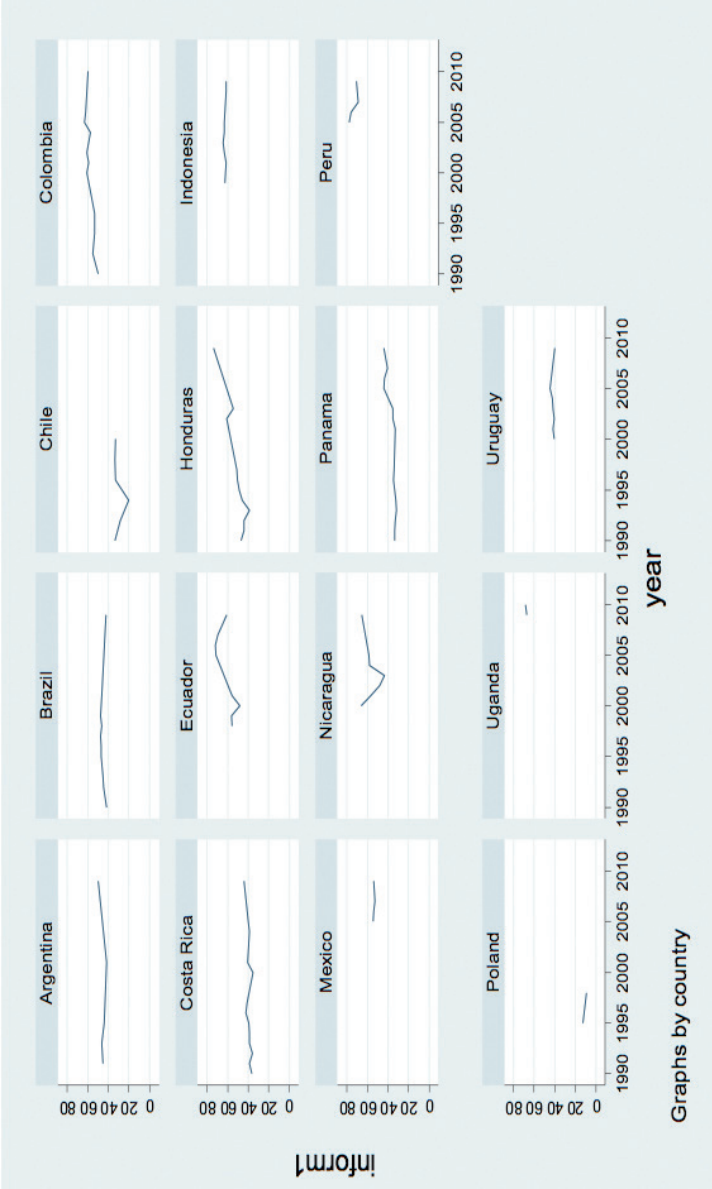
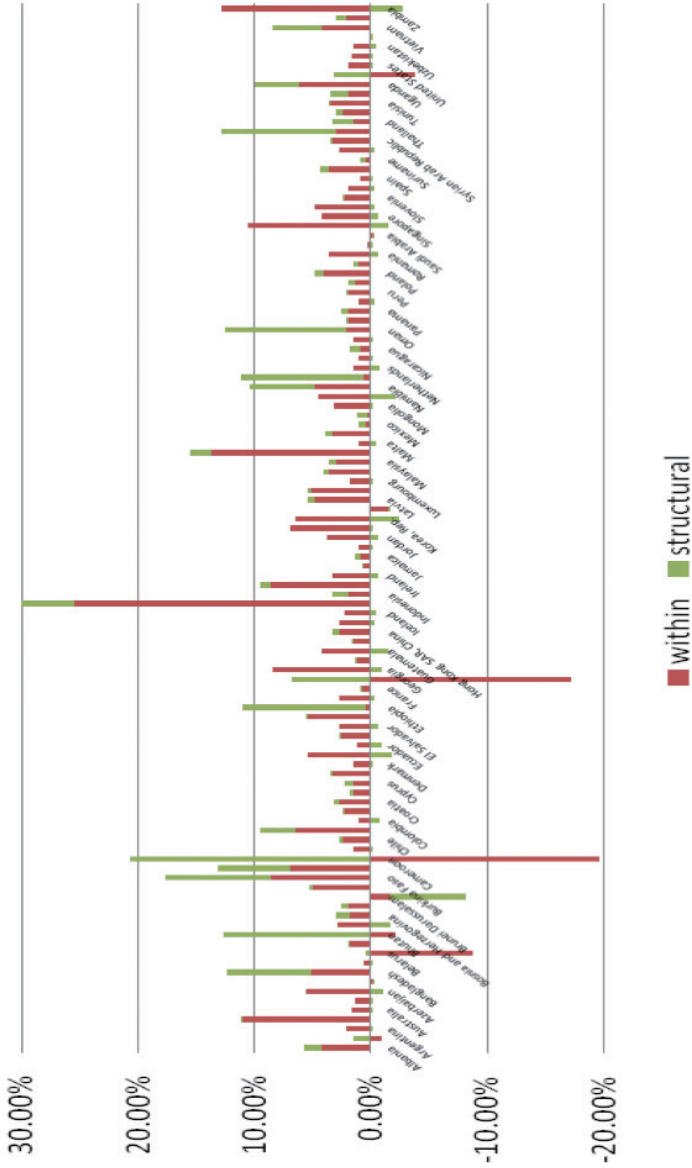


