The role of labor market in explaining growth and inequality in income: the Philippines' case*

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This paper analyses the relationship between growth and inequality of household income in the Philippines, focusing on the role played by the labor market. It proposes a decomposition methodology that explores linkages between growth in income and labor market performances in terms of labor force participation, employment, work hours, and productivity. This paper introduces a methodology that shows a direct linkage between growth and inequality in income, and labor market characteristics. The paper provides empirical analysis using both the Family Income and Expenditure Survey (FIES) and the Labor Force Survey (LFS), covering the period 1997-2003.

1. Introduction

The Philippines has lost its advantage as a developing country that once had a very promising future in the region to become a successful, high-growth economy. This paper posits that the sluggish performance in the growth of jobs may have contributed to the unimpressive record in economic growth. Along with low growth, the Philippines has had a persistently high level of income inequality in the past.

Given rapid population growth and the high rise in labor force participation, employment growth in the Philippines has not been sustained at a level that is sufficient to lower unemployment and underemployment rates. Productivity growth has been meager and spotty. Labor productivity in the Philippines

increased by less than 7 percent in 1988-2000, far lower than the increases of 30-50 percent in other Asian countries such as Indonesia, Malaysia, Thailand, and South Korea.

Labor income is the main source of people's income. Labor incomes are generated through employment in the labor market. Thus, growth in income depends on the magnitude of employment growth. Nevertheless, employment is not the only factor that explains labor income. There are other contributing factors. For instance, labor productivity is also vital to explaining labor income. Labor productivity differs across individuals; similarly, their access to employment opportunities varies. Therefore, the labor market plays a critical role in explaining how much income people enjoy on average and how their incomes are distributed across individuals within a country at a given point in time. In this paper, the role of the labor market is examined in the context of the Philippines.

The main objective of this paper is to analyse growth and inequality in household income, focusing on the role played by the labor market.[1] It proposes a decomposition methodology that explores the linkages between growth and income inequality through characteristics such as labor force participation, employment rate, work hours, and productivity. In the literature, the linkage has often been explored using regression models. Unlike convention, however, this paper examines the direct linkage between growth and inequality in labor income, and labor market characteristics using a decomposition method.

A corollary objective of this paper is to examine how the Philippine educational system has addressed the needs of its labor market. The paper deems such an analysis as falling under the purview of gaining a better understanding of how the labor market has affected the Philippines' uneven economic performance.

This paper utilizes two sources of data, both of which are considered as micro-unit record. The data sources are the Family Income and Expenditure Survey (FIES) and the Labor Force Survey (LFS). These surveys are undertaken by the Philippine government's primary statistical agency, the National Statistics Office (NSO). The surveys used in this study are for the latest three periods, from 1997 to 2003. Moreover, the study uses the merged data sets of FIES and LFS for the periods 1997, 2000, and 2003.

The paper is organized as follows. Section 2 is devoted to explaining growth by factor income components. Section 3 investigates the impact of factor incomes on inequality. Section 4 looks into trends in key labor market

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[1] The term "growth" used throughout the study does not refer to growth in GDP. In this paper, growth and inequality are analysed based on household incomes, which every member of the household actually receives from various sources. See section 2 for detailed discussions on this.

indicators, while section 5 examines the linkage between growth and labor market characteristics. Section 6 studies inequities in key labor indicators, and section 7 is concerned with explaining inequality in labor income. Section 8 discusses issues on education and the labor market. Section 9 concludes the study.

2. Explaining growth in income by factor components

Gross domestic product (GDP) per capita and related aggregate income measures are widely used to assess the economic performance of countries. Economic growth that measures the rate of change in per capita real GDP has become a standard economic indicator. Despite the popularity of economic growth as a measure of success, there is increasing recognition that it is an inadequate measure of a population's average well-being. Higher economic growth does not necessarily mean a higher level of the average population's well-being. This is because GDP includes many components, which provide disutility to individuals.

Information on incomes of households is now widely available from household surveys conducted by many countries. Given a household size, we calculate per capita household income for each household. By aggregating per capita income of each household in the survey, we are able to calculate the average household income as well as its inequality using an appropriate inequality measure.

Suppose x is the total per capita income of a household, which can be written as the sum of several factor incomes or income components:

$$x = \sum_{j=1}^{k} x_j \tag{1}$$

where k is the total number of income components and x_j is the per capita income from the jth income component. In our empirical analysis, we have six income components:
  (a) Agricultural wage income
  (b) Non-agricultural wage income
  (c) Enterprise income
  (d) Domestic remittances
  (e) Foreign remittances
  (f) Other residual income (e.g., interest, dividends, pensions, rents)

Suppose μ is the per capita average income of all households in the Philippines and μ_j is the per capita income from the jth income component, then using (1) we can write

$$\mu = \sum_{j=1}^{k} \mu_j \tag{2}$$

μ_j / μ is the share of jth income component. This share is useful as it indicates the households' sources of income.[2] Poor households may differ from the other households with respect to their sources of income. Table 1 shows where all households and the poor households derive their incomes. It also shows trends in average per capita income for three periods: 1997, 2000, and 2003.

Table 1 shows that the share of wages (both agriculture and non-agriculture) in per capita total household income has been the largest but has declined steadily from 46.1 percent in 1997 to 44.8 percent in 2003. Meanwhile, the share of remittances, particularly foreign remittances, rose over the period from 9 percent in 1997 to 12.7 percent in 2003. This suggests that remittances have become an important source of household income in the Philippine economy. As expected, remittances played a significant role as a form of informal safety nets for average households during the crisis period (1997-2000).

