DOES EMPLOYMENT GENERATION REALLY MATTER FOR POVERTY REDUCTION?

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ABSTRACT

In this paper we analyze whether the employment/productivity profile of growth as well as its sectoral pattern matter for poverty reduction. We also identify some conditions of the labor market which are associated with employment intensive growth or specific sectoral growth.

We find that, in the short run, while the overall employment intensity of growth does not matter for poverty reduction, the sectoral pattern of employment growth and productivity growth is important. While employment intensive growth in the secondary sector appears to be associated with decreases in poverty, employment intensive growth in agriculture increases poverty. Similarly productivity intensive growth in agriculture is associated with poverty reduction.

The results suggest that focusing on the aggregate employment elasticity of growth, alone, as a way to reduce poverty may lead to misleading policy recommendations and more be gained by focusing on secondary sector employment growth and productivity intensive growth in agriculture.

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Introduction

Recent years has seen a growing concern amongst policy makers with 'jobless' growth as a major obstacle to the poor benefiting from the positive growth performance experienced by many countries worldwide. This has been reflected in (i) an increase emphasis on the employment elasticity of growth as an indicator of the equity of the growth process and (ii) an intense debate on how best to foster employment intensive growth.[2] Behind this emphasis is the implicit assumption that employment generation plays an important role in reducing poverty. This seems intuitive as the poor derive most of their income/consumption from work, as employees, self-employed or in subsistence activities. Thus the impact of growth on poverty is seen as depending on the extent to which it generates employment. But is employment-intensive growth sufficient to ensure poverty reduction? Is it even necessary in Low Income Countries (LICs) where unemployment is a luxury, most people are employed in low-productivity, low-wage activities and the number of '*working poor'* has increased from 88% of the employed to 95% (if China and South Asia are excluded). Would the poverty reduction efforts of policy makers not be more fruitfully targeted to improving the quality of available employment—defined in terms of the income it generates? This is clearly a very important policy question.

Another recurrent issue in the policy discussion is whether poverty reduction is more effectively achieved by a growth pattern that favors the sectors of the economy in which the poor *are,* so as to enhance employment opportunities—ie, labor intensive growth in unskilled sectors—or by one that advances disproportionally the sectors where the poor *are not*, so that more of the poor can be drawn into the higher-earning parts of the economy.[3] The solution to this puzzle rests on the answer to two sets of questions. The first relates to the extent to which the sectoral impact of growth matter for poverty reduction. Does it matters more than the overall employment elasticity? And if it does, what are the most effective poverty-reducing growth paths and what are the factors that prevent some countries from following these paths?

Despite their clear importance of these questions for the development of successful shared growth strategies in LICs, they remain largely unexplored in the current literature and this significantly undermines the ability to provide sound evidence-based policy advice in this area.

The main objective of this paper is to deepen the understanding of these issues by (i) providing a comprehensive profile of the relative role of employment generation and productivity enhancement in explaining poverty reduction across a large sample of countries and (ii) presenting empirical findings on the importance of the sectoral pattern of growth in explaining the heterogeneity of poverty's response to growth across a number of countries. It also attempts to assess the extent to which the prevailing labor

[2] One of the core elements of the global employment agenda "Macroeconomic policies for growth and employment" calls for addressing four key questions, one of which is "How can the employment intensity of growth be increased"; ILO (2003).

[3] Achieving economic development by moving people out of the poorer sectors and into the richer ones has been labeled "intersectoral shifts." Both the Lewis and the Kuznets models described above are models of intersectoral shifts. These and later contributions are reviewed in Basu (1997).

market conditions and the average skill of the labor force play a role in explaining differences in growth patterns.

The paper contributes to the exiting literature in several ways. First, it provides empirical input to the debate on the impact of the sectoral patterns of growth by studying the sectoral employment/productivity profile of growth and its impact on poverty. Second, it develops a new methodology to estimate the impact of employment intensive growth on poverty. Most studies that address the poverty impact of employment intensive growth use the total change in employment over the total change in output as a measure for the total elasticity of employment, and then regress this variable against changes in poverty. As mentioned by Sundaram and Tendulkar (2002) this methodology has several drawbacks. Instead we use Shapely decompositions of growth into changes in several components one of which is the share of the labor force that is employed. This paper uses the amount of growth in output per worker associated with changes in employment (holding all else constant), as a measure of employment intensive growth. As it will be discussed, this measure has some advantages over the use of total employment elasticity. Finally, we go beyond the study of the link between the profile of growth and poverty reduction, and provide some preliminary evidence as to which labor market conditions determine the pattern of growth observed.

The paper is structured as follows the next section discusses the methodology and data. Section 2 shows that the overall employment intensity of growth has little relevance for poverty reduction. Section 3 discusses why this might be so and analyzes the role of the sectoral distribution of employment and productivity intensity of growth on poverty reduction. The extent to which labor conditions play any role in explaining the pattern of growth is explored in section 4. Section 5 concludes.

1 Methodology and data

1.1 Measuring the employment intensity of growth

The most common measure of employment intensive growth is the partial elasticity of employment with respect to growth $\partial E * Y / \partial Y * E$, which is obtained by regressing log of aggregate employment against the log total GDP, aggregate wages and other controls. Because it is a demand elasticity, it assumes a causality from growth to employment changes. There are both conceptual and empirical difficulties with respect to this measure. Conceptually, it tries to categorize growth as good or bad depending on whether it *generates* employment or not. It is however possible that observed growth is due to new entrants into the labor market; conceptually it is unclear whether this should be interpreted as 'good' growth using the definition implicit in the elasticity measure. From our point of view it is irrelevant whether the observed growth was due to new entrants into the labor market (supply effect), or whether the higher employment was due to (exogenous) growth (demand effect), either way it can be poverty reducing (or not).

What's important is that we can link employment growth with GDP growth in a consistent and comparable way. In addition, the employment elasticity of growth looks at changes in the level of employment, so that it is unable to distinguish whether employment changed as a fraction of the total labor force. We believe that what matters for poverty reduction is not the absolute number of employed, but the number of employed relative to the labor force.

From the empirical point of view, our main reservation with measuring employment intensive growth via the partial elasticity of employment with respect to growth, is with the way this measure is estimated, and that is, by assuming that both output and wages are exogenous. Aggregate wages will most likely be affected by employment growth, and output might very well increase due to employment growing[4]. Moreover, it is rarely the case that enough data is available to adequately estimate the partial elasticity for a large number of countries, so studies often settle for using the total elasticity of employment with respect to growth $\frac{\Delta E / E}{\Delta Y / Y}$, which attributes all possible employment changes to total growth, when in fact many other forces, -including relative wage changes or demographic changes- might be generating the variations in employment.

Followin Kakwani et al. (2006), a simple way of understanding how growth is associated into increases in productivity and employment at the aggregate level and by sectors, is to perform a simple decomposition of per capita GDP growth in three components: productivity changes, employment rate changes and demographic changes. To do so, note that per capita GDP, $Y/N=y$ can be expressed as:

$$\frac{Y}{N} = \frac{Y}{E}\frac{E}{A}\frac{A}{N}$$

Equation 1

Or:

$$y = \omega * e * a$$

where Y is total value added, E is total employment, A is the total population of working age and N is total population. The ratio $\omega=Y/E$ corresponds to output per worker, $e=E/A$ corresponds to the share of working age population employed and $a=A/N$ corresponds to the the share of populaiton of working age, that is the ratio of working age population to total population.

From Equation 1 it is possible to decompose the change in per capita value added in two consecutive periods, Δy, into the marginal contributions of each of its components using a Shapley decomposition. The Shapley decomposition approach is based on the marginal effect on the value of a variable or indicator, of eliminating each of the contributory factors in a sequence. The method then assigns to each factor the average of its marginal

[4] See Hammermesh (1986, 1993) for a discussion about the difficulties of estimating elasticities from aggregate data.

contribution in all possible elimination sequences (see Shorrocks 1999). Let $\bar{\omega}$, and $\bar{e}$ be the marginal contribution to the observed change in per capita value added, expressed as a fraction of observed growth, and $\bar{a}$ be the marginal contribution of the the share of populaiton of working age to change in per capita income, expressed as a fraction of growth, in other words, $\bar{\omega}\frac{\Delta y}{y}+\bar{e}\frac{\Delta y}{y}+\bar{a}\frac{\Delta y}{y}=\frac{\Delta y}{y}$.

In this case $\bar{e}$ would indicate the share of total growth that can be linked to growth in the employment rate as measured by the ration between total employment and working age population. In other words, had all dependency rates and productivity levels stayed the constant, and employment rate growth been the observed one, then total growth consistent with this scenario would have been equal to $\hat{e}=\bar{e}\frac{\Delta y}{y}$. Although strictly speaking employment rates are measured as the fraction of the population that 'participates' in the labor market that is employed, throughout this paper the term 'employment rate' will refer to employment as a fraction of the working age population[5].

It is worth noting that there are no causality implications in this decomposition. Growth in employment rates might have caused increases in per capita value added or, or it might have been in the opposite direction, i.e. increases in per capita value added might have generated more employment. Whatever the causality, $\hat{e}$ is the growth consistent with the hypothetical scenario in which all other things had stayed equal, and the employment rate had changed as observed. In this way $\hat{e}=\bar{e}*\Delta y/y$ reflects how much growth can be linked to employment rate growth and has the natural interpretation of employment intensive growth. Note again that we are measuring employment intensive growth with respect to changes in the employment *rate*, rather than the employment *level*.

The interpretation of the productivity term $\bar{\omega}$ is not so straight forward. It combines both increases in productivity due to technological change or reorganization of the process of production as well as cyclical changes in demand. Firms operating in economic downturns may have underutilized labor and capital, when the demand increases again; it will be reflected as an increase in productivity. This means that cyclical behavior of output will be reflected as changes in productivity, and this term has thus a wider interpretation that just technological change. This cyclical change in output per worker might be particularly important in the short run. $\hat{\omega}=\bar{\omega}\frac{\Delta y}{y}$ will then be the amount of growth in per capita value added that can be linked to productivity growth.

The component $\bar{a}$ reflects changes in the demographic structure of the population. For example, despite rises in labor productivity and employment, countries with a rapidly rising young population may see a decline in per capita income, if the employment and

[5] In developing countries and in particular in low income countries measuring participation is extremely difficult. In many cases unemployment is very low but the inactive include agents that are seasonally unemployed and large numbers of discouraged workers. We believe that in these cases a better measure of labor force is the working age population, rather than those participating actively in the labor market.

productivity growth is not enough to counteract the growing dependency ratio. The same might happen with countries that have rapidly aging population. $\hat{a} = \overline{a}\frac{\Delta y}{y}$ will then be the amount of growth in per capita value added that can be linked to changes in the dependency ratio, and $(1-\overline{a})\frac{\Delta y}{y}$ will be the amount of growth that can be linked to changes in output per working age person.

We can further decompose changes in output as a share of the working age population $\frac{Y}{E}\frac{E}{A} = \frac{Y}{A}$ into sectoral growth by noting that:

$$\frac{Y}{A} = \sum_{s} \frac{Y_i}{A}$$

Equation 2

Where Y_i is value added in sector *i*, and there are *s* sectors in the economy. Let $\overline{y}_i$ denote the share of growth in aggregate value added per working age person that can be attributed to growth in sector *i*. Then, $\frac{\Delta y}{y}\overline{y}_i * (1-\overline{a})$ is the amount of growth in *per capita* value added that can be attributed to total value added growth in sector *i*.