Figure 2. Value added per worker growth- within^a and structural components



^a Within component relates to productivity growth within the sector, structural component is the growth component from reallocation across sectors.

Regarding informality of employment, this is very large especially in some middle income countries such as India or Peru and other low income countries across all continents, suggesting that informality might be embedded in particular institutional contexts. In terms of low-informality for the countries with data available, which mainly excludes high income countries; this appears low in Eastern Europe and former Soviet Union republics. Figure 1 shows the evolution of informality for those countries with more than one observation over time. Interestingly, informality appears to have increased or stayed at similar levels in most countries.

These indicators suggest that the pattern of economic growth has not resulted in substantial improvements in the quality of employment indicators used in this analysis. This is likely the result of the recent financial crisis, but also it suggests that some of the high growth in developing countries have perhaps not had the full transformative potential desired for these countries.

4. Quality of labor and structural change across developed and developing countries

4.1 Measuring Structural change

In order to characterize structural change we calculate direct measures of structural change following the decomposition of labor productivity growth suggested in the literature (McMillan and Rodrik 2011). The decomposition separates the aggregate growth in value added per worker into two components (equation 1); where VL is value added per worker in sector i and year t and s is the employment share in sector i and year t . The first component, the within-sector productivity growth, captures the part of value added growth per worker that corresponds to sectoral productivity growth. The second component, the between or structural change growth, captures the part of the productivity growth that corresponds to labor shares being reallocated to higher or lower productivity sectors. When the structural change component is negative, labor is being reallocated into lower productivity sectors.

$$\Delta VL_t = \sum_{i=n} s_{it} \Delta VL_{it} + \sum_{i=n} \Delta s_{it} VL_{it} \quad (1)$$

A critical element in calculating the decomposition in (1) is the choice of sectors. Data on sector employment share is very scarce. Some studies

use a sample of countries with detailed sector data from existing input-output tables (McMillan and Rodrik 2011; Kucera and Roncolato 2012; Timmer and de Vries 2009). The advantage of using more sectors is that it allows a more nuanced description of the productivity growth pattern. However, it restricts the analysis to a very small number of countries, usually larger and higher income countries.⁵ Therefore, in order to have a measure that we can extend to as many countries as possible and can be used in the econometric analysis, we estimate a simpler version of the decomposition based on only two sectors, agriculture vs. non-agriculture. This reflects a more traditional structural change measure of reallocation away from agriculture, but also implies masking large within-sector heterogeneity in the non-agriculture sector.