The story is somewhat different for poor households. First, a major source of income for the poor is derived from enterprise activities, not from wages. This suggests that poor households are mainly working in the informal sector. The trend indicates that the share of enterprise income to the total income of the poor has fallen steadily.

Another interesting point is the share of remittances—foreign and domestic—in the total household income of the poor. Compared to the average household, its share is far smaller; in 2003, for instance, the share of total remittances to total income was 5.9 percent for poor households and 12.7 percent for average households in the country. Moreover, poor households receive remittances mainly from domestic sources rather than from overseas. These findings imply that while nonpoor households rely more heavily on remittances than the poor, they receive remittances mostly from overseas; on the other hand, poor households receive remittances mainly from other household members living in the country.

We now extend the analysis to examine growth rates and relative contributions of each income component to the growth in total household

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[2] In defining poor households, this study uses poverty lines developed by Balisacan [1999]. These are consistency-conforming provincial poverty lines that are comparable across regions and over time. Households are defined as poor if their per capita household income is less than the poverty line, and otherwise nonpoor.

Table 1. Average per capita household income by components

Income components	Per capita income			Percentage shares		
	1997	2000	2003	1997	2000	2003
All households						
Agriculture wage income	761	775	939	3.2	2.8	3.1
Non-agriculture wage income	10,058	11,597	12,566	42.9	42.6	41.7
Enterprise income	6,097	6,664	7,185	26.0	24.5	23.9
Domestic remittance	502	681	809	2.1	2.5	2.7
Foreign remittance	1,612	2,332	3,009	6.9	8.6	10.0
Other income	4,388	5,149	5,607	18.7	18.9	18.6
Total income	23,418	27,198	30,115	100.0	100.0	100.0
Poor households						
Agriculture wage income	793	927	1,078	13.9	13.2	13.7
Non-agriculture wage income	1,171	1,548	1,792	20.5	22.1	22.7
Enterprise income	2,393	2,839	3,077	41.9	40.5	39.0
Domestic remittance	259	334	373	4.5	4.8	4.7
Foreign remittance	75	76	97	1.3	1.1	1.2
Other income	1,019	1,287	1,473	17.8	18.4	18.7
Total income	5,710	7,012	7,889	100.0	100.0	100.0

Note: Other income includes interests, dividends, rentals received, and pensions and
   social security benefits.
Source: Author's calculations based on FIESs.

income. To do so, each income component is deflated by the per capita poverty
line, which takes into account the differences in regional costs of living as well
as changes in prices over time.[3] Doing so gives us average per capita welfare.
Having made the adjustment for the prices, we can calculate the growth rate of
per capita total income and individual income components. It is useful to know
how much each income source contributes to the growth in total income.

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[3] Per capita welfare of income (or expenditure) is interpreted as real income (or
expenditure) and equivalent to the per capita income (or expenditure) that is above or below
the poverty line. For instance, per capita welfare of income of 250 means that an individual's
income is 2.5 times greater than the poverty line. Similarly, per capita welfare of income
of 70 can be interpreted as the per capita income that is 30 percent lower than the poverty
threshold.

Suppose r is the growth rate of per capita total real income and r_j is the growth rate of per capita real jth income component, then using (2), we can write

$$r = \sum_{j=1}^{k}(\mu_j / \mu)r_j \qquad (3)$$

which shows that the growth rate of total income is equal to the weighted average of the growth rates of the individual income components, where weight is given by the share of each income component. $(\mu_j / \mu)r_j$ is the contribution of the jth income component to the growth rate of total income.

As shown in Table 2, per capita total household income has declined in 1997-2003. As would be expected, the fall was particularly greater during the crisis period. In 1997-2000, components such as wages and enterprise income fell sharply, but domestic and foreign remittances grew at an annual rate of 3.5 percent and 6.2 percent, respectively. These findings thus suggest that the fall in per capita total income could have been much greater in the absence of any remittances, particularly from migrant workers. This is also indicated by the positive relative contribution of the growth in remittances, to the growth in total household income. Other components—particularly non-agricultural wages and enterprise income—have been largely responsible for the negative growth in the total income over the period.

The results in Table 2 reveal that per capita household income also fell among the poor households in 1997-2003, although much slower than did the national average. This was largely due to the drop in enterprise incomes during the period. The adverse impact of enterprise incomes on the growth rates was partly offset by the positive growth in wage income among the poor households.

To recap, Filipino households derive their incomes mainly from labor incomes, with the poor being more reliant on enterprise earnings. While remittances buffered incomes during the crisis years, foreign remittances flowed mostly to the nonpoor while the poor tend to rely more on domestic remittances.