By the same token, growth in each sector can be decomposed into productivity and employment changes within the sector:

$$\frac{Y_i}{A} = \frac{Y_i}{E_i}\frac{E_i}{A}$$

Where E_i is total employment in sector *i*. Let $\overline{e}_i$ denote the share of growth in sector *i* that can be linked to employment changes, and let $\overline{\omega}_i$ denote the fraction of growth in sector *i,* that can be linked to changes in output per worker. Then we can compute how much of aggregate per capita value added growth can be linked to employment growth in sector *i* as:

$$\hat{e}_i = \frac{\Delta y}{y}\overline{y}_i * (1-\overline{a}) * \overline{e}_i$$

And the amount of aggregate per capita value added growth that can be linked to productivity growth in sector *i,* as:

$$\hat{\omega}_i = \frac{\Delta y}{y}\overline{y}_i * (1-\overline{a}) * \overline{\omega}_i$$

In other words, $\hat{e}_i$ is simply the product of the share of per capita value added growth due to output growth $(1-\overline{a})$, times the share of total value added growth attributable to sector

i ($\overline{y}_i$), times the share of growth in sector i, attributable to employment growth in sector i ($\overline{e}$), times observed growth.

Total growth can be then be expressed as:

$$\frac{\Delta y}{y} = \sum_{i=1}^{S} \hat{e}_i + \sum_{i=1}^{S} \hat{\omega}_i + \hat{a}$$

Our measure of aggregate employment intensive growth will thus be $\hat{e}$, our measure of sectoral growth is simply $\hat{y}_i = \frac{\Delta y}{y}\overline{y}_i$, and our measure of sector-i-employment intensive growth is $\hat{e}_i$. We believe that, for the specific purpose of understanding the link between employment intensive growth and poverty, the measure of employment intensive growth proposed has some advantages over the traditional employment elasticity of growth. The measure of employment intensive growth proposed in this paper is free of causality implications. It simply measures the growth and employment rates changes that are consistent with a particular productivity and population structure scenario (which is held constant), regardless of the source of this employment growth. In addition it measures employment intensive growth as growth linked to changes in the employment rate, rather than changes in absolute employment.

1.2 The data

To analyze whether employment matters for poverty reduction (sections 4 and 5) we make use of data on total and sectoral GDP, poverty, population and employment. The analysis covers the period ranging between 1980 and 2004, and uses a sample of 36 developing countries. Data on total GDP comes from the World Bank, World Development Indicators. To construct sectoral GDP we use data from the United Nations National Accounts, which have the share of total GDP by sector. Data on population comes from the UN population division. Data on poverty is obtained from the World Bank Poverty database. Finally data on employment comes from ILO-KILM database. United Nations data on National accounts has value added disaggregated into seven sectors in accordance with ISCS-rev3 definitions: agriculture, hunting, forestry and fishing; mining and utilities: manufacturing; construction; wholesale, retail, restaurant and hotels; transport storage and communications and other activities. Poverty data from the World Bank in PovCalNet, lists several measures of poverty, several measures of income distribution and mean survey income. It is based on household surveys and measures welfare either by income or consumption.

The KILM database has information for 20 indicators of the labor market, with several disaggregations each. It is the most comprehensive database for labor market outcomes available. It has however some limitations in terms of comparability across countries and within countries across time. The main difficulty for cross-country comparability is that definitions vary by country, and coverage of population and segments of the labor market

are not always the same. In particular, many countries report values for formal employment only, and others leave sectors such as agriculture out. The KILM database however, does provide information when this is the case, so that it is possible to control for differences in measurement and coverage. The main problem for within country comparisons is changes in sample or survey design. Again the database provides information of these breaks in the series. Finally, coverage for Sub-Saharan Africa is particularly low. We use indicators on employment by sector. The database presents data for both ISCS revision 2 and revision 3, when ever revision 3 is available for a country year we use this last classification system, otherwise we use the available information using revision 2. In either case we make sectoral aggregations consistent with the level of sectoral aggregation of UN national accounts information on GDP by sector of economic activity.

To establish the extent to which labor market conditions play any role in explaining the pattern of growth (section 4) we use data on labor regulation from Rama and Artecona (2002); and Sulla, Scarpeta and Pierre (mimeo World Bank), which covers a substantial amount of topics on regulation and labor institutions.

To profile growth in terms of employment and productivity by sectors we construct short run 'growth spells'. For each country, short run growth spells are constructed as the percentage change in Value Added per capita (VA) between two consecutive *comparable* points in time. One country may have several growth spells. For each growth spell in VA the corresponding changes in employment to labor force ratios (E/A) by sectors, value added per worker (Y/E) by sectors, and ratio of labor force to total population (A/N) are constructed. To link the profile of growth to poverty, the corresponding changes in poverty headcount ratio are constructed. Care is taken to make sure that the spells are in fact comparable in time. In particular, we take into consideration that within a spell, measured poverty is constructed using the same welfare indicator (income or consumption) and employment numbers have the same coverage (total or urban). Consistency in employment measures by sectors is obtained by taking into account breaks in employment series emanating either from changes in coverage or sample, so that within a spell employment is measured using the same sample and coverage. The average duration of the short run spells is 2.2 years with the longest spell being eight years.

Table 1 describes the covered sample. There is a very low number of low income countries as well as a very low number of countries in Sub-Saharan Africa or the Middle East and North Africa. The main data limitations come from employment data, which have very low coverage in these regions. This implies that the analysis may describe better the behavior of middle income countries.

Table 1: Sample description

Countries grouped by Region and Income Level	*No. of Countries in the Region*	*No. of countries in the Sample*	*% of countries in the Sample*
By Region			
Sub-Saharan Africa	48	2	4.2%
East Asia and the Pacific	24	5	20.8%
Europe and Central Asia	27	9	33.3%
Latin America and the Caribbean	31	17	54.8%
Middle East and North Africa	14	1	7.1%
South Asia	8	3	37.5%
Total	152	37	24.3%
By Income level			
Low Income	53	6	11.3%
Lower Middle Income	58	20	34.5%
Upper Middle Income	41	11	26.8%
Total	152	37	24.3%

2 Does aggregate employment intensity of growth matter for poverty reduction?

As mentioned before, there has seen a growing concern amongst policy makers with 'jobless' growth as a major obstacle to the poor benefiting from the positive growth performance experienced by many countries worldwide. Behind this emphasis is the implicit assumption that employment generation plays an important role in reducing poverty, as the poor derive most of their income/consumption from work, as employees, self-employed or in subsistence activities. This emphasis in employment intensive growth on the other hand, seems to downplay the importance of the quality of the employment generated, i.e. the overall productivity intensity of growth. In many cases productivity intensive growth is thought of as a process by which labor is substituted for capital and thus decreases employment and increases poverty.

The relative importance of productivity and employment changes on poverty reduction depends on the workings of the labor markets and the structure of employment. In a simple supply and demand framework, with no frictions or barriers to mobility, the economy is always at 'full employment', employment rates are always one and so there would be nothing as 'employment (rate) intensive growth'. Since we defined employment intensive growth as growth that is accompanied by increases in the employment rate, we need to depart from the competitive markets to tackle this question.

In models with friction and barriers to mobility (e.g. matching models), or in models of labor market segmentation there is space for employment intensive growth, that is growth

that is accompanied by increases in the employment rate. There are many ways in which frictions, barriers to mobility or segmentation might affect the ability of GDP growth to translate into employment generation and poverty reduction.

Indeed of the theoretical literature on labor markets in developing emphasizes the duality and segmentation of these labor markets[6]. At the core of this model is the idea that there is a 'bad job sector' and a 'good job sector'.[7] In the good jobs sector productivity is higher and so wages are higher. In the bad jobs sector productivity is low and income from self employment/wages is low. Given that productivity in the bad jobs sectors is low households that earn a living in the bad job sector are more likely to be poorer than the rest. Jobs in the good jobs sectors are rationed because wages are institutionally set above the competitive market clearing level. There may be minimum wages, unions may bargain for higher wages, firms may set 'efficiency wages' etc. Movement between the bad jobs sector and the good jobs sector may be limited, and people 'queue' for a good job. On top of the limited mobility created by institutionally set wages, there may be geographic barriers to mobility. For example many bad sector jobs may be in rural areas and migration to urban areas may be costly and risky, as there may be lack roads and few property rights enforcement on land for those who leave their land. There may also be barriers to mobility due to discrimination and segregation, as good jobs may only be given to those of certain ethnic group or to a particular gender. Similarly, good jobs may be reserved for those with a certain level of education so that the unskilled poor may be completely left out of the good jobs sector[8].

How can the employment intensity of growth affect poverty reduction under such model? Let's begin by assuming that population growth is zero and that the structure of the population (working age/non working age) remains unaltered. Assume also that the economy can be divided into three sectors: a bad jobs sector where productivity and earnings are low and two good jobs sector, where productivity and earning are high and where, for now, skill and employment intensity are the same. Assume also that a fraction of the labor force is unemployed.

Under the hypothesis of perfect mobility, an exogenous economy wide increase in the demand for the goods produced in the good jobs sector -say due to larger foreign demand- this growth will increase demand for labor in the good jobs and draw people out of the bad jobs and out of unemployment and thus reduce poverty. This means that if

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[6] Labor market segmentation is now part of the standard labor economic textbooks (see, for example, Borjas [1996], Bosworth et al. [1996], and Layard, Nickel, and Jackson [1991]). The main reason is that it offers a better explanation for some empirical observations than the competitive model. An often-quoted example is the persistent existence of intra-industry wage differentials for observationally equivalent workers (Katz and Summers 1988). For other contributions, see Dickens and Lang (1988) and Esfahani and Salehi-Isfahani (1989).

[7] The bad jobs sector is usually associated with agricultural sector or the informal sector and the 'good jobs sector' is generally associated with the industrial or modern sector or the formal sector, we believe that this distinctions may be too simplifying and that the division of the labor market between good and bad jobs, goes beyond the formal/informal or agricultural/industrial divide.