To estimate equation (1) we use sector employment shares and value added for the agricultural and other sectors available in WDI (2013). We use those countries with at least two years of information available. In total we have information for 117 countries, 41 high income, 37 upper middle-income, 28 low middle-income and 11 low-income countries. The period analyzed varies country by country, but in around 70% of cases we are able to measure value-added per worker change from late 1990s or early 2000s to the period 2007-2011.

4.2 Structural change measures

Table 4 shows the results aggregated by income group of applying the decomposition proposed in equation (1) to the dataset. For the analysis, we have excluded outlier countries with very low or very large components – values below the 1st percentile and above 99th percentile since these are likely to indicate the bad quality of the data.⁶ The estimates are a weighted average using country GDP as weights.

5. McMillan and Rodrik (2011) carry out the analysis for 11 countries, primarily middle-income countries.

6. Almost all of these outliers are in the low-income group and therefore only affect the results for this group. When including outliers, the results for the low-income group suggest a structural change component of 5% and within growth of 6.25%.

Table 4. VA decomposition by income group^a (GDP weighted)

	VA/L%	within	structural
High income	1.54%	1.65%	-0.11%
Low income	11.94%	4.24%	7.70%
Low middle income	15.57%	12.30%	3.28%
Upper middle income	4.78%	3.41%	1.37%

^a Excludes outliers defined as those countries with structural change component in the 1st and 99th percentile. Source: Author's own elaboration from WDI.

Value added per worker increased very modestly in high-income countries and very significantly in low middle-income and low-income countries. In general within-sector productivity growth is larger than structural change, with the exception of low-income countries. The size of the structural change coefficients is consistent with economic development models where structural change components are larger at lower levels of development, since more people are reallocated to higher productivity sectors outside agriculture. In the case of high-income countries the structural change term is even negative. These results are different than McMillan and Rodrik (2011) and more in line with Kucera and Roncolato (2012) aggregates. In both cases, these use a more disaggregated sector dataset, although for a smaller set of countries. Structural change estimates are also positive for SSA in our dataset, where value added per worker increased by 3.18%: 2.45% corresponding to within-sector growth and 0.72% to structural change.

Individual results are plotted in Figure 2 above, excluding countries with extreme values, and the results for top and bottom performing countries are summarized in Table 5. India is the country with the largest value added per worker growth, mainly explained by high productivity growth of the non-agricultural sector, services. A similar pattern, although with lower growth is followed by Maldives. In terms of structural change Cameroon, Bhutan, Ethiopia, Nepal and Oman are the countries with larger positive structural change; and the Dominican Republic, Morocco, Korea, Zambia and Brunei the ones with the larger negative structural change. In 47 countries structural change is negative, while in the remaining 64 structural change is positive, which suggest large diversity of results regarding structural change. Finally and in line with the literature, within productivity growth is the main driver of value added per worker growth. In 97 of the 117 countries with data available, within productivity growth is larger than the structural change component.

Table 5. Top and bottom countries' VA decomposition

	VA/L%		within		Structural change
India	31.53%	India	25.53%	Cameroon	20.65%
Burkina Faso	17.65%	Maldives	13.65%	Bhutan	12.64%
Maldives	15.53%	Zambia	12.83%	Ethiopia	10.64%
Cambodia	13.11%	Armenia	11.07%	Nepal	10.45%
Tanzania	12.79%	Senegal	10.57%	Oman	10.33%
Ukraine	-0.69%	Bhutan	-2.15%	Dominican Rep.	-1.77%
Kyrgyz Republic	-1.52%	Ukraine	-3.79%	Morocco	-2.10%
Brunei	-8.09%	Belarus	-8.82%	Korea, Rep.	-2.43%
Belarus	-8.37%	Gabon	-17.15%	Zambia	-2.77%
Gabon	-10.30%	Cameroon	-19.68%	Brunei	-6.42%

Source: Author's own elaboration from WDI

These results suggest significant heterogeneity of experiences regarding structural change. This tends to be larger in low-income countries, but within each income group there are significant differences. More importantly, within-sector productivity growth tends to be the main driver of productivity growth.