3. Impact of factor incomes on inequality

In view of its diversity, the Philippines became divided into 16 distinct regions. A major problem in the country is the regional disparity in living conditions. Disparity can be very large even within regions. Any analysis of inequality should reflect such regional variations. Theil's measure of inequality is

Table 2. Growth rates and contributions to growth in total income

Income components	Per capita welfare			Annual growth rates		Contribution to growth rates	
	1997	2000	2003	1997-00	2000-03	1997-00	2000-03
All households							
Agriculture wage income	9.9	8.3	9.0	-5.2	2.7	-0.2	0.1
Non-agriculture wage income	113.1	107.0	102.8	-1.8	-1.3	-0.8	-0.5
Enterprise income	72.8	65.1	62.8	-3.5	-1.2	-1.0	-0.3
Domestic remittance	6.0	6.6	6.9	3.5	1.7	0.1	0.0
Foreign remittance	18.1	21.5	24.7	6.2	5.0	0.4	0.4
Other income	50.1	48.2	46.9	-1.3	-0.9	-0.2	-0.2
Total income	270.0	256.8	253.1	-1.6	-0.5	-1.6	-0.5
Poor households							
Agriculture wage income	10.2	9.9	10.2	-1.2	1.1	-0.2	0.2
Non-agriculture wage income	14.1	15.3	15.4	2.8	0.3	0.6	0.1
Enterprise income	30.4	29.2	27.9	-1.4	-1.5	-0.6	-0.6
Domestic remittance	3.3	3.4	3.4	1.6	-0.7	0.1	-0.0
Foreign remittance	0.9	0.8	0.8	-5.7	3.2	-0.1	0.0
Other income	12.9	13.3	13.5	1.1	0.4	0.2	0.1
Total income	71.9	71.9	71.2	-0.0	-0.3	-0.0	-0.3

Source: Author's calculations based on FIESs.

well suited to analyse inequality in the Philippines because it can be decomposed into between- and within-regional inequality. In this section, we use the Theil's index to explain how inequality in total income is impacted by changes in factor incomes.

Suppose x is the per capita total household income, which is a random variable with density function $f(x)$, then Theil's inequality measure can be written as

$$T = \int_0^\infty \left[\log(\mu) - \log(x)\right] f(x) dx \qquad (4)$$

The question we want to address is: how does growth in factor incomes affect inequality? For example, we want to know how foreign transfers to recipient households affect inequality in per capita total income. If increases in foreign transfers increase inequality, we can conclude that foreign transfers are anti-poor because they benefit the nonpoor proportionally more than the poor. Similarly, if these transfers reduce inequality, then it can be said that they are pro-poor, benefiting the poor more than the nonpoor. From a policy point of view, it is important to know which income components are pro-poor or anti-poor. These questions can be answered by means of the elasticity of inequality with respect to the various income components.

The elasticity of Theil's inequality measure T in (4) with respect to μ_j can be written as

$$\eta_j = \frac{\mu_j}{T}\frac{\partial T}{\partial \mu_j} = \frac{1}{T}\int_0^\infty \left[\frac{\mu_j}{\mu} - \frac{x_j}{x}\right] f(x)dx \tag{5}$$

which tells us that if μ_j increases by 1 percent, the inequality measure T will change by η_j %. If η_j is negative (positive), this implies that a growth in the jth income component will decrease (increase) the inequality of per capita total income. Thus, the jth income component is pro-poor (anti-poor) if η_j is negative (positive). It can be easily verified that $\sum_{j=1}^{k}\eta_j = 0$, implying that when all income components increase by 1 percent, total inequality does not change.

Table 3 presents the inequality elasticity with respect to the various income components. The components that would result in a reduction in inequality are agricultural wage income, enterprise income, and domestic remittances. Those that would increase inequality are non-agricultural wage income, foreign remittances, and other income. These have important implications. First, the agricultural wage income is pro-poor in the sense that it has contributed to a reduction in inequality. Yet, since its share has been declining over time, we can expect that the ongoing transformation of the economic structure will continue to exacerbate inequality in the future. Second, the share of the non-agricultural wage income, from which the households derive a major source of livelihood, will continue to increase. Thus, it is to be expected that the increasing share of non-agricultural wage income in the total household income would be a major factor that contributes to the increase in inequality.[4]

As we have noted earlier, foreign remittances have contributed significantly to the growth in total household income. Unfortunately, this component tends to increase inequality. Other income—which includes earnings from interest, rents, pensions, dividends, and the like—is always expected to be pro-rich or

anti-poor. This type of nonlabor income component is likely to increase in share during the era of globalization.

Enterprise income is pro-poor because a large proportion of the poor are engaged in the informal sector, pursuing enterprise activities in spite of very low earnings. With economic expansion, we can expect the informal sector to shrink and the enterprise income to become anti-poor.

Domestic remittances are pro-poor, contributing to the reduction in inequality. It is unlikely that the share of domestic remittances will increase so much as to have any significant impact on inequality in the future.

Table 3. Inequality elasticity with respect to income components

Variables	1997	2000	2003
Agriculture wage income	-0.095	-0.099	-0.105
Non-agriculture wage income	0.158	0.163	0.150
Enterprise income	-0.128	-0.143	-0.139
Domestic remittance	-0.024	-0.024	-0.026
Foreign remittance	0.050	0.076	0.099
Other income	0.038	0.026	0.020
Total income	0.000	0.000	0.000
Theil's index	0.418	0.413	0.395

Source: Author's calculations based on FIESs.

In sum, our analysis suggests that many factors can perpetuate, if not worsen, the level of inequality. Government policies are called for to offset the impact of such factors. In this regard, an effective policy could be to introduce well-targeted cash transfer programs. A similar program can be in the form of conditional cash transfers such as those adopted in many Latin American countries. Such cash transfer programs have been regarded as a leading-edge social policy tool for their ability in targeting both short-run poverty, and for improving the human capital of the poor. In addition, these programs have been lauded for their ability to focus on the poor, for making it easier to integrate different types of social service (e.g., education, health, and nutrition), and for their cost-effectiveness performance.