[8] For example, in several African economies the best jobs are those in the public sector, and only the educated ones have access to these. In Nicaragua, to be able to work in many of the maquila firms you are required to have completed secondary.

there are no barriers to mobility *growth will reduce poverty by pulling poor people into the good jobs.*

But growth may impact demand for labor more or less, depending for example on the production technology and relative prices of labor versus capital. Compare for example two countries that face the same relative prices of labor, but one country has a production technology that is more intensive in labor than the other. The country with the high employment intensity will generate a higher demand for labor for every percentage point of growth, and thus might be able to bring more people out of the bad jobs sector and into the good jobs sector and more people out of unemployment. The reduction in the unemployment rate will be reflected as employment intensive growth, and the higher the number of people pulled out of unemployment the larger the effect on poverty. *In other words the overall employment intensity of growth will matter.* Note however that while the movement out of unemployment will be reflected in higher employment rates, the movement of workers from the bad jobs sector into the good jobs sector will be reflected as an increase in output per worker i.e. as productivity intensive growth. Thus larger movements out of the bad jobs sector and into the good jobs sector will be reflected in a higher productivity intensity of growth. *Thus productivity intensive growth will be related to poverty reduction.*

What about productivity growth in the good jobs sector? This is a hard question, because it depends on the definition of productivity, the source of its growth and the way it reflects on output demand. If we measure productivity as output per worker, then we have to differentiate between the short run and the long run. In the short run we can consider the capital stock to be fixed so that any increase in productivity (measured as output per worker) can be equated with increases in TFP. This means that firms can produce the same amount of output at lower level of inputs and thus lower costs. Under monopolistically competitive markets for output, they would thus be able to sell at lower prices than other competitors and increase their share of the market. Two different effects will work in opposite directions: a) fewer workers are needed per unit of output b) more output is being sold. In the extreme case where total demand for goods stays constant and does not increase, then the demand for labor will be reduced, workers will be shed to the bad jobs sectors or to unemployment and poverty will increase. *In the short run productivity increases in the good jobs sector may have an ambiguous effect on poverty depending on the effect of higher productivity on the demand for labor.*

What about productivity growth in the good jobs sector and its effects on wages? In the above discussion we are assuming wages are not affected by productivity increases. Clearly, with higher productivity firms are having higher profits (less costs same or more output). Whether higher productivity translates into higher wages will depend on the wage setting mechanisms. Under bargaining models or union set wages this will clearly raise the pressure to increase wages. Wage increase may decrease poverty if poor households have a combination of income from both bad jobs sector and good jobs sector. *This means that productivity increases in the good jobs sector may reduce poverty if it translates in rising wages, depending on the composition of the sources of*

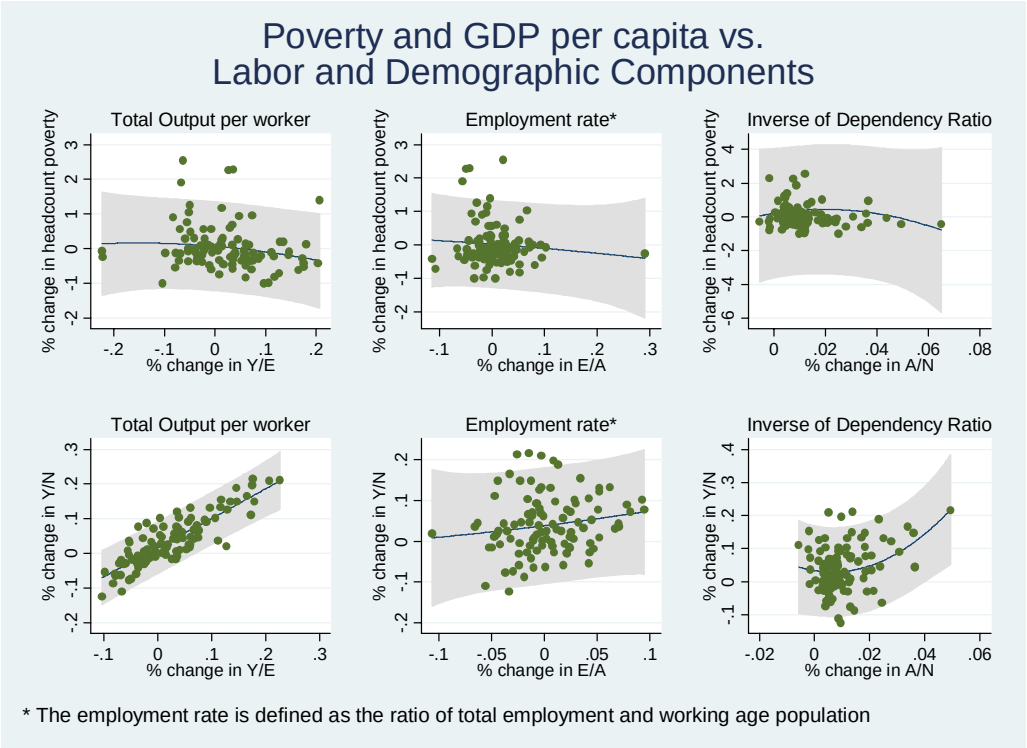
household labor income among the poor. If poor households have at least some income from wage employment in the good jobs sector then poverty is likely to decrease.

2.1 What do the stylized facts say?

Figure 1 presents stylized facts on the empirical link between growth and poverty changes in all countries for which data were available. It shows how poverty changes and per capita value added growth are correlated with changes in *productivity*, *employment rates* and the *the share of populaiton of working age*. Productivity is defined as value added per worker. Employment rates are measured as the number of employed as a fraction of the working age population[9]. The the share of populaiton of working age is the ratio of total working age population to total population. Each data point in the figure illustrates a growth spell for a country. A growth spell is simply the percentage change in the variables of interest between two points in time. The spells are short and medium run: on average each spell lasts 2 years, and most spells are between one and 4 years (Section 1.2 discusses further the data). The first row of plots in Figure 1 illustrates how percentage changes in **headcount poverty** correlate with percentage changes in productivity (first plot), employment rates (second plot) and the inverse of the dependency rate (third plot). All of these components seem to be negatively correlated with poverty, although the correlations appear to be small and the confidence intervals (the shaded area) large. The positive correlation is perhaps not very surprising: higher value added per worker can translate into higher labor income either via higher wages or higher profits from self employment, and thus it can reduce poverty. Higher employment rates would imply more people working and thus more people earning. Lower dependency rates mean that each working age member has to support a lower number of dependants on his/her income. The second row of plots in the Figure illustrates the correlation between **per capita value added** and the same three components. The strong positive correlation between changes in productivity and per capita value added stands out, meaning that productivity growth and per capita value added growth are strongly correlated. Changes in employment as well in as the the share of populaiton of working age are also positively correlated with increases in per capita value added, but there confidence intervals are substantially wider, suggesting the relation is less strong. From this simple approach it seems that changes the in employment rate and productivity growth *might* both be correlated with poverty reduction as well as with overall growth.

[9] See footnote 6.

Figure 1



2.2 Empirical results

The relationships discussed above can be more rigorously answered using regression analysis. We present four different sets of estimations. The first analyzes the relation between growth in overall per capita value added and poverty changes. The second asses the extent to which the aggregate employment intensity of growth matters. For each set of regressions several models where estimated, the basic model (column 1 in all the tables) corresponds to the full sample and no controls. The other models exclude outliers and/or include control variables.

Following Bourguignon (2002), we include as controls all those variables that may affect the responsiveness of poverty to growth: value added per capita at the beginning of the spell, the level of inequality at the beginning of the spell, the level of poverty at the beginning of the spell and the change in income inequality at the beginning of the spell. These variables may also be correlated with our dependent variable. Specifically, higher levels of inequality may promote pro-capital or pro-labor policies. Changes in the distribution may affect the sectoral pattern of growth, and the level of income may also be associated with more or less pro-worker or pro-capita legislation.

If our assertion according to which '*overall growth should reduce poverty by dragging people out of the bad jobs and into the good jobs'* is true then increases in GDP per capita ($\Delta y/y$) should be associated with decreases in poverty ($\Delta P/P$), and we should expect a negative coefficient β_1 when estimating:

$$\frac{\Delta P}{P} = \beta_0 + \beta_1 \frac{\Delta y}{y}$$

Equation 3

Table 2 shows the results of estimating Equation 3. Columns one and three refer to the whole sample. Columns two and four estimate the equation excluding outliers. The results when excluding the outliers support the hypothesis: that growth in value added reduces poverty, and the results are robust to the inclusion of controls.

Table 2: Changes in poverty and overall growth.

	(1) Full sample	(2) No outliers	(3) Full sample	(4) No outliers
Change in Y/N (%)	-2.185	-2.546***	-3.673	-2.521***
	(-0.95)	(-2.82)	(-1.64)	(-2.78)
Gini at t=0			-0.0498***	-0.0111
			(-2.69)	(-1.61)
Y/N at t=0			0.0000364	0.0000465
			(0.39)	(1.43)
Poverty at t=0			-0.0185	-0.00392
			(-1.07)	(-0.62)
Change in Gini (%)			7.481***	2.588***
			(3.68)	(3.34)
Constant	0.416**	0.122*	2.764***	0.435
	(2.07)	(1.71)	(3.27)	(1.35)
Observations	109	102	109	102
Adjusted R-squared	-0.001	0.064	0.198	0.190
t statistics in parentheses				
* p<.10, ** p<.05, *** p<.01				

To determine whether the overall employment intensity of growth matters we would need to decompose total growth into the fraction linked to productivity increases and employment increases. We can use the results from the decomposition and estimate:

$$\frac{\Delta P}{P} = \beta_0 + \beta_1 \hat{e} + \beta_1 \hat{\omega} + \beta_1 \hat{a}$$

Equation 4

Our right hand side variable is ΔP/P and our left hand side variables are expressed in the form $\hat{x} = \overline{x} * \Delta y / y$, for $\hat{x} \in (\hat{e}, \hat{\omega}, \hat{a})$ This means that a coefficient on $\hat{x}$ of say 10, should

be interpreted as meaning that a 1% x-intensive-growth, reduces the **head count poverty ratio** by 10%.

Table **3** shows the results of estimating Equation 4. The overall productivity intensity of growth is negatively correlated with poverty changes, that is productivity intensive growth is poverty reducing. Employment intensive growth appears to be poverty reducing also but the significance is much lower and only significant when outliers are excluded. to check whether there is any difference between employment intensive growth and productivity intensive growth we test for equality of the coefficients. Equality of coefficients can't be rejected for models 1, 2 and 4 (but it is rejected for model 3), so that it is appears that the impact of overall productivity intensive growth is no different from employment intensive growth. If anything, we can conclude that it is productivity intensive growth that is more robustly correlated with poverty reduction.

Table 3: Poverty changes and the employment/productivity intensity of growth

	(1) full sample	(2) No outliers	(3) Full sample	(4) No outliers
Inverse of dependency A/N	-2.675	-5.373	3.944	-2.818
	(-0.17)	(-0.82)	(0.27)	(-0.44)
Value added per worker Y/E	-3.151	-2.282**	-5.404**	-2.352**
	(-1.26)	(-2.31)	(-2.30)	(-2.39)
Employment rate E/A	-0.536	-3.404*	-1.898	-3.355*
	(-0.20)	(-1.90)	(-0.77)	(-1.99)
Gini at t=0			-0.0564***	-0.0102
			(-3.07)	(-1.42)
Y/N at t=0			0.0000544	0.0000468
			(0.59)	(1.40)
Poverty at t=0			-0.0203	-0.00355
			(-1.20)	(-0.55)
Change in Gini (%)			7.328***	2.625***
			(3.64)	(3.35)
Constant	0.417	0.147	2.913***	0.387
	(1.61)	(1.58)	(3.34)	(1.09)
Observations	109	102	109	102
Adjusted R-squared	0.002	0.051	0.226	0.176
t statistics in parentheses				
* p<.10, ** p<.05, *** p<.01				

3 If the overall employment intensity of growth does not matter, then what matters?

It has often been argued that what is important for poverty reduction is not overall employment growth, but the sectoral pattern of growth. A growing literature has focused on understanding the determinants of the growth elasticity of poverty (i.e. differences in poverty's response to growth). Initial levels of inequality, individual endowments of physical and human capital, stabilization from high inflation, the size of government, labor productivity in agriculture and the regional and sectoral patter of growth, have all been emphasized in past work as driving forces behind the differences in the degree to which growth reduces poverty[10].