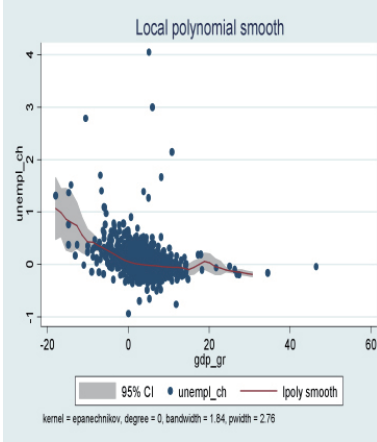
4.3 Unemployment, quality of employment and economic growth

Before looking more formally at how different patterns of economic growth affect the quality of employment, we briefly explore whether countries changes in labor outcomes indicators are highly correlated with economic growth. Figure 3 shows non-parametric plots of changes in the four labor quality indicators and the average rate of growth. Specifically, we compute the year-to-year rate of change of the four variables average in the 1990s and the 2000s, and plot these rates against the average rate of growth for the period for each country. This allows us to explore whether it is likely that economic growth is the main driver of the path in these variables.

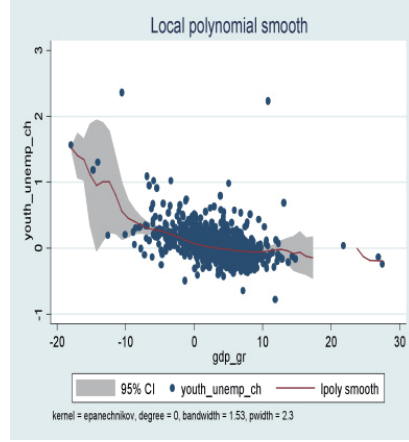
Panels (a) and (c) show the plots for unemployment rates and youth unemployment rate changes. Although, some of the points lie outside the confidence interval, the plots depict a potential negative relationship, and suggest that economic growth might be an important driver in reducing both types of unemployment. Panels (b) and (d) for informality and vulnerable employment, on the other hand, show no clear relationship between economic growth and changes in these variables. This suggests that other factors might be important drivers of change in these labor outcomes.

Figure 3. Non-parametric plots

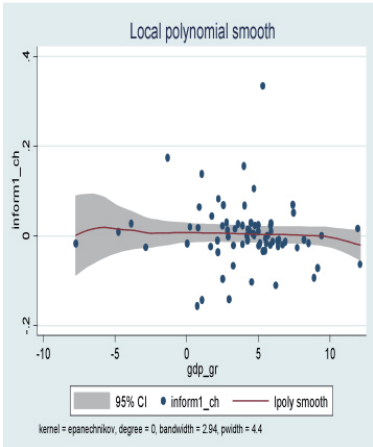
(a) Unemployment rate change and GDP growth



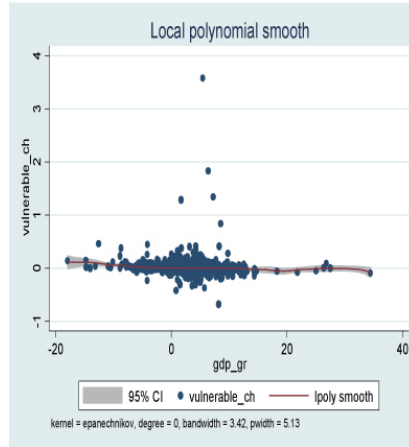
(b) Youth unemployment rate change and GDP growth



(c) Informality rate change and GDP growth



(d) Vulnerable rate change and GDP growth



The relationship between growth, structural change and labour outcomes are further explored in the next section.