4. Labor market indicators

As discussed earlier, the average Filipino household derives its major source of income from labor earnings. Table 1 shows that more than 70 percent of total

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[4] This study does not support the inverted Kuznet curve. Instead, the implications emerging from the study suggest that there are forces that can lead to a continuous increase in inequality in the Philippines.

household income is generated from labor earnings. This implies the enormous impact of the labor market on both growth and changes in inequality. In this section, we discuss the trends of a few key indicators of the labor market. These indicators are normally defined in terms of individual characteristics, while growth and inequality measures are estimated from household characteristics. A question then arises as to how such different characteristics of households and individuals could be linked. An initial step to address this issue is by converting individual labor market indicators into household indicators. This represents an important contribution of the paper to studies in this area that attempt to link labor market with growth and inequality. For instance, per capita employment in a household is obtained by the total number of employed persons in a household divided by the household size. From Table 4, average per capita employment within households was calculated as equal to 0.384 in 2003. This means that, on average, about 38.4 percent of household members were employed in 2003: almost two members living in a five-member household were engaged in some form of employment in the labor market.

In Table 4, we present five labor market indicators for households:

(a) Per capita employment: (e)
(b) Per capita unemployment: (u)
(c) Per capita labor force participation rate (LFP): $(l = e + u)$
(d) Per capita work hours: (h)
(e) Per capita labor income: (x_l for nominal and x_l^* for real)

Using these indicators, we can define:

Employment rate: $\left(\dfrac{e}{l}\right)$

Work hours per employed person: $\left(\dfrac{h}{e}\right)$

Labor productivity: $\left(\dfrac{x_l}{h}\right)$ for nominal and $\left(\dfrac{x_l^*}{h}\right)$ for real

The labor force participation rate for a household is defined as the sum of per capita employment and per capita unemployment; the employment rate in a household is measured by per capita employment divided by per capita labor force participation rate; work hour per employed person is obtained by per capita work hours divided by per capita employment.

In addition, labor productivity for each household is defined as per capita labor earnings divided by per capita work hours. Labor productivity

Table 4. Trends in labor market indicators

	Actual values			Annual growth rates	
	1997	2000	2003	1997-00	2000-03
All households					
Per capita employment	0.375	0.373	0.384	-0.1	0.9
Per capita unemployment	0.036	0.048	0.049	10.0	0.7
Per capita LFP	0.410	0.422	0.433	0.9	0.9
Per capita work hours	15.3	16.3	16.5	2.0	0.3
Per capita nominal labor income	16,916	19,036	20,689	3.9	2.8
Per capita real labor income	195.8	180.4	174.6	-2.7	-1.1
Employment rate	91.3	88.6	88.6	-1.0	0.0
Work hours per employed	40.9	43.7	42.9	2.2	-0.6
Productivity (current prices)	21.2	22.4	24.2	1.9	2.5
Productivity (constant prices)	0.25	0.21	0.20	-4.8	-1.4
Poor households					
Per capita employment	0.318	0.317	0.331	-0.1	1.5
Per capita unemployment	0.024	0.031	0.035	8.2	4.4
Per capita LFP	0.342	0.348	0.366	0.6	1.7
Per capita work hours	11.0	12.2	12.1	3.7	-0.4
Per capita nominal labor income	4,357	5,314	5,946	6.6	3.7
Per capita real labor income	54.8	54.4	53.5	-0.3	-0.5
Employment rate	93.0	91.2	90.4	-0.7	-0.3
Work hours per employed	34.5	38.6	36.5	3.8	-1.9
Productivity (current prices)	7.7	8.4	9.5	2.9	4.1
Productivity (constant prices)	0.10	0.09	0.09	-4.0	-0.1

Source: Author's calculations based on FIESs and LFSs.

can be expressed in both nominal and real terms. To examine trends in labor productivity, labor earnings should be adjusted for prices. Thus, the real productivity is equal to nominal productivity adjusted for prices.

Table 4 shows a number of points that merit emphasis. Per capita employment has increased from 0.375 in 1997 to 0.384 in 2003, but this has

not been sufficient to lower per capita unemployment given a rise in the LFP in the economy. LFP grew at an annual rate of 0.9 percent while per capita unemployment jumped by 10 percent per annum during the crisis period and increased by slightly less than 1 percent annually afterward. This meant that the number of jobs available in the labor market has not grown fast enough to absorb the number of new entrants to the labor force. This can be similarly observed for poor households.

As one would expect, productivity measured in current prices has been increasing. This is due largely to the rise in per capita nominal labor income. However, when per capita productivity is adjusted for price changes (i.e., per capita productivity at constant prices), the average per capita productivity for the whole economy fell by 4.8 percent and 1.4 percent per annum during the 1997-2000 and 2000-2003 periods, respectively. Over this period, the employed Filipinos have worked longer hours but have become worse off in terms of their per capita real labor income, which have thus reduced productivity.