Loayza and Raddatz (2006) consider the growth impact in unskilled labor intensive sectors. The findings show that growth in unskilled intensive sectors contributed to explain poverty reduction after controlling for average growth. Ravallion and Datt (Op. Cit), which links sectoral value added growth to poverty changes in India, and finds that growth in agriculture helped reduce poverty while growth in manufacturing did not. World Bank (2005) found evidence indicating that the ability to migrate enabled the rural poor to benefit from growth. It also concluded that access to non-farm rural employment and informal urban employment facilitated the participation of the poor in the growth process. Additionally, in three of the fourteen countries studied pro-poor growth was associated with more labor intensive growth[11]. In a related analysis, Islam (2004) uses a cross-country sample of 23 developing countries to determine whether the employment intensity of growth in manufacturing contributes to explain poverty reduction, but finds that results are not robust to the inclusion of per capita GDP growth. Often the discussion has focused on whether growth should be concentrated on the sectors where the poor are (usually agriculture) or on sector where the poor are not (manufacturing), so that these sectors can pull the poor out of the low return sectors (Fields 2005), but empirical evidence to illuminate this debate has been scant. In this section we try to address these issues.

3.1 What do the stylized facts say?

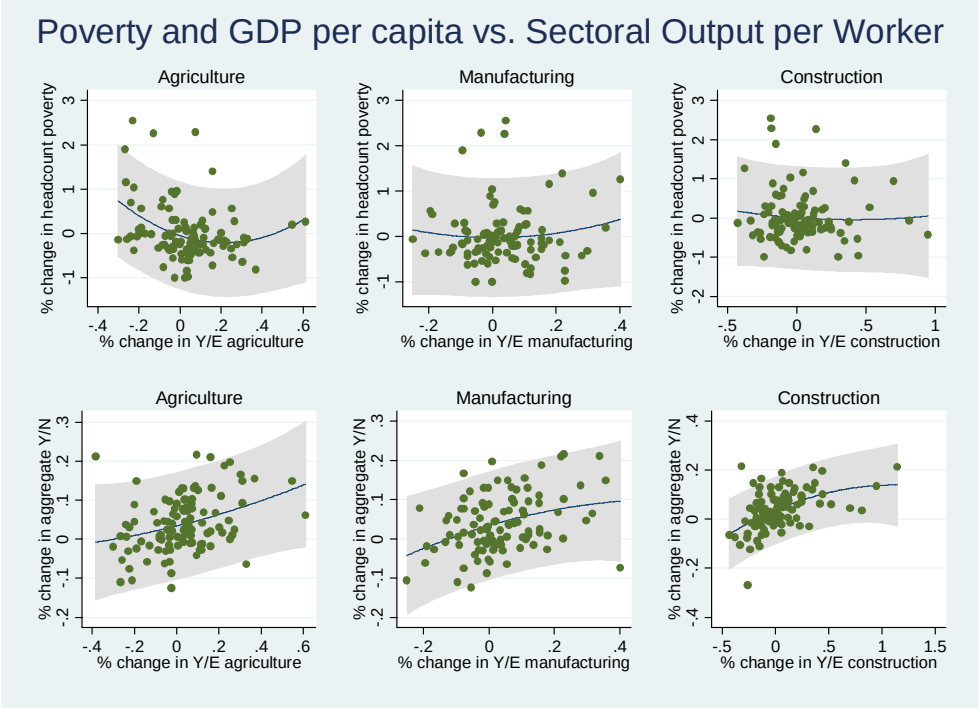
Figure 2 illustrates how changes in poverty and value added per capita, are correlated with changes in productivity -value added per worker- for three selected sectors (manufacturing, construction and agriculture). A simple look at the figure suggests that there might be important differences. For example growth in output per worker in agriculture seems to be strongly correlated with poverty reduction, while productivity

[10] See for example, Dollar and Kraay (2002), Kraay (2006), Ravallion (2005), Ravallion and Chen (2004), Ravallion and Datt (2002), Loayza and Raddatz (2006), and Bourguignon (Op. Cit).
[11] These where Indonesia, Vietnam, and Tunisia.

growth in manufacturing and construction does not seem to have any clear effect on poverty (first row of plots). On the other hand, changes in productivity in all sectors seem to be positively associated with overall productivity increases, with no significant differences among sectors.

Finally, Figure 3 illustrates how changes in poverty and changes in per capita value added are correlated with employment growth in the selected sectors. Clearly there are differences among sectors. While employment growth in agriculture is associated with growing poverty, employment growth in manufacturing and construction seems to be associated with decreases in poverty. In other words, within countries, when employment in agriculture grows as a share of total working age population, poverty increases. It is worth highlighting that these are changes within 2 years (on average). The relationship between changes in overall per capita value added and employment rates in the different sectors are also different. Increases in employment in agriculture seem to be negatively correlated with overall growth, while the opposite holds true for manufacturing and construction.

Figure 2

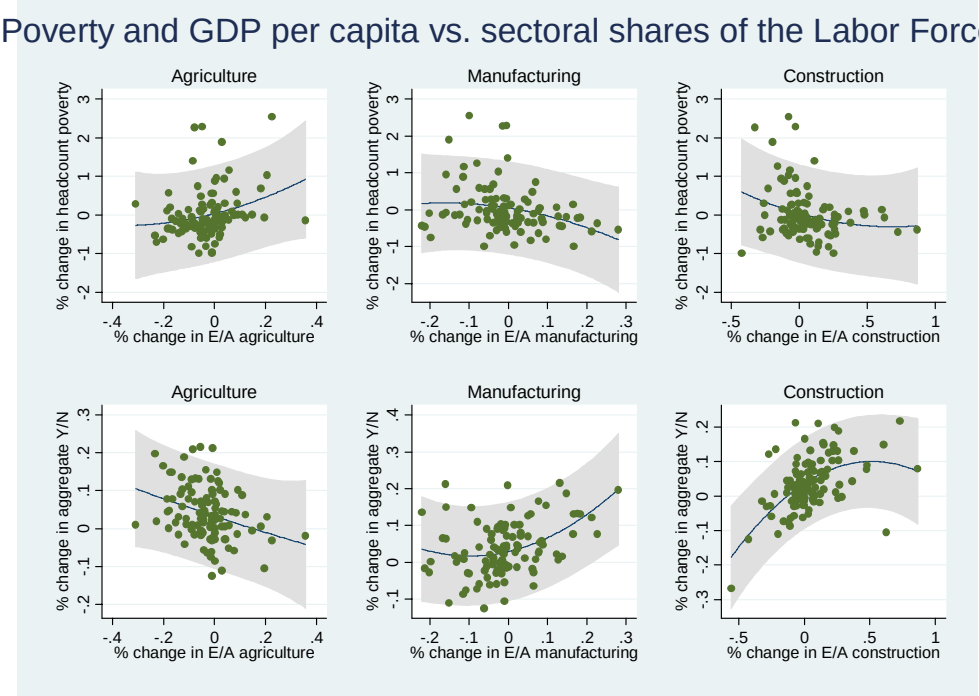


3.2 *Why would the sectoral employment and productivity profile of growth matter for poverty reduction?*

Although in a competitive model although there is no role for employment intensive growth, the sectoral pattern of growth can affect the degree to which growth translates into poverty reduction. In a competitive model growth in one particular sector would increase demand for labor and rise wages everywhere uniformly, but how much upward pressure is exerted will depend on how much labor the growing sector is demanding.

More labor intensive sector will generate a higher demand for labor per 'unit' of growth – e.g. a one percent growth in an employment intensive sector will exert a higher pressure on wages than a one percent growth in a capital intensive sector-. Growth in sectors such as agriculture (which is mostly labor intensive in developing countries) would be more poverty reducing that say growth in high tech manufacturing or utilities, which could be less labor intensive (See Loayza and Raddatz (Op. Cit.) for a model that deals with this mechanism). In this case sectoral growth would be reflected in changes of the employment share of the different sectors, but overall, there would be no employment intensive growth. The only mechanism by which growth would affect poverty is by affecting wages.

Figure 3



In the dual models discussed before, there is scope for both changes in the sectoral share of employment and employment intensive growth. As before, assume that the economy is composed of a good jobs sector and a bad jobs sector; and that within the good jobs sector there are two sub-sectors. Assume there is no population growth and no changes in the structure of the population (working age/non working age). As in the previous section an exogenous economy wide increase in the demand for goods in the good jobs sector, will have the same impact on labor demand independently of the sectoral distribution of growth, if both sub-sectors within the good jobs sector have the same employment intensity and the same productivity. However, if sectors differ with respect to their employment intensity (and/or skill intensity) then the sectoral pattern of growth will matter. Let's compare say manufacturing and finance. The first is tends to be more employment intensive than the second, so that a 1% growth in manufacturing is likely to pull more labor out of the bad jobs sector and of unemployment than a 1% growth in finance (all else equal). This will imply that, growth in employment intensive sectors

(and particularly in unskilled intensive sector) might be more efficient in pulling people out of poverty. *Thus the sectoral pattern of growth matters for poverty reduction.*

Growth may also be reflected or accompanied by changing employment intensities within sub-sectors. Firms may choose more or less employment intensive techniques when responding to increasing demand. For example some sectors may meet rising demand easily through higher labor while others may meet it through higher productivity. Even if the two sub-sectors experience the same amount of growth, but one sector rises productivity while the other rise labor demand, then they will have differing amounts of impact on poverty *so that sectoral employment and productivity intensity within sectors will matter for poverty reduction.*

What about employment intensive growth in the bad jobs sector? If there is no population growth nor structural changes of the labor force, employment intensive growth in the bad jobs sector can only occur as a result of shrinking employment in the good jobs sector. This means that poverty will always increase as a consequence of this and *employment intensive growth in the bad jobs sector will increase poverty.*

Now consider the case where the bad jobs sector has an increase in productivity or in demand (or both). Since we said most of the poor are earning income from this sector, poverty will immediately be reduced (or at least its depth). This means that *productivity intensive growth in the sectors where the poor are should reduce poverty, regardless of whether there are or not barriers to mobility.*

Will it matter which sector among the good jobs sector experiences the productivity intensive growth? As with employment intensive growth discussed above, the sectoral pattern of productivity growth will matter. If the overall effect of productivity increases is to shed labor into the bad jobs sector and into unemployment, the more labor intensive a sector is the bigger its effect on increasing poverty. If the overall effect of productivity increases is an increase in the demand for labor, the opposite will be true. *Productivity intensive growth in the good job sectors matters, but its effects will depend on the final effect on employment and wages.*

The above discussion assumed that there are not extensive barriers to mobility between the good and bad jobs sectors. If there are extensive barriers to mobility then increasing demand for labor in the good job sector will only push wages up, and growth will not be employment intensive. The overall effect on poverty will depend on the structure of household income; if at least some members in poor households have access to good jobs the poverty may be reduced[12]. With extensive barriers to mobility the only type of growth that is likely to be poverty reducing is productivity intensive growth in the bad jobs sector.