5. Growth pattern, structural change and labor outcomes

5.1 Specifications

In this section we examine empirically the impact of the pattern of

growth and structural change on different quality of labor outcomes. We use a two-stage methodology. In the first stage, we estimate a reduced form equation where labor market outcomes are a function of income per capita, income growth and structural characteristics of the economy. In the second stage we analyze directly the impact of structural change measures on labor outcomes.

Specifically in the first stage we estimate equation (2) below:

$$L_{it} = \beta_0 + \beta_1 GDP/cap_{it} + \beta_2 \Delta GDP_{it} + \sum \delta_k Str_{kit} + \lambda_i + \lambda_t + u_{it} \quad (2)$$

Each labor outcome (L) in country i in year t is explained by a set of variables. We proxy structural characteristics of the economy (Str) using labor endowments (population), rents from natural resources as a share of GDP, manufacturing value added as a share of GDP and agriculture value added as a share of GDP. These variables attempt to capture how differences in the pattern of sectoral growth (i.e. growth via manufacturing sector or agriculture) impact quality of labor outcomes.

We also use an augmented specification that takes into account the degree of flexibility of the labor market as defined in section 3. Unfortunately, for this variable we only have data available from 2000, which represents a significant drop in the number of observations. This augmented specification also includes an interactive term between GDP growth and a dummy for SSA and a dummy for the Latin America and the Caribbean Region. This interactive term aims at capturing whether the effect of economic growth is different in these regions given the more natural resource-based economic growth prevalent in these economies.

The final dataset covers the period 1990-2001 and includes more than 160 countries. Data availability for labor outcomes is, however, problematic for many low income and developing countries, limiting, therefore, the size of the dataset to be used for the estimations. Equation (2) is estimated in logarithms and using country fixed effects and year dummies. In order to estimate directly the impact of structural change on labor outcomes in a second stage we average the dataset and add as regressors the different structural change components estimated from equation (1). The advantage of this approach is that it allows the use of direct structural change measures. The main disadvantage, however, is the significant loss of observations since we lose the panel structure and

rely only on a cross-section of countries. Specifically, we estimate equation (3):

$$L_i = \beta_0 + \beta_1 GDP/cap_{it} + \beta_2 Growth_i + \beta_3 lab_freedom_i + u_i \quad (3)$$

We use different proxies for economic growth and sources of growth. The first specification uses GDP growth, the second value added per worker growth; then we use the measure of structural change calculated above and the measure of within-sector productivity growth. These two decomposition measures are then interacted with a dummy for low-income countries to test whether their effects on labor outcomes are different at lower levels of development. All variables are averaged for the period 1990-2011. In total, we have data for around 100 countries, with the exception of informal employment that given the low availability of data, only 36 observations, we omit from the analysis in this section.

5.2 Results

Table 6 shows the main results for the four types of labor outcomes. Looking at the estimates of the base line specification that maximizes the number of observations (odd columns), both the level of GDP per capita and the rate of economic growth reduce unemployment and youth unemployment. Interestingly and in line with the non-parametric plots in the neither previous section, neither income per capita nor GDP growth appear to be robust predictors of employment in the informal sector or vulnerable employment.

The results regarding the structure of economic growth and endowments are also interesting. Countries with larger labor endowments measured by population appear to have larger unemployment, youth unemployment, informal employment and vulnerable employment; although for youth unemployment and vulnerable employment the estimated coefficients are only marginally significant. The coefficient on natural resource rents to proxy for the size of the extractive sector is positive but only marginally significant for youth unemployment. A more puzzling result is related to the impact of manufacturing value added. The estimated coefficients are positive and marginally significant for unemployment and youth unemployment. This would suggest that increases in manufacturing productivity might reduce labor intensity and generate unemployment, although the low

significance of the coefficients suggests that we should interpret the results with caution. Finally, agriculture value added does not appear to explain any of these labor outcomes.