5. Explaining growth in labor income

This section attempts to explain how changes in certain labor market characteristics contribute to the growth in per capita real labor income. Using the definitions in section 4, we can express the logarithm of average per capita real labor income as

$$Ln(\bar{x}_i^*) = Ln(\bar{l}) + Ln(\bar{e}/\bar{l}) + Ln(\bar{h}/\bar{e}) + Ln(\bar{x}_i^*/\bar{h}) \tag{6}$$

where bars on variables indicate the average over all households. For instance, $\bar{x}_i^*$ is the average per capita real labor income. If we take the first difference in (6), we obtain the growth rates. Thus, the growth rate of per capita real labor income can be expressed as the sum of the contributions by the following four factors:

(a) Average labor force participation rate
(b) Average employment rate
(c) Average work hours per employed person
(d) Average labor productivity

These four contributions are quantified for all households as well as for poor households in Table 5. The per capita labor income declined at an annual rate of 2.73 percent between 1997 and 2000, stemming from the deep economic crisis in Asia. What are the factors that have contributed to this decline? The

employment rate contributed to reduction in growth rate by 1.02 percent. Despite a fall in employment rate, the employed persons worked more hours, which contributed to a positive growth rate of 2.15 percent. It appears that during the crisis, those who were employed had to work longer hours because their hourly earnings were falling rapidly. This drop in earnings is reflected by the negative contribution of real productivity to growth of 4.76 percent. Interestingly, there was an increase in labor force participation rate, which made a positive contribution growth rate by 0.89 percent. Generally when the labor market is weak, many workers, particularly women, tend to withdraw from the labor market. The increase in labor force participation rate may be explained by the sharp decline in earnings from the labor market.

Table 5. Explaining growth rates in real labor income

	All households		Poor households	
	1997-00	*2000-03*	*1997-00*	*2000-03*
Labor force participation	0.89	0.92	0.57	1.74
Employment rate	-1.02	0.02	-0.66	-0.27
Work hours per employed	2.15	-0.63	3.79	-1.87
Real productivity	-4.76	-1.42	-3.96	-0.14
Real labor income	-2.73	-1.10	-0.26	-0.53

Source: Author's calculations based on FIESs and LFSs.

In the postcrisis period, per capita real labor income continued to decline but at a slower pace. The employment rate improved slightly while productivity did not decline as sharply as that experienced during the crisis. Between 2000 and 2003, more poor people entered the labor force. Despite the increase in labor force participation by the poor, the poor were not able to find employment (as indicated by the negative contribution of employment rate to the decline in real labor income). They also incurred less work hours, which indicated the appalling lack of job opportunities available to the poor.

In hindsight, the period chosen for review in this paper—1997-2003—showed that the growth of per capita labor income in the Philippines has been sluggish. Average per capita income continued to decline albeit at a much slower rate after the crisis. This drop can be attributed to changes in the labor market, particularly the continuing lack of employment opportunities as well as the persistently low levels of labor productivity.

6. Inequalities in the labor market

In section 4, we have previewed the huge impact that the labor market could have on inequality in the Philippines. Theil's index can be used to measure inequities in the labor market. This index can be calculated for labor market indicators such as per capita labor force participation rate, per capita employment, per capita work hours, and per capita labor income. For example, the Theil's index for per capita employment can be given by

$$T(e) = \int \ [\log(\mu_e) - \log(e)] f(x) dx \qquad (7)$$

where μ_e is the average per capita employment. $T(e)$ measures the inequality in employment across individuals belonging to a household.

Table 6 shows disparity in the Philippine labor market based on key indicators for the period 1997-2003. To begin with, we note that inequality in per capita labor income is much higher than inequality in per capita employment, per capita labor force participation rate, and per capita work hours. This suggests that the disparity in employment (also in the labor force participation rate and work hours) between the poor and nonpoor is not very large, while the disparity in per capita labor income can still be substantial. Such wide gap in earnings between the poor and nonpoor could be explained by the level of productivity. The nonpoor have a much higher productivity than the poor. Factors that explain productivity differences, however, are highly complex and beyond the scope of this paper. This will be dealt with in a future study.

In Table 6, we have attempted to explain total inequality in terms of disparities in various labor market indicators within as well as between regions. As the table shows, regional differences explained 11.54 percent of total inequality in per capita labor income in 1997. The contribution of regions to total inequality in indicators (such as employment, labor force participation, and work hours) is rather small.

This buttresses the misconception that inequality is largely derived from disparity across regions. Instead, inequality can be explained mainly by disparity within each of those regions. As shown in Figure 1, inequality in labor income is particularly high in Western Mindanao and Ilocos. Hence, a policy that intends to reduce aggregate inequality should cater to the needs of the specific region.

7. Explaining inequality in labor income

In this section, we want to explain what accounts for inequality in per capita labor income based on changes in certain labor market characteristics.

Table 6. Inequality in labor market indicators, Theil's index

	Theil's index			*Change in inequality*	
	1997	*2000*	*2003*	*1997-00*	*2000-03*
Total inequality					
Per capita employment	17.4	17.3	17.2	-0.1	-0.1
Per capita LFP	15.9	15.4	15.3	-0.5	-0.1
Per capita work hours	31.1	33.3	31.8	2.2	-1.5
Per capita labor income	64.5	65.8	61.3	1.4	-4.5
% of inequality explained by regions					
Per capita employment	1.40	1.72	1.39	0.3	-0.3
Per capita LFP	1.41	1.62	0.90	0.2	-0.7
Per capita work hours	0.92	0.69	0.43	-0.2	-0.3
Per capita labor income	11.54	10.70	8.75	-0.8	-2.0

Source: Author's calculations based on FIESs and LFSs.