[12] This issue can only be adequately analyzed answered at a country level using household data.

3.3 Results: it is the sectoral employment and productivity intensity that matters

We now turn to the sectoral pattern of growth. From our discussion in section 3 we concluded that *'the sectoral pattern of growth matters for poverty reduction'.* To test this hypothesis we regress poverty changes against the contribution of each sector to total growth:

$$\frac{\Delta P}{P} = \beta_0 + \sum_{i=1}^{S} \beta_i \hat{y}_i$$

Equation 5

where $\overline{y}_i$ is the share of total growth attributable to sector i, and S the number of sectors.

Table 4 shows the estimation results of Equation 5 using a seven sector disaggregation. We present two set of outliers, the columns termed outliers 1 only excludes those observation with outliers in the poverty data. Only growth in services appears to be significantly associated with poverty reduction. Manufacturing appears to be poverty reducing when the whole sample is used, but this result is not robust to outliers. We also estimate Equation 5 using a three sector aggregation. We leave agriculture as the primary sector, and aggregate manufacturing mining and construction into 'secondary sector' and services, transport and communication and other sectors as 'tertiary sector'. The results are shown in Table 5. Contrary to results in previous literature agriculture does not seem to be associated with poverty reduction. Growth in the secondary and tertiary sectors appears to be associated with poverty reduction but the results are not robust to the model specification. Moreover, the null hypothesis that the coefficients of the three sectors are equal can't be rejected in 5 out of 6 of the model specification.

Finally, we turn to the sectoral employment intensity of growth by estimating:

$$\frac{\Delta P}{P} = \beta_0 + \sum_{i=1}^{S} \beta_i \hat{e}_i + \sum_{i=1}^{S} \gamma_i \hat{\omega}_i$$

Equation 6

Where as mentioned before $\hat{e}_i$ reflects how much of the observed growth can be linked to (relative) increases in employment in sector *i*; and $\hat{\omega}_i$ corresponds to the amount of growth that can be linked to changes in productivity in sector *i*[13]. Since employment intensity and productivity intensity are highly correlated within sectors, we decided to break the estimation in two steps. A first estimation looks at changes in poverty and the amount of growth due to employment changes in each sector. A second estimation

[13] Again we estimate this model for two sets of outliers, the first excludes those changes in poverty that are unusually big; and the second also considers outliers among the right regressors of Equation 6

analyzes the changes in poverty against productivity intensive growth. We estimated Equation 6 for the seven sectors and for three sectors aggregation.

Table 4: Poverty changes and the sectoral pattern of growth. Seven sector disaggregation

	(1) full sample	(2) No outliers 1	(3) No outliers 2	(4) Full sample	(5) No outliers 1	(6) No outliers 2
Agriculture (Primary Sector)	14.29	-0.635	-3.465	12.25	0.157	-1.505
	(1.49)	(-0.15)	(-0.77)	(1.37)	(0.04)	(-0.35)
Manufacturing	-25.07***	-1.734	0.0886	-25.29***	-4.552	-2.203
	(-4.01)	(-0.57)	(0.03)	(-4.45)	(-1.55)	(-0.66)
Mining	10.51	-1.824	-1.606	7.799	-2.524	-2.601
	(1.21)	(-0.57)	(-0.48)	(0.94)	(-0.80)	(-0.79)
Construction	9.115	-4.686	-6.236	25.89**	2.751	0.726
	(0.70)	(-0.96)	(-1.23)	(2.06)	(0.56)	(0.14)
Services	-5.571	-9.317**	-9.579**	-5.658	-8.821**	-9.966**
	(-0.51)	(-2.30)	(-2.18)	(-0.53)	(-2.20)	(-2.31)
Transport & Communications	47.43***	5.136	2.090	16.70	0.886	-1.714
	(2.81)	(0.73)	(0.29)	(1.00)	(0.13)	(-0.25)
Commerce and other	-0.0413	0.245	2.702	-4.985	-1.993	0.172
	(-0.01)	(0.09)	(0.95)	(-0.79)	(-0.80)	(0.06)
Gini at t=0				-0.0381**	-0.0105	-0.00866
				(-2.11)	(-1.51)	(-1.22)
Y/N at t=0				0.0000417	0.0000387	0.0000355
				(0.47)	(1.13)	(1.02)
Poverty at t=0				-0.0206	-0.00737	-0.00741
				(-1.19)	(-1.11)	(-1.09)
Change in Gini (%)				7.880***	2.625***	2.638***
				(3.84)	(3.23)	(3.22)
Constant	0.139	0.0398	0.000336	2.075**	0.458	0.350
	(0.74)	(0.57)	(0.00)	(2.44)	(1.39)	(1.02)
Observations	109	105	98	109	105	98
Adjusted R-squared	0.165	0.048	0.055	0.313	0.179	0.176
t statistics in parentheses						
* p<.10, ** p<.05, *** p<.01						

Table 5: poverty changes and sectoral growth. Three sector disaggregation

	(1) full sample	(2) No outliers 1	(3) No outliers 2	(4) Full sample	(5) No outliers 1	(6) No outliers 2
Agriculture (Primary Sector)	6.482	-2.088	-4.735	7.134	-2.455	-3.686
	(0.69)	(-0.52)	(-1.11)	(0.82)	(-0.64)	(-0.91)
Secondary Sector	-9.887***	-2.684*	-2.334	-7.494**	-2.419	-1.960
	(-2.63)	(-1.67)	(-1.37)	(-2.13)	(-1.58)	(-1.19)
Tertiary Sector	5.129	-2.214*	-1.527	-0.198	-2.662**	-2.357
	(1.41)	(-1.68)	(-1.03)	(-0.05)	(-2.03)	(-1.64)
Gini at t=0				-0.0423**	-0.0107	-0.00927
				(-2.25)	(-1.56)	(-1.31)
Y/N at t=0				0.0000279	0.0000484	0.0000490
				(0.30)	(1.45)	(1.43)
Poverty at t=0				-0.0201	-0.00347	-0.00307
				(-1.17)	(-0.56)	(-0.48)
Change in Gini (%)				7.407***	2.595***	2.719***
				(3.49)	(3.36)	(3.42)
Constant	0.281	0.0783	0.0531	2.392***	0.378	0.280
	(1.46)	(1.16)	(0.74)	(2.79)	(1.20)	(0.85)
Observations	109	105	98	109	105	98
Adjusted R-squared	0.049	0.037	0.025	0.210	0.178	0.165

T statistics in parentheses

* p<.10, ** p<.05, *** p<.01

Table 6 illustrates the results for employment intensive growth. It stands out that growth associated with increases in agricultural employment within a country (agricultural employment intensive growth), are associated with increases in poverty. This result is robust to the inclusion of outliers and controls and highly significant. Growths that can be linked to increases in employment shares in manufacturing seem to be associated with poverty reduction but the result seems to be largely driven by outliers. If agriculture is a residual sector that absorbs the surplus labor from the good jobs sector then these results would support our claim that '*employment intensive growth in the bad jobs sector should increase poverty'*.

Table 6: Poverty changes and sectoral employment intensity of growth

	(1) Full sample	(2) No outliers 1	(3) No outliers 2	(4) Full sample	(5) No outliers 1	(6) No outliers 2
Employment share in Agriculture (Primary Sector)	15.63**	9.333**	6.823	18.72***	10.63***	8.509**
	(2.19)	(2.27)	(1.56)	(2.80)	(2.74)	(2.08)
Employment share in Mining	-0.817	-4.761	-4.124	-8.711	-6.567*	-6.732*
	(-0.08)	(-1.25)	(-1.04)	(-0.87)	(-1.82)	(-1.83)
Employment share in Manufacturing	-25.14***	-5.274	-5.989	-15.55*	-3.632	-4.895
	(-3.05)	(-1.56)	(-1.49)	(-1.95)	(-1.15)	(-1.31)
Employment share in Construction	-7.720	-4.101	-6.300	-3.972	-1.722	-1.045
	(-0.43)	(-0.64)	(-0.90)	(-0.23)	(-0.29)	(-0.16)
Employment share in Services	7.470	1.167	-0.412	3.871	1.596	0.656
	(0.74)	(0.27)	(-0.08)	(0.41)	(0.40)	(0.13)
Employment share in Transport & Communications	-11.81	-12.47	-12.10	-17.80	-14.91*	-18.05*
	(-0.47)	(-1.36)	(-1.14)	(-0.76)	(-1.73)	(-1.83)
Employment share in Commerce and other	2.591	1.332	-0.981	2.549	1.021	-2.334
	(0.37)	(0.54)	(-0.31)	(0.39)	(0.44)	(-0.80)
Gini at t=0				-0.0409**	-0.00811	-0.00637
				(-2.21)	(-1.21)	(-0.92)
Y/N at t=0				0.0000416	0.0000426	0.0000433
				(0.48)	(1.37)	(1.33)
Poverty at t=0				-0.0118	-0.00141	-0.00335
				(-0.74)	(-0.25)	(-0.57)
Change in Gini (%)				6.590***	2.877***	3.086***
				(3.32)	(3.83)	(4.05)
Constant	0.292	0.0692	0.0773	2.115***	0.254	0.184
	(1.50)	(0.99)	(1.03)	(2.67)	(0.86)	(0.58)
Observations	109	105	98	109	105	98
Adjusted R-squared	0.159	0.096	0.087	0.287	0.237	0.248
t statistics in parentheses						
* p<.10, ** p<.05, *** p<.01						

The joint hypothesis that construction, manufacturing and mining and utilities have equal coefficients, and that services, communication and transport, and other sectors have the same coefficients, could not be rejected in any of the specification. We thus estimate a three sector aggregation. Table 7 illustrates the results. Poverty increases are positively associated with agricultural employment intensive growth. The result is statistically significant the 5% and 1% levels in 5 out of three specifications. On the other hand, secondary sector employment intensive growth is associated with decreases in poverty. The result is statistically significant at the 1% level for all of the model's specifications. If the secondary sector concentrates most of the good jobs sector then this result would support our claim that *' ...(the) sectoral employment intensity of growth will matter and employment intensity in the good jobs sector should pull people out of poverty'.* Moreover, a test of whether the coefficients are equal was rejected in five of the 6 specification. Three of the rejections are at the 1% confidence level.

Table 7: Poverty changes and sectoral employment intensity. Three sector disaggregation.