Looking at the augmented specifications (even columns) allows us to analyze the impact of different labor institutions, proxied by the labor regulations freedom index. Including this variable, however, reduces significantly the number of observations to half of the sample. The labor institutions index does not appear to be a significant predictor of these labor outcomes; and it is only negative and marginally significant for the unemployment rate specification, suggesting that more flexible labor markets have lower unemployment rates.

Table 6. Fixed effects estimates: Quality of labor indicators

	(1) log (unemp)	(2) log (unemp)	(3) log(youth_ unempl)	(4) log(youth_ unempl)	(5) log (informal)	(6) log (informal)	(7) log (vulnerab)	(8) log (vulnerab)
log(GDP_cap)	-0.594** (0.268)	-1.272*** (0.297)	-0.847*** (0.189)	-1.536*** (0.285)	-0.369 (0.263)	-0.786 (0.582)	-0.220 (0.141)	-0.166 (0.215)
GDP_growth	-0.00923** (0.00388)	-0.0108** (0.00415)	-0.0145*** (0.00386)	-0.0164*** (0.00442)	0.00529* (0.00263)	0.0124 (0.0242)	0.00198 (0.00186)	0.00408 (0.00342)
log(popul)	0.839** (0.327)	0.425 (0.612)	0.666* (0.358)	0.762 (0.706)	2.085*** (0.607)	1.326* (0.692)	0.496* (0.439)	0.417 (0.439)
log(natres_rents)	0.0167 (0.0142)	0.0160 (0.0243)	0.0270* (0.0150)	0.00721 (0.0336)	0.0411 (0.0422)	0.0767* (0.0384)	-0.00289 (0.0131)	0.0199 (0.0214)
log(manuf_VA/GDP)	0.199* (0.111)	0.218* (0.127)	0.314** (0.121)	0.209 (0.140)	-0.0812 (0.117)	-0.638*** (0.112)	0.0129 (0.0618)	-0.0859 (0.0649)
log(agri_VA/GDP)	-0.114 (0.0878)	-0.170 (0.103)	-0.127 (0.0856)	-0.170 (0.110)	-0.117 (0.0900)	0.116 (0.100)	0.00206 (0.0568)	0.0890 (0.0641)
log(lab_freedom)		-0.221* (0.114)		-0.0986 (0.142)		-0.0217 (0.143)		0.112 (0.0698)
GDP_gr*SSA		0.00172 (0.0301)		-0.0223 (0.0252)		-0.121* (0.0630)		0.00311 (0.0137)
GDP_gr*LAC		-0.00114 (0.00649)		0.0123 (0.00767)		-0.00415 (0.0190)		-0.00739** (0.00299)
Constant	-6.673 (6.630)	6.253 (10.30)	-1.237 (6.506)	3.924 (12.16)	-27.02** (9.997)	-10.43 (10.77)	-3.018 (4.331)	-2.439 (7.384)
Observations	1764	691	1359	568	143	74	1297	583
R-squared	0.155	0.393	0.204	0.372	0.508	0.628	0.075	0.089
Number of i	161	113	142	97	39	34	136	95

All specifications with country and year fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7. OLS estimates: Unemployment rates

	(1)	(2)	(3)	(4)	(5)	(6)
GDP/cap	-0.000115*** (2.56e-05)	-0.000138*** (3.00e-05)	-0.000103*** (2.72e-05)	-0.000103*** (2.74e-05)	-9.96e-05*** (2.78e-05)	-0.000107*** (2.75e-05)
GDP_gr	-0.523 (0.331)					
VA/L gr		-31.71** (14.51)				
structural			-10.03*** (3.505)	-10.58*** (3.853)		
Struct*low income				5.647 (12.66)		
within					6.970*** (1.999)	9.060*** (2.525)
Within*low income						-26.11** (10.09)
lab_freedom	0.559* (0.327)	0.755** (0.377)	0.564 (0.368)	0.528 (0.367)	0.563 (0.378)	0.501 (0.367)
Constant	8.596*** (2.057)	7.500*** (2.141)	7.039*** (2.069)	7.241*** (2.043)	6.798*** (2.088)	7.372*** (2.057)
Observations	134	107	107	107	107	107
R-squared	0.096	0.134	0.140	0.142	0.105	0.147