Figure 1. Inequality in labor income within region, 2003
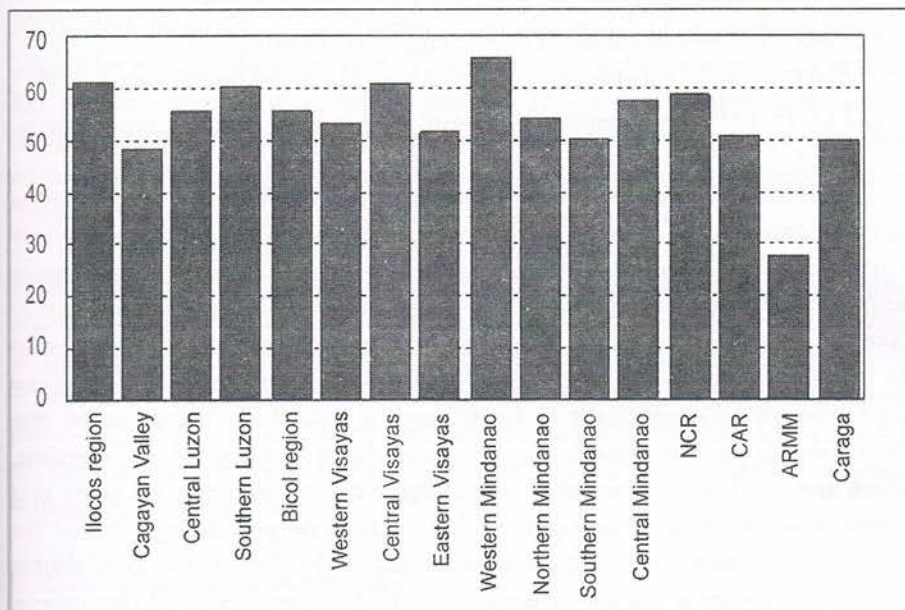
Source: Author's calculations based on FIESs and LFSs.

Using the definitions in the previous section, we can express the logarithm of per capita labor income as

$$Ln(x_l) = Ln(l) + Ln(e/l) + Ln(h/e) + Ln(x_l/h) \qquad (8)$$

Subtracting (8) from (6), we obtain

$$Ln(\bar{x}_l) - Ln(x_l) = [Ln(\bar{l}) - Ln(l)] + [Ln(\bar{e}/\bar{l}) - Ln(e/l)] + [Ln(\bar{h}/\bar{e}) - Ln(h/e)]$$
$$+ [Ln(\bar{x}_l/\bar{h}) - Ln(x_l/h)]$$

where $\bar{x}_l$ refers to the average per capita labor income, and the bars on variables indicate the average over all households. By integrating this equation over all households, we obtain

$$T(x_l) = T(l) + [T(e) - T(l)] + [T(h) - T(e)] + [T(x_l) - T(h)] \qquad (9)$$

Equation (9) shows that inequality in per capita labor income is equal to the sum of the contributions of the four labor market characteristics (used in section 5):

$T(l)$ = contribution of the labor force participation rate
$T(e) - T(l)$ = contribution of the employment rate
$T(h) - T(e)$ = contribution of work hours per employed person
$T(x_l) - T(h)$ = contribution of earnings per hour or labor productivity

Table 7 shows the results of our analysis. The Theil's index for per capita labor income in 1997 was 64.5. The per capita labor force participation rate contributed 15.9 percent to total inequality. This suggests a higher dependency ratio in poorer households compared to the nonpoor. Poor households may have more children (less than ten years) or elderly (more than 65 years), who do not participate in the labor force. Inequality in per capita labor income can be decreased significantly by increasing the labor force participation rate among the poor. The contribution of employment rate is only 1.5 percent, which means that the disparity in employment rate between the poor and nonpoor is very small. This suggests that focusing on generating jobs for the poor will not have much impact on inequality. The factor that contributes most to inequality is labor productivity (at 33.4 percent). Several factors can account for the low productivity of the poor. Most studies emphasize that the poor have low productivity because they possess, among others, a low level of human capital. Human capital may be an important factor that explains the

productivity differences between the poor and the nonpoor. We will return to this issue in the next section.

Table 7. Explaining inequality in per capita labor income

	Contribution to inequality			Contribution to change in inequality	
	1997	*2000*	*2003*	*1997-00*	*2000-03*
Labor force participation	15.9	15.4	15.3	-0.49	-0.14
Employment rate	1.5	1.9	1.9	0.41	0.02
Work hours per employed	13.7	16.0	14.6	2.26	-1.33
Productivity	33.4	32.6	29.5	-0.82	-3.06
Per capita labor income	64.5	65.8	61.3	1.36	-4.51

Source: Author's calculations based on FIESs and LFSs.

During the 1997-2000 period, inequality in labor income rose by 1.36 percent due mainly to the employment rate and work hours. This suggests that during the crisis, the employment rate and work hours among poor households fell much sharper than those among nonpoor households. In the subsequent period, 2000-2003, inequality in labor income declined by 4.5 percent, made possible largely by a fall in the inequality of productivity (-3.06 percent). Productivity has become more equal across households. This is consistent with our earlier finding that the fall in real productivity was far smaller among the poor than among the national average. Hence, the gap in productivity difference between the poor and the nonpoor has narrowed down in 2000-2003.

In synthesizing how the labor market impacts on inequality in the Philippines, our findings show that inequality in the Philippine labor market can be attributed to disparities within each region, rather than across regions. Within each region, the gaps in per capita incomes are quite pronounced. Moreover, looking closely at inequality levels within each region, the findings reveal that the level of and changes in labor productivity can explain much of the disparity in labor incomes. Like growth, labor productivity impacts significantly on inequality in the Philippines.