	(1) Full sample	(2) No outliers 1	(3) No outliers 2	(4) Full sample	(5) No outliers 1	(6) No outliers 2
Employment share in Agriculture (Primary Sector)	20.46***	9.249**	7.273*	18.81***	9.695**	7.925**
	(3.58)	(2.38)	(1.77)	(3.58)	(2.62)	(2.05)
Employment share in Secondary Sector	-15.02***	-5.270***	-5.704***	-11.83***	-4.689***	-5.194***
	(-3.27)	(-2.89)	(-2.93)	(-2.77)	(-2.75)	(-2.89)
Employment share in Tertiary Sector	0.271	-0.567	-2.432	-0.447	-0.748	-3.454*
	(0.07)	(-0.35)	(-1.12)	(-0.12)	(-0.48)	(-1.72)
Gini at t=0				-0.0454**	-0.00899	-0.00761
				(-2.62)	(-1.39)	(-1.15)
Y/N at t=0				0.0000503	0.0000486	0.0000446
				(0.60)	(1.60)	(1.42)
Poverty at t=0				-0.0103	-0.00112	-0.00279
				(-0.67)	(-0.20)	(-0.49)
Change in Gini (%)				6.535***	2.646***	2.885***
				(3.41)	(3.61)	(3.90)
Constant	0.326*	0.0638	0.0749	2.281***	0.258	0.246
	(1.75)	(0.96)	(1.07)	(3.09)	(0.90)	(0.82)
Observations	109	105	98	109	105	98
Adjusted R-squared	0.162	0.114	0.112	0.309	0.244	0.260
t statistics in parentheses						
* p<.10, ** p<.05 *** p<.01						

The second set of estimations analyzes the relationship between sectoral productivity intensive growth and poverty reduction. As before, we consider 6 different specifications and 2 aggregations. Table 8 shows the seven sector disaggregation. In five out of the six specifications, productivity intensive growth in agriculture reduces poverty, and the results are significant at the 5% confidence level. In other specification productivity intensive growth in manufacturing and services reduces poverty but results are not robust to the exclusion/inclusion of outliers or controls. We test equality of coefficients to see whether we can aggregate sectors into the three basic groups. Equality of the coefficients could not be rejected in several of the model's specifications, suggesting that a three sector aggregation may be more appropriate.

Table 9 shows the results for a three sector disaggregation. The results do not change. productivity intensive growth in agriculture is associated with poverty reduction while productivity intensive growth in the secondary and tertiary sector have an ambiguous effect on poverty reduction. These results seem to support the claim that '*In the short run, productivity increases in the good jobs sector may have an ambiguous effect on poverty…''*.

In summary we find that overall employment intensive growth is not clearly associated with poverty reduction. Nor is the sectoral pattern of growth. What seems to matter most if the employment and productivity sectoral profile of growth. We find that employment intensive growth in agriculture increases poverty, while employment intensive growth in the secondary sector reduces poverty. On the other hand productivity intensive growth in agriculture happens to reduce poverty, while productivity intensive growth in the secondary and tertiary sectors have an ambiguous effect on poverty.

The magnitude of these effects is important: a 1% employment intensive growth in agriculture increases headcount poverty by around 7% (e.g. from 45% to 48%) to 20%. A 1% employment intensive growth in manufacturing decreases poverty by 5% to 15%. Productivity intensive growth in agriculture reduces poverty by 7% to 10%.

Table 8: Poverty changes and sectoral productivity intensive growth. Seven sector disaggregation

	(1) Full sample	(2) No outliers 1	(3) No outliers 2	(4) Full sample	(5) No outliers 1	(6) No outliers 2
VA per worker in Agriculture (Primary Sector)	-11.77**	-6.983**	-7.193**	-6.798	-6.595**	-6.654**
	(-2.28)	(-2.37)	(-2.41)	(-1.38)	(-2.39)	(-2.39)
VA per worker in Mining	-1.036	1.260	1.402	3.297	2.195	2.064
	(-0.17)	(0.52)	(0.56)	(0.57)	(0.92)	(0.84)
VA per worker in Manufacturing	-11.79	3.389	2.669	-18.75**	0.917	1.116
	(-1.51)	(1.13)	(0.77)	(-2.61)	(0.32)	(0.33)
VA per worker in Construction	10.71	-2.702	-1.321	20.92	1.765	1.473
	(0.76)	(-0.53)	(-0.24)	(1.61)	(0.36)	(0.28)
VA per worker in Services	-7.203	-5.124*	-5.859*	-5.180	-4.193	-5.115*
	(-0.97)	(-1.82)	(-1.87)	(-0.77)	(-1.55)	(-1.69)
VA per worker in Transport & Communications	43.95***	7.191	6.223	21.44	6.161	4.548
	(3.17)	(1.23)	(0.98)	(1.61)	(1.09)	(0.75)
VA per worker in Commerce and other	-5.631	-0.258	1.206	-5.004	-0.242	1.245
	(-1.32)	(-0.16)	(0.64)	(-1.29)	(-0.16)	(0.70)
Gini at t=0				-0.0542***	-0.0103	-0.00779
				(-2.90)	(-1.44)	(-1.06)
Y/N at t=0				0.000102	0.0000696**	0.0000615*
				(1.17)	(2.15)	(1.83)
Poverty at t=0				-0.0106	0.00144	-0.000137
				(-0.64)	(0.23)	(-0.02)
Change in Gini (%)				7.097***	2.452***	2.537***
				(3.48)	(3.10)	(3.19)
Constant	0.272	-0.00443	-0.0278	2.410***	0.118	0.0291
	(1.51)	(-0.07)	(-0.39)	(2.92)	(0.36)	(0.08)
Observations	109	105	98	109	105	98
Adjusted R-squared	0.102	0.042	0.048	0.270	0.169	0.176
t statistics in parentheses						
* p<.10, ** p<.05, *** p<.01						

Table 9: Poverty changes and sectoral productivity intensive growth. Three sector dissaggregation.

	(1) Full sample	(2) No outliers 1	(3) No outliers 2	(4) Full sample	(5) No outliers 1	(6) No outliers 2
VA per worker in Agriculture (Primary Sector)	-10.48**	-6.419**	-7.283**	-7.147	-6.753**	-7.104**
	(-2.28)	(-2.23)	(-2.49)	(-1.64)	(-2.53)	(-2.60)
VA per worker in Secondary Sector	-2.337	1.796	1.898	-2.274	1.891	2.139
	(-0.57)	(1.13)	(1.07)	(-0.61)	(1.24)	(1.26)
VA per worker in Tertiary Sector	1.725	-0.420	0.0411	-1.054	-0.375	0.0500
	(0.64)	(-0.39)	(0.03)	(-0.41)	(-0.35)	(0.04)
Gini at t=0				-0.0547***	-0.0115*	-0.00918
				(-2.97)	(-1.69)	(-1.31)
Y/N at t=0				0.000105	0.0000739**	0.0000674**
				(1.18)	(2.31)	(2.02)
Poverty at t=0				-0.00990	0.00187	0.00174
				(-0.58)	(0.30)	(0.28)
Change in Gini (%)				6.677***	2.477***	2.614***
				(3.27)	(3.25)	(3.38)
Constant	0.338*	0.0287	0.0249	2.420***	0.172	0.0828
	(1.88)	(0.45)	(0.37)	(2.99)	(0.55)	(0.25)
Observations	109	105	98	109	105	98
Adjusted R-squared	0.042	0.026	0.038	0.222	0.173	0.177
t statistics in parentheses						
* p<.10, ** p<.05, *** p<.01						

4 What determines whether a country experiences employment intensive growth or productivity growth?

In the previous section we found that there are important differences between countries in the type of growth experienced, and that these differences are important for the poverty impact of growth. It is thus important to establish to what extent the observed growth patterns are the result of the underlying labor market characteristics.

There is a vast literature that analyzes the effect of regulation on total employment or on the unemployment rate (For reviews see Heckman and Pages 2000, Arias et al. 2005, among others). Most of the literature concludes that labor regulation hinders employment creation and increases unemployment and that the impact of labor regulation on productivity growth has been underemphasized. Another strand of literature analyzes the effect of regulation on growth and/or poverty. Lustig and McLeod (1997), for example, analyze the impact of minimum wages on poverty in developing countries, while Besley and Burgess (2004) found that pro-poor worker regulation was associated with lower output growth and increases in urban poverty in India. The study on "Pro-Poor growth in the 1990's" (World Bank 2005), found that highly regulated labor markets restricted the participation of the poor in economic growth. The focus of these studies has been overall employment or productivity growth rather than the employment/productivity intensity of growth, and very few of these studies consider sectoral differences. Additionally, factors other than labor regulation have received relatively little attention. The exception is perhaps a paper by Bentolila and Revenga (1995), who find that for OECD countries the employment intensity of growth is affected by the share of agriculture in total output, the level of firing costs, the degree of inter-union and inter-firm coordination and the percentage of employees in large firms.

In this section we explore the links between manufacturing and secondary sector labor intensive growth, as well as agricultural productivity intensive growth and some characteristics of the labor markets. We focus on labor intensive growth in the manufacturing and secondary sector($\hat{e}_{j,s}$ for s= manufacturing, secondary) and on agricultural productivity intensive growth ($\hat{y}_{agriculture}$) since our previous findings (see section 3.3) indicate that these are the patterns of growth which are positively related to poverty reduction[14]. We thus test whether this pattern of growth can be explained by the selected variables. In particular we explore whether the level of education, the share of workers in agriculture, and labor market regulation affect manufacturing employment intensive growth and secondary sector employment intensive growth or agricultural productivity intensive growth. Unfortunately we could not match our employment spells with any investment climate indicators or governance indicators as these datasets are few and are rather recent. Moreover, the data on labor regulation is scant and we were only able to match very few of the available regulation variables in the available datasets, with our growth-poverty spells data. For this reason these results should not be interpreted as conclusive. They provide only a first look into the subject.

4.1 Results

To estimate the impact of these underlying determinants we estimate the following equation:

[14] We also use the percentage of growth that can be attributed to employment changes in manufacturing and the secondary sector but nothing appears significant.

$$\hat{x}_{ji} = g(Z_{j,t=0}, X_j) \text{ for } \hat{x} \in (\hat{e}_{manuf}, \hat{e}_{secondary}, \hat{\omega}_{agriculture})$$

Equation 7

Where $\hat{x}_{ij}$ the amount of growth explained by employment/productivty intensive growth in country j in the sector i; $Z_{j,t=0}$, is a vector of possible explanatory variable in country j at the beginning of the spell (t=0) and $X_{j,}$ are control variables.

The $Z_{j,t=0}$ vector includes regulation variables, the share of labor in agriculture and education. A large share of workers in agriculture may provide more 'surplus labor' to feed employment intensive growth, if there are no important barriers to moving away from this sector. But a higher share of workers in agriculture may reduce productivty intensive growth in this sector if there are marginal decreasing returns. Education levels may affect employment/productivty intensive growth by supplying (or not) the skill requirement of the growth process –e.g. low levels of education may imply a supply of cheap labor- but if the level of education is too low employment generation may be hampered or productivity increases limited. Finally, regulation may hamper or promote labor intensive growth by affecting the relative price of labor and the ease with which workers can be hired and fired. Although the agricultural sector is often associated with informality in developing countries, it is still possible that regulation may affect formal agriculture, which might be more associated with high productivty. We also analyze the effect of bargaining, strikes and unions, since unionization and the number of strikes appear to be negatively related to growth (Rama and Artecona Op. Cit).

We estimate several models. A first model includes all the data in the sample, a second model excludes outliers, and the third model includes some controls. In particular we include the initial level of inequality, as both regulation and employment intensive growth may be correlated with inequality, the initial level of poverty and changes in poverty. In a final model we include growth ($\Delta y/y$) to see whether the effect of regulation is capturing the effect of our regressor on growth itself.