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 8. OLS estimates: Youth unemployment rates

	(1)	(2)	(3)	(4)	(5)	(6)
GDP/cap	-0.000188*** (4.65e-05)	-0.000238*** (5.13e-05)	-0.000184*** (5.33e-05)	-0.000218*** (5.90e-05)	-0.000187*** (5.42e-05)	-0.000236*** (5.52e-05)
GDP_gr	-0.878 (0.745)					
VA/L gr		-58.87*** (17.14)				
structural			-6.408 (5.134)	-2.933 (3.486)		
Struct*low income				-124.0** (56.29)		
within					0.583 (2.966)	0.713 (2.639)
Within*low income						-240.5*** (36.97)
lab_freedom	0.709 (0.638)	1.391** (0.626)	1.065 (0.686)	1.479** (0.676)	1.132 (0.691)	1.461** (0.654)
Constant	19.14*** (4.116)	15.32*** (3.820)	14.58*** (3.872)	13.03*** (3.868)	14.26*** (3.865)	13.66*** (3.716)
Observations	125	104	104	104	104	104
R-squared	0.082	0.140	0.079	0.140	0.070	0.194

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9. OLS estimates: Vulnerable employment rates

	(1)	(2)	(3)	(4)	(5)	(6)
GDP/cap	-0.00114*** (0.000132)	-0.000915*** (0.000149)	-0.00103*** (0.000147)	-0.00103*** (0.000148)	-0.000968*** (0.000145)	-0.000965*** (0.000140)
GDP_gr	1.882* (0.981)					
VA/L gr		137.2** (67.35)				
structural			-2.421 (47.35)	-7.792 (50.49)		
Struct*low income				10.50 (96.46)		
within					74.35** (34.27)	10.68 (58.43)
Within*low income						123.3* (73.84)
lab_freedom	-1.835 (1.463)	-1.124 (1.467)	-0.526 (1.426)	-0.556 (1.423)	-0.380 (1.426)	-0.323 (1.394)
Constant	54.46*** (8.966)	45.79*** (7.703)	48.19*** (8.182)	48.36*** (8.138)	43.97*** (7.808)	44.82*** (8.020)
Observations	124	100	100	100	100	100
R-squared	0.410	0.417	0.341	0.341	0.384	0.420

Robust standard errors in parentheses. ***, p<0.01, **, p<0.05, * p<0.1

The impact of the interactive GDP growth*region dummies does not appear statistically significant for unemployment and non-unemployment rates. In the case of informal employment the SSA interactive term suggests that, at least in SSA, economic growth reduced informal employment. Similarly, economic growth appears to reduce vulnerable employment in Latin America. Finally, manufacturing value added growth reduces informality when we reduce the sample to the 2000s.

Overall, these results suggest that economic growth does not result in “jobless” growth since on average it reduces unemployment rates. This is in line with recent evidence for East Asian countries (Hanusch 2012) and consistent with recent estimates of the elasticities of employment to economic growth in OECD countries (Cazes et al. 2011). It is possible, however, that when TFP growth in the manufacturing sector is large, this results in fewer jobs. On the other hand, large agriculture value added or dependency on natural resources does not seem to impact unemployment rates. Informal and vulnerable employment does not seem to be determined by income growth or income per capita; only by the population size.