8. Education and labor market

The previous sections illustrate the importance of labor incomes in influencing the pattern and trends of growth and inequality in the Philippines. As a corollary objective, this paper maintains that a discussion of this linkage

would be more complete with a review of how the country's educational system responds to the needs of its labor market.

Because households make important decisions on schooling and the choice to work, it is most logical to use a micro approach to look into the relationship between education, and labor productivity and earnings. The primary motivations to attend school are better future income prospects and personal well-being. Education is known not only to lead to higher earnings but also to other non-labor market benefits, e.g., better nutrition and health, better capacity to enjoy leisure [Haveman and Wolfe 1984]. In line with the human capital view of education, higher earnings are compensation for increased productivity through education.

One distinguishing feature of Philippine development is the very high rate of school attendance. In this section, we will look into the educational attainment of the working-age population at household level. We will also investigate educational attainment by sector and by gender.

Table 8 shows the educational levels for those employed within households, both for the average and the poor during the period 1997-2003. To begin with, one should note that the figures presented in the table are all expressed in per capita terms within households.

Table 8 indicates that household members are getting more educated in the Philippines. Over the period 1997-2003, the proportion of employed household members with secondary and tertiary education increased, while that of employed household members with primary education declined. This suggests that higher education matters for employment in the Philippine labor market. Nevertheless, almost 70 percent of the employed among the poor households have acquired only primary education.

In terms of gender, the proportion of employed female members tends to be higher at secondary and tertiary levels. Its growth is quite strong over the period, particularly among the poor households. Moreover, the gender gap in the employment rate within household narrows down—still higher for male members—particularly at the tertiary level.

Based on the foregoing so far, a puzzle remains as to the differences in the employability of male and female employed by educational levels. Our study suggests that educational attainment is higher for women than for men. However, it does not seem to be the case that higher educational attainment among females leads to their greater employability in the labor market. This issue will be discussed below.

In general, one would expect employability to increase with a higher level of education. Such a pattern is indeed observed from Table 9. For instance in 1997, employability among the primary-educated persons is 47.8 percent,

rising to 48.9 percent among secondary educated, and reaching 56.6 percent among the tertiary educated.

Table 8. Per capita household employment by education and gender

	Actual values			Annual growth rate	
	1997	2000	2003	1997-00	2000-03
All households					
Primary education	16.5	15.2	15.0	-2.9	-0.3
Male	10.9	9.8	9.9	-3.4	0.4
Female	5.7	5.4	5.1	-2.0	-1.6
Secondary education	12.5	13.1	14.1	1.7	2.5
Male	8.2	8.5	9.1	1.0	2.3
Female	4.3	4.6	5.1	2.9	2.8
Tertiary education	8.5	9.1	9.3	2.3	0.7
Male	4.5	4.8	4.9	1.7	0.8
Female	3.9	4.3	4.4	2.9	0.6
Total employment	37.5	37.3	38.4	-0.1	0.9
Male	23.6	23.0	23.9	-0.8	1.2
Female	13.9	14.3	14.6	1.0	0.6
	Actual values			Annual growth rate	
	1997	2000	2003	1997-00	1997-00
Poor households					
Primary education	23.0	21.3	22.6	-2.5	1.9
Male	16.1	14.8	15.7	-2.7	1.8
Female	6.9	6.5	6.9	-2.0	1.9
Secondary education	7.8	9.1	9.3	5.1	0.6
Male	5.2	6.3	6.3	6.2	0.0
Female	2.6	2.8	3.0	3.0	2.0
Tertiary education	1.0	1.3	1.3	9.0	1.0
Male	0.7	0.8	0.8	6.4	-1.2
Female	0.3	0.5	0.5	14.2	4.6
Total employment	31.8	31.7	33.1	-0.1	1.5
Male	22.0	21.9	22.7	-0.1	1.2
Female	9.8	9.8	10.4	-0.0	2.1

Source: Author's calculations based on FIESs.

Such a pattern can be observed for average households, but not necessarily for poor households in 1997 and 2000. This could be because poor households find work mainly in the informal sector that does not recruit skilled laborers or those with higher education. This can also be explained by the large unemployability among the female members of poor households, particularly at tertiary level. Employability is far greater for male members of poor households compared to those of average households. This finding is consistent with the view that poor people cannot afford to be unemployed. More important, at all education levels, women have much lower employability than men. The male-female gap, however, is much less among those with college education.

Table 9. Employability by education and gender

	All households		
	1997	*2000*	*2003*
Primary education	47.8	45.4	34.3
Male	61.5	57.5	43.6
Female	33.6	32.8	24.3
Secondary education	48.9	48.1	49.8
Male	64.0	60.9	63.9
Female	33.6	34.8	35.7
Tertiary education	56.6	54.3	56.8
Male	64.5	61.0	64.1
Female	49.6	48.4	50.4
	Poor households		
	1997	*2000*	*2003*
Primary education	50.2	47.4	36.0
Male	65.8	62.2	47.2
Female	32.3	30.7	23.4
Secondary education	47.6	47.0	48.1
Male	67.7	65.4	67.9
Female	29.8	29.0	30.0
Tertiary education	43.3	44.0	52.1
Male	67.5	63.2	69.3
Female	24.0	28.5	37.9

Source: Author's calculations based on FIESs and LFSs.

Furthermore, it is interesting to note that, on average, almost 50 percent of tertiary-educated females do not work, whereas the corresponding figure for poor households is 60-70 percent. In addition, employability among tertiary-educated females who belong to the poor households has increased dramatically over the period 1997-2003. The low levels of employability among educated females in 1997 and 2000 could be partly explained in terms of discouraged worker's effect during the crisis period.