4.1.1 Regulation and unionization

For regulation we use two sets of variables: i) those related to hiring restrictions and labor costs and ii) those related to unionization and strikes. The first group include the monthly minimum wage in absolute value (US dollars) and the minimum wage relative to the average manufacturing wage; the duration of maternity leave; minimum annual paid leave after one year of work; social security contributions paid by the worker and the employers as a fraction of total salaries; and severance pay after three years of employment in months of salary. As for unionization, we explored the effect of total trade union membership as percent of the labor force, coverage of collective agreements as percent of salaried employment, number of strikes and lock-outs per year, annual work days lost to strikes and number of workers involved in strikes and lockouts.

Table 10 and Table 13 in the appendix show the results of those variables that where significant in explaining employment intensive growth in manufacturing or the secondary

sector[15]. The results suggest that employment intensive growth in manufacturing ($\hat{e}_{manufacturing}$) is only affected by minimum wages (both in absolute terms and relative to manufacturing) and severance pay have any power in explaining manufacturing employment intensive growth. Both are negatively correlated. When growth is included as an explanatory variable, the magnitude of the coefficient is reduced but the effect is still negative and significant. None of the unionization variables appear significant.

When the dependent variable is the amount of growth that can be linked to employment growth in the secondary sector as a whole ($\hat{e}_{\sec ondary\_\sec tor}$), the minimum wage is significant except when growth is included as a dependent variable. It appears then, that the minimum wage reduces growth, but it does not affect how secondary sector employment intensive this growth process is. Annual leave appears to have a positive effect, which is somewhat surprising. A possible explanation is that it might increase the supply of labor to this sector. No other regulation variables considered, affecting the cost of labor or the easy of hiring or firing, had any explanatory power. Neither did any of the unionization or labor unrest (results not shown for brevity).

Table 14 and Table 15 in the appendix, show the results for agricultural productivty intensive growth ($\hat{\omega}_{agriculture}$).Minimum wages are significant in explaining agricultural productivty intensive growth, although when growth is included as an explanatory variable the coefficient is no longer significant, suggesting that the effect is by affecting growth itself. Annual leave was also significant and positive in all the. At this point we are unclear about the explanation, but it may be capturing a reverse causality: those countries with higher productivty growth can afford to give more generous annual leave, and using the level of this variable at the beginning of the spell may no be sufficient to control for reverse causality given that we are dealing with short time periods. This reverse causality effect can also affect the other results.

4.1.2 Education and the structure of employment

We begin by examining the relationship between our estimated employment intensive growth measure and poverty and inequality measures, after which we take a closer look at the role played by the share of workers in agriculture and by the level of education. The first row of plots in Figure 4 illustrates how employment intensive growth in manufacturing correlates with the initial level of poverty and changes in poverty (first plot), the initial level of inequality (second plot) and share of workers in agriculture (third plot). Initial poverty and inequality seems to be negatively correlated with manufacturing employment intensive growth, while, higher share of employment in agriculture seems to be positively correlated, but confidence intervals are wide suggesting that the relation might be weak.

The second row of plots in Figure 4 illustrates the correlation between employment intensive growth in manufacturing and three education level components: no schooling,

[15] Other results are available upon request.

completion of first, and of second level education. No schooling and primary education are positively correlated with our measure of employment intensive growth at higher overall levels of education (when the share of population with this level of education is low) and negatively correlated when the share of labor force with primary or no education rises (i.e inverse U). However, confidence intervals for these components are wide, suggesting the relation may not be strong.

Figure 4

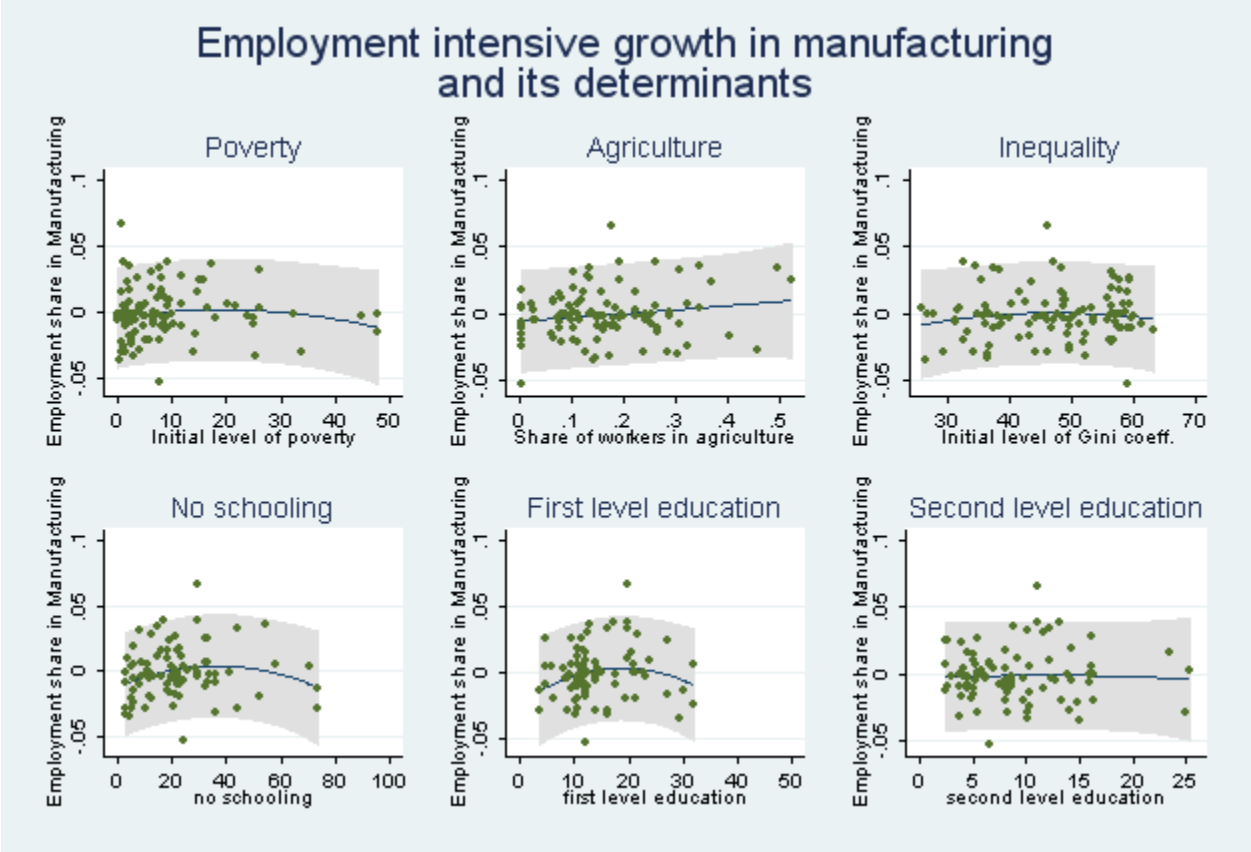
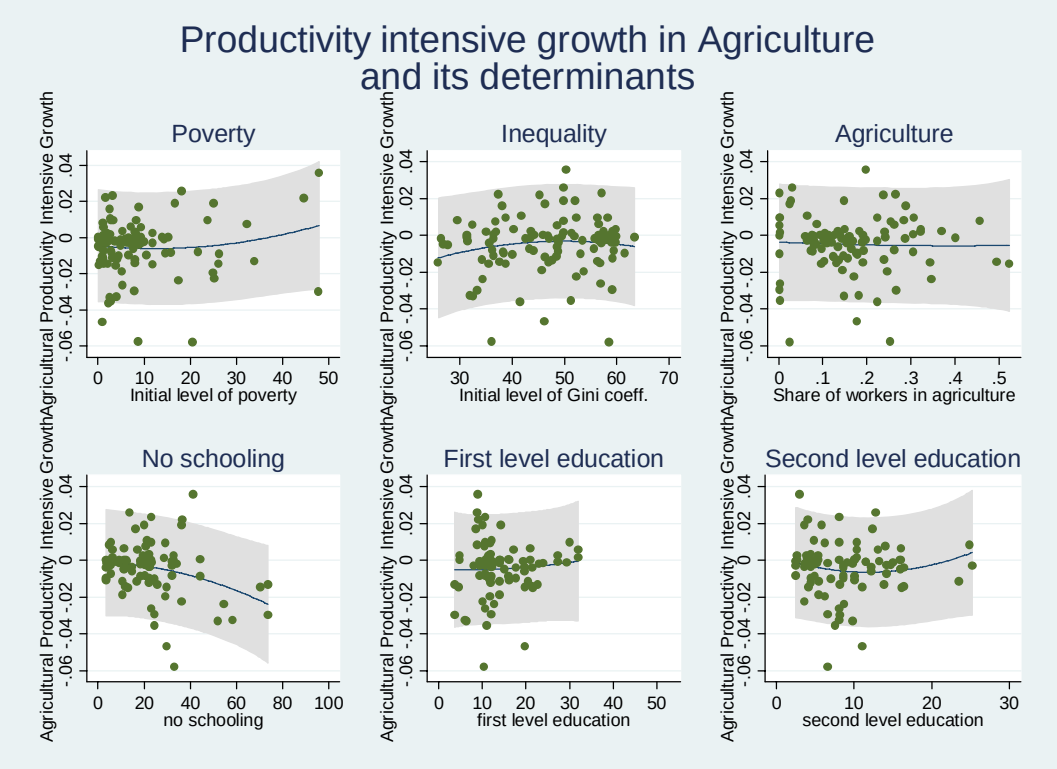


Figure 5 illustrates the same relations but for agricultural productivty intensive growth. Initial poverty and inequality levels seem slightly positively correlated with agricultural productivty intensive growth. Again the confidence intervals are wide, suggesting the relationship might not be strong. The second row of plots of in the figure illustrates the relationship between productivty intensive growth in agriculture and the different levels of education. The plots suggest that the higher the share of population with no schooling the lower the productivity intensive growth. The opposite seems to be true first and for secondary level education. These would imply that low education hampers productivty intensive growth in agriculture and thus poverty reduction.

Figure 5



Next we test for these relationships using a regression framework. We estimate Equation 7, for each of the variables considered. Table 16 and Table 17 in the appendix illustrate the results for those variables that had any explanatory power[16] in explaining employment intensive growth in manufacturing and the secondary sector. They suggest that only the share of workers in agriculture has any power in explaining the amount of growth that can be linked to growth in the manufacturing sector. The regression term is positive and significant. When growth is included as an explanatory variable, the magnitude of the coefficient is not reduced and the effect is still positive and significant. None of the education variables was significant in explaining employment intensive growth in manufacturing or the secondary sector as a whole (results are not included for brevity).

The lack of significance of the education variables may reflect several things. First there might be considerable heterogeneity in the quality of education among countries, so that a measure such as 'share of workers with secondary' might be capturing a very heterogeneous level of skills. Alternatively, education may have ambiguous effects on fostering employment intensive growth. On one hand low levels of education may mean cheap labor to feed into employment intensive growth, but on the other hand it means low skills and low productivity of the labor force which might disincentive labor demand. Both effects may be canceling each other. The fact that the initial share of workers in agriculture fosters employment intensive growth may mean that the size of this sector is

[16] Other results are available upon request.

related to the amount of surplus labor that can feed into the growing labor demand of a labor intensive industrialization process, with out pushing wages up.