Tables 7 to 9 show the OLS estimates for each labor outcome separately. Starting with unemployment rates in Table 7, the results suggest that, as expected, countries with larger income per capita tend to have lower unemployment rates. Interestingly, growth rates do not significantly impact unemployment rates, which is likely the result of growth rates tending to be more extreme, both positive and negative, in developing countries with larger unemployment rates. On the other hand, countries with larger TFP growth tend to have lower unemployment. When we look at the decomposition of this growth, the results suggest that countries with larger positive structural change tend to have lower unemployment rates, while countries with larger within-sector productivity growth tend to have more unemployment; with the exception of low-income countries where both components reduce unemployment. This suggests that when most of the productivity growth is not reallocated to higher productivity sectors, the unemployment outcomes are worse. Finally, the labor freedom index is positive but only statistically significant in the specification using value added per worker.

Table 8 shows the estimates for youth unemployment. The results are somehow similar to total unemployment. Countries with higher income per capita and TFP growth tend to have less youth unemployment. The structural change coefficients are not statistically significant, which suggests that youth unemployment depends on other factors not related to structural change. The interactive term suggests that structural change and within-sector productivity reduces youth unemployment only for low-income countries, but this could be explained by other factors. One potential explanation is the fact that population growth and new entrants to labor markets are much larger in low-income countries, and this is being captured by the interactive term.

For the case of vulnerable employment in Table 9, the results are more puzzling to interpret. As expected countries with lower income per capita tend to have more vulnerable employment, but countries with larger GDP, TFP growth and within-sector productivity growth tend to have more vulnerable employment. This may be related to the definition used of vulnerable employment - those self-employed, without other employees, and those contributing to family labor – where growth processes are increasing self-employment and, therefore, the measure of vulnerability. Structural change does not appear to impact vulnerability of employment.

Overall, these results suggest that productivity growth is likely to be the critical element to reduce unemployment. More importantly, a growth pattern of productivity growth based on positive structural change, reallocation of workers to more productive sectors is also key in reducing unemployment rates, while within-sector productivity appears positive for low income countries only. On the other hand, the type of structural change does not appear to be a relevant element affecting the quality of labor indicators used in the paper.

6. Conclusions

This paper has analyzed one important aspect of the quality of growth; its capacity to deliver higher quality of employment. One key element arising from traditional development economic theories is the importance of structural change and the reallocation of workers from low to high productivity sectors in explaining improvements in labor markets and standards of living. The concept of structural change is

significant in the reallocation of workers from low to high productivity sectors. Given the observed pattern of commodity-based economic growth in many countries in the developing world in the last decades, especially in Africa and Latin America, some concerns about how this type of growth has been impacting employment in developing countries and the possibility that these countries experience “jobless” growth have emerged.

Our findings suggest that economic growth might not result in “jobless” growth since, on average, it appears to reduce unemployment rates over time. As expected, countries with larger income per capita tend to have better quality of labor outcomes. More importantly, TFP growth and positive structural change appear to be critical elements in reducing unemployment, while within-sector productivity might increase unemployment in higher income countries via reducing labor intensity, but decreasing unemployment in low income countries.

In addition, the paper complements the existing literature on structural transformation by analyzing an unexplored dimension of structural transformation, the impact on labor quality indicators such as youth unemployment, informality and vulnerability. The important result of the paper is that while the effect of the growth process on employment levels is significant, the impact on vulnerable and informal employment does not appear to be explained by the type of economic growth pattern. This suggests that other unexplained factors, such as the quality of labor institution, might be a more important factor explaining the quality of employment than economic growth.

In terms of policy implications, the findings emphasize the importance of productivity growth in reducing unemployment and the significant contribution of structural change, which suggests the importance of guarantee labor opportunities in higher productivity sectors. This can be problematic in countries with large comparative advantages in terms of primary commodities. In terms of the quality of labor indicators, more empirical work is necessary to fully understand these determinants and the role of labor market institutions.

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