Interestingly, employability among the primary-educated labor force declined sharply over the period 1997-2003, while it increased for both secondary and tertiary levels. This suggests that as the labor force is becoming more educated, job opportunities for those with lower education have become increasingly scarce. There are two alternative explanations behind this. One is that there has been greater demand for secondary and tertiary-educated individuals in the labor market. The other is that low-productivity jobs are taken over by the more educated labor force.

If the latter is true, the above observations suggest that the labor productivity of educated workers has been on the decline. As indicated in Table 8, per capita employment has remained roughly constant over the period. This implies that employment has increased merely in line with the population growth. Hence, if there is no improvement in labor productivity, then growth in per capita real labor earnings is expected to stagnate. To achieve a positive growth, labor productivity has to increase. Total labor productivity depends on the pattern of employment by sectors and gender.

Table 10 shows per capita household employment by sector and gender. Accordingly, in terms of magnitudes, the proportion of household members employed in agriculture has declined, has remained virtually unchanged in the industrial sector, and has risen for the service sector. This suggests a structural change in which the labor force is moving away from the agriculture sector toward the service sector. Overall, the average household members are largely employed in services. In the service sector, there is a significant increase in the employment of female household members over the period. This could be supported by a claim that the proportion of female college graduates employed in finance, insurance, and real estates has increased over time [Orbeta 2002].

As the findings clearly suggest, the working-age population is increasingly more engaged in the service sector. Although the service sector tends to create more jobs, the quality of job does matter for individual earnings in the labor market. While taxi drivers belong to the service sector, lawyers and doctors also belong to the same sector.

Table 10. Per capita household employment by sector and gender

	Actual values			Annual growth rate	
	1997	2000	2003	1997-00	2000-03
All households					
Agriculture	**14.7**	**13.8**	**14.0**	**-2.2**	**0.5**
Male	10.9	10.4	10.6	-1.6	0.6
Female	3.8	3.4	3.4	-3.8	0.2
Industry	**6.3**	**6.1**	**6.1**	**-1.0**	**0.0**
Male	4.5	4.3	4.4	-2.0	0.6
Female	1.8	1.9	1.8	1.3	-1.4
Service	**16.4**	**17.4**	**18.3**	**1.9**	**1.6**
Male	8.1	8.3	8.9	0.9	2.2
Female	8.3	9.1	9.4	2.9	1.1
Total employment	**37.5**	**37.3**	**38.4**	**-0.1**	**0.9**
	Actual values			Annual growth rate	
	1997	2000	2003	1997-00	2000-03
Poor households					
Agriculture	**23.2**	**21.8**	**23.1**	**-2.1**	**1.9**
Male	17.1	16.5	17.2	-1.2	1.5
Female	6.1	5.3	5.9	-4.6	3.4
Industry	**3.1**	**3.4**	**3.4**	**3.1**	**-0.3**
Male	2.3	2.4	2.4	1.9	-0.5
Female	0.8	1.0	1.0	6.3	0.2
Service	**5.5**	**6.5**	**6.7**	**5.7**	**0.8**
Male	2.6	3.0	3.1	4.8	1.2
Female	2.9	3.5	3.5	6.5	0.4
Total employment	**31.8**	**31.7**	**33.1**	**-0.1**	**1.5**

Source: Author's calculations based on FIESs and LFSs.

9. Conclusions

This paper aimed to analyse economic growth and income inequality in the Philippines, focusing on the role played by the labor market. It hypothesized that the Philippine sluggish economic growth can be attributed to poor performance in the labor market. Our microanalytical approach, thus far, provides evidence of the enormous impact that labor incomes can have, as far

as influencing the pattern and trends of growth and inequality of labor income in the Philippines.

In the Philippines, there has been a massive expansion in the supply of qualified labor. Nevertheless, the performance in labor productivity contrasts with the fact that the market has been endowed with highly educated (and, by implication, highly skilled) labor. Moreover, the poor growth performance of the Philippines has become even more puzzling if we consider the educational effort that has been made. Two findings are worthwhile highlighting.

First, the study has found that higher education is an important determinant of employment in the Philippine labor market. Employability among the primary-educated labor force has declined sharply over the period 1997-2003, whereas it has increased for those with secondary and tertiary education. This indicates that those with higher education have crowded out the less educated in terms of job opportunities. The study premised this finding on two explanations. First, there has been greater demand for secondary and tertiary-educated individuals in the Philippine labor market. Second, low-productivity jobs are taken over by the more educated labor force. If the second explanation is valid, then our finding supports a scenario in which the labor productivity of educated workers declines.

So far, our analysis has proven this argument to be true. We have found that per capita labor productivity has fallen over the 1997-2003 period. This finding confirms our previous conjecture that a large expansion in the supply of qualified workers has lowered the price for skilled labor over the period. Indeed, this is an issue of mismatch between the labor market and the education sector. This indicates that the current education sector does not supply the right kind of skills demanded by the labor market.

The labor mismatch is also an issue that government needs to reckon with to accelerate and sustain economic growth. The major findings in this study have made it clear that a policy of expanding the aggregate supply of skills is not sufficient to address the decline in labor productivity, which has, in turn, slowed the pace of economic growth. From a policy perspective, going beyond universal coverage in education is imperative because what is required is an expansion of the supply of the right kind of skills.

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