When analyzing the effect of education and the structure of the labor force on agricultural productivty intensive growth, we find that no schooling is negatively and robustly correlated, while average schooling is positively and robustly correlated. In other words, education is important in fostering productivity growth in agriculture and thus poverty reduction. Table 18 and Table 19 in the appendix illustrate these results.

5 Conclusions

In this paper we analyze the relationship between poverty reduction and the employment and productivity profile of growth, both at the aggregate level and by sectors.
The framework used in this paper is inscribed within the segmented labor markets tradition.

Although we do not provide a formal model of segmentation that explains the mechanisms at work, we provide an intuitive description of the implications of labor market segmentation for the poverty- growth linkages. We decompose per capita value added growth between labor market components (employment, productivity and demographic changes) and empirically analyze how each component affects poverty reduction. We also explore the role of the labor markets characteristics and the structure of employment, in the observed pattern of growth, and its poverty reducing effect.

We complement existing literature on the subject mainly in two ways. First, we go beyond the simple sectoral pattern of growth, or its overall employment intensity and analyze the role of sectoral productivity and employment intensity, in poverty reduction. Second, we use a decomposition methodology first proposed by Kakwani et al. (Op. Cit), and extend it to show how it can be used to construct a measure of employment intensive growth. We believe this measure addresses some conceptual and empirical weaknesses of the more commonly: the employment elasticity of growth. Our study also complements existing literature by including a larger fraction of countries among our sample.

Using a sample of 111 spells, covering 37 countries, we find that both the sectoral pattern of growth as well as the employment/productivity profile varies significantly between countries. In the aggregate, the employment intensity of growth does not seem to matter for poverty reduction. But the sectoral pattern of employment generation and productivity growth is important. The results seem to suggest that employment intensive growth in the secondary sector reduces poverty, while more employment intensive growth in agriculture tends to increase it. By contrast, productivity intensive growth in agriculture has a significant poverty reducing impact.

Evidence on the link between employment intensive growth and education or regulation is not very conclusive. There seems to be no clear correlation between schooling and employment intensive growth in manufacturing or the secondary sector as a whole. As far as regulation is concerned, only minimum wages and severance pay seem to be correlated with employment intensive growth in manufacturing. Unionization does not seem to

affect the amount of growth linked to employment growth in manufacturing. or the secondary sector Education however, does seem to be positively correlated to agricultural productivity intensive growth.

The results appear to support the hypothesis of labor market segmentation with ‘good’ and ‘bad’ sectors coexisting and movements from the later to the former increasing welfare and reducing poverty. The results imply that focusing on the overall employment elasticity of growth may not be an effective way to increase the poverty impact of growth. Thus it is important for policy makers to move beyond the aggregate figure of growth and its impact on employment and focus more on both the sectoral distribution of growth and its impact. Higher employment will reduce poverty only if it is concentrated on the good jobs sectors, mainly the secondary sector (manufacturing, construction mining and utilities). But focusing on rising productivity of agriculture will also reduce poverty. An additional priority for policy makers is to reduce the existing barriers to mobility between different segments of the labor market, being these geographic or skill related, or the results of gender or ethnic discrimination. The results also suggest that policies addressing educational deficiencies in the rural sector and minimum wage regulation in the secondary sector may merit careful cost-benefit analysis, as potential poverty reducing policies.

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Appendix: estimation results on regulation and structural variables.

Table 10: Absolute minimum wage and manufacturing employment intensive growth $\hat{e}_{manufacturing}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
minimum wage	-0.000177*** (-3.36)	-0.000177*** (-3.36)	-0.000218*** (-3.83)	-0.000140** (-2.53)
gini_t0			0.000330 (1.00)	0.000556* (1.86)
h_t0			-0.000507 (-1.64)	-0.000332 (-1.19)
Changes in GDP per capita				0.120*** (3.39)
Constant	0.0198*** (3.53)	0.0198*** (3.53)	0.0113 (0.70)	-0.0155 (-0.95)
Observations	42	42	42	42
Adjusted R-squared	0.201	0.201	0.241	0.405
t statistics in parentheses * p<.10, ** p<.05, *** p<.01				

Table 11 Relative minimum wage and manufacturing employment intensive growth $\hat{e}_{manufacturing}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
minimum wage relative to average	-0.0497**	-0.0497**	-0.0512**	-0.0434***
	(-2.55)	(-2.55)	(-2.54)	(-2.82)
gini_t0			-0.000510	-0.000135
			(-1.22)	(-0.41)
h_t0			0.000331	0.000946
			(0.44)	(1.62)
Changes in GDP per capita				0.153***
				(4.59)
Constant	0.0178***	0.0178***	0.0412*	0.00666
	(3.36)	(3.36)	(1.95)	(0.38)
Observations	31	31	31	31
Adjusted R-squared	0.155	0.155	0.140	0.507
t statistics in parentheses ="* p<.10	** p<.05	*** p<.01"		

Table 12: Minimum wage and secondary sector employment intensive growth $\hat{e}_{secondary\_sector}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
minimum wage	-0.000295***	-0.000295***	-0.000284**	-0.000144
	(-2.95)	(-2.95)	(-2.65)	(-1.36)
gini_t0			-0.000722	-0.000320
			(-1.17)	(-0.56)
h_t0			-0.00114*	-0.000827
			(-1.96)	(-1.56)
Changes in GDP per capita				0.214***
				(3.16)
Constant	0.0310***	0.0310***	0.0761**	0.0283
	(2.90)	(2.90)	(2.50)	(0.90)
Observations	42	42	42	42
Adjusted R-squared	0.158	0.158	0.213	0.364
t statistics in parentheses ="* p<.10	** p<.05	*** p<.01"		

Table 13: Paid annual leave and secondary sector employment intensive growth $\hat{e}_{secondary\_sector}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
paid annual leave	0.000586	0.000193	0.00335	0.00336*
	(0.18)	(0.13)	(1.62)	(1.89)
gini_t0			-0.00328*	-0.00302**
			(-2.17)	(-2.31)
h_t0			-0.00212	-0.00181
			(-1.06)	(-1.05)
Changes in GDP per capita				0.240*
				(2.20)
Constant	0.00175	-0.0109	0.117*	0.0893
	(0.03)	(-0.40)	(1.81)	(1.56)
Observations	16	15	15	15
Adjusted R-squared	-0.069	-0.076	0.115	0.344
t statistics in parentheses				
="* p<.10	** p<.05	*** p<.01"		

Table 14: Minimum wage and agricultural productivty intensive growth $\hat{\omega}_{agriculture}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
Montlhy minimum wage	0.000129***	0.000129***	0.000103**	0.0000777
	(3.18)	(3.18)	(2.29)	(1.58)
gini_t0			0.000302	0.000229
			(1.16)	(0.86)
h_t0			-0.000110	-0.000167
			(-0.45)	(-0.68)
Changes in GDP per capita				-0.0392
				(-1.25)
Constant	-0.0215***	-0.0215***	-0.0335**	-0.0248*
	(-4.99)	(-4.99)	(-2.62)	(-1.70)
Observations	42	42	42	42
Adjusted R-squared	0.182	0.182	0.175	0.187
t statistics in parentheses				
* p<.10, ** p<.05, *** p<.01"				

Table 15: Annual Leave and agricultural productivty intensive growth $\hat{\omega}_{agriculture}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
paid annual leave	0.00114	0.000552	0.000990*	0.000988**
	(0.26)	(1.59)	(1.82)	(2.33)
gini_t0			-0.000347	-0.000428
			(-0.87)	(-1.37)
h_t0			-0.000623	-0.000719
			(-1.18)	(-1.75)
Changes in GDP per capita				-0.0742**
				(-2.85)
Constant	0.00223	-0.0165**	-0.00156	0.00709
	(0.03)	(-2.59)	(-0.09)	(0.52)
Observations	16	15	15	15
Adjusted R-squared	-0.066	0.099	0.059	0.429
t statistics in parentheses				
* p<.10, ** p<.05, *** p<.01				

Table 16: Share of workers in agriculture and manufacturing employment intensive growth $\hat{e}_{manufacturing}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
Share of workers in agriculture	0.0224	0.0292*	0.0531***	0.0408**
	(0.97)	(1.75)	(2.70)	(2.19)
Initial level of Gini coeff.			0.000371*	0.000501**
			(1.78)	(2.52)
Initial level of poverty			-0.000287*	-0.000160
			(-1.74)	(-1.01)
Changes in GDP per capita				0.0952***
				(3.85)
Constant	-0.00438	-0.00585*	-0.0244**	-0.0334***
	(-0.97)	(-1.80)	(-2.13)	(-3.04)
Observations	109	105	105	105
Adjusted R-squared	-0.001	0.020	0.048	0.163
t statistics in parentheses				
* p<.10	** p<.05	*** p<.01"		

Table 17: Share of workers in agriculture and secondary sector employment intensive growth $\hat{e}_{secondary\_sector}$

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
Share of workers in agriculture	0.0609	0.0933***	0.112***	0.0882***
	(1.45)	(3.38)	(3.38)	(2.87)
Initial level of Gini coeff.			0.000253	0.000506
			(0.72)	(1.55)
Initial level of poverty			-0.000277	-0.0000278
			(-0.99)	(-0.11)
Changes in GDP per capita				0.186***
				(4.58)
Constant	-0.0105	-0.0178***	-0.0301	-0.0476***
	(-1.28)	(-3.30)	(-1.55)	(-2.63)
Observations	109	105	105	105
Adjusted R-squared	0.010	0.091	0.085	0.236
t statistics in parentheses ="* p<.10, ** p<.05, *** p<.01				

Table 18: No schooling and agricultural productivity intensive growth

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
no schooling	-0.000317	-0.000278***	-0.000475***	-0.000412***
	(-0.91)	(-2.83)	(-4.22)	(-3.84)
Initial level of Gini coeff.			0.0000243	-0.0000640
			(0.16)	(-0.45)
Initial level of poverty			0.000477***	0.000377***
			(3.39)	(2.79)
Changes in GDP per capita				-0.0669***
				(-3.47)
Constant	0.00763	0.00164	-0.0000400	0.00594
	(0.82)	(0.62)	(-0.00)	(0.77)
Observations	91	88	88	88
Adjusted R-squared	-0.002	0.074	0.169	0.266
t statistics in parentheses				
* p<.10, ** p<.05, *** p<.01				

Table 19: Average schooling and productivity intensive growth

	(1) full sample	(2) No outliers	(3) Controls	(4) Growth
Average	0.00299	0.00187**	0.00293***	0.00293***
	(0.95)	(2.02)	(2.96)	(3.22)
Initial level of Gini coeff.			0.000202	0.0000772
			(1.31)	(0.53)
Initial level of poverty			0.000320**	0.000252**
			(2.36)	(2.01)
Changes in GDP per capita				-0.0793***
				(-4.08)
Constant	-0.0153	-0.0145***	-0.0332***	-0.0239**
	(-0.87)	(-2.81)	(-3.27)	(-2.50)
Observations	91	88	88	88
Adjusted R-squared	-0.001	0.034	0.088	0.231
t statistics in parentheses				
="* p<.10, ** p<.05, *** p<.01"				