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The Dynamics of Inequality Change in a Highly Dualistic Economy

Honduras, 1991–2007

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Abstract

We examine the drivers of inequality change in Honduras between 1991-2007, trying to understand why inequality increased in Honduras until 2005, while it was falling in most other Latin American countries. Using annual household surveys, we document first rising inequality between 1991-2005, which is followed by falling inequality thereafter. Using an inequality decomposition technique, we show that the rising inequality between 1991 and 2005 was, for the most part, driven by the dispersion of labour incomes in rural areas. We also show that the extraordinary labour earnings disequalization is mainly the result of a widening wage gap between the tradable and non-tradable sectors and occupations, combined with highly segmented labour markets and poor overall educational progress. The underlying determinants of the divergence between tradable and non-tradable sectors were highly overvalued currencies and poor …/.

Keywords: inequality, decomposition, education, wages, Honduras, migration

JEL classification: C15, D31, I21, J23, J31, R23, J61

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commodity process for Honduras' agricultural exports. Between 2005 and 2007, however, the inequality reduction was a result of equalizing trends in labour and non-labour incomes. The commodity boom promoting the tradable sector and remittances (in this order) played a significant role here, with government transfers playing a small supporting role. Since the decline in inequality is largely driven by international factors, we cannot be sure whether the decline in inequality will continue.

Acknowledgements

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Acronyms

CAFTA	US-Central America Free Trade Agreement
EPHPM	household surveys (*Encuesta Permanente de Hogares de Propositos Múltiples*)
HIPC	heavily indebted poor countries
IADB	Inter-American Development Bank
MDRI	Multilateral Debt Relief Initiative
PRAF	cash transfer programme (*Programa de Asignación Familiar*)

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1 Introduction

Honduras stands out in Latin America as one of the few examples where inequality has not declined in the early 2000s, as it has in most other Latin American countries. As we show below, inequality has been rising, more or less continuously between 1991 and 2005. After 2005, inequality has started to fall, apparently extending beyond the last data point in our analysis, 2007.[1] Honduras has thus been an outlier where the peak in inequality occurred much later and the decline thereafter is also much more tentative. The macro and micro causes of this exceptionalism are the main topic of this paper.

Despite considerable economic growth before the global economic downturn started in 2008, the World Bank (2006b) portrays Honduras as one of the poorest countries in Latin America with more than 50 per cent of its population below the poverty line. Moreover, the country has one of the highest rates of inequality in Latin America. Poverty and inequality, in particular, have been aggravated by natural disasters (such as hurricane Mitch in 1998)[2] since the poor commonly live off small-scale agriculture in rural areas.[3] After the disaster of hurricane Mitch, Honduras designed a poverty reduction strategy, seeking to reduce extreme poverty by half by 2015 (World Bank 2006b), and its implementation since 2006 has been supported by debt relief from donors through the HIPC (Heavily Indebted Poor Countries) Initiative. These actions, together with external market conditions, have allowed Honduras to experience a positive economic growth during the last 15 years, averaging 3 per cent annually.

Honduras is a small open economy relying heavily on a narrow range of exports, mainly bananas and coffee, making it highly vulnerable to natural disasters and shifts in commodity prices. In particular, hurricane Mitch largely wiped out the banana production in 1998 and 1999, from which Honduras recovered very slowly thereafter, and was greatly affected by falling coffee prices until about 2002 and rising prices for both commodities thereafter (see Figure A1 in the Appendix). However, investments in the *maquila* (US factories operated in Honduras under preferential tariff programmes) and non-traditional export sectors are slowly diversifying the production of the Honduran economy. These attempts at diversification are supported by signing and ratifying the US-Central America Free Trade Agreement (CAFTA). Honduras also is notable for its very high population growth rate of more than 2 per cent yearly throughout the period under examination. With such a rapidly growing labour force, it also exports its labour and is in fact the fastest growing remittance destination in the region with inflows representing over a quarter of the GDP, equivalent to nearly three-

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1 2007 is the most recent year for which reliable household survey data are available (*Encuesta Permanente de Hogares*: EPHPM I from 1991-99 and II from 2001-07.) We always use the October wave of the survey. Since 2008, only the May wave has been available. These show that the decline in inequality has apparently continued beyond 2007 (EPHPM 2008, 2009 and 20010).

2 ECLAC (1999) states 'Hurricane Mitch is the most serious hydro-meteorological disaster to have struck Central America in many years. Its force upon reaching the coasts of the region was exceptional, as were its diameter, the amount of moisture and rain it carried and the erratic path it followed for several days'. Moreover, Mitch caused around 14,000 direct deaths and an estimated material loss of around US$3.8 billion.

3 EPH 2007 shows that 85 per cent and 64 per cent of individuals of the first and second quintiles, respectively, are living in rural areas.

quarters of all exports. Consequently, external conditions, trade and currency policy will have an important impact on growth, poverty, and inequality.

Honduras has recurrently faced serious economic crises: in 1994, 1998/9 and then again in 2009. These crises were often disequalizing, because of the lack of available proper safety nets for poor and vulnerable population groups (Lustig 1995). Despite improvements in tax collections and other macroeconomic policies, the country continues to struggle with fiscal deficits.[4] Since 2005, as a result of the combined effects of public policies (targeted social transfers),[5] improved economic growth closely linked to increasing commodity prices and the fact that significant additional resources have gone directly to households through remittances,[6] there has been a reduction in extreme poverty.

The political system in Honduras of the past 30 years has been characterized by the Liberal Party (centre-left liberal political party) and the National Party (centre-right conservative political party) taking turns in government. As a result, there is not much variation in the kinds of policies implemented. Tax revenues have been growing continuously since 1994, beginning with Carlos Reina's government. The same occurs with the public social expenditure. It may be argued, that liberal governments have been slightly more willing to increasing debt-based social expenditure, while governments led by the National Party have been more conservative in this policy aspect. Regarding labour market policies, even when there are some labour regulations protecting workers, these regulations are quite flexible and have been systematically ignored by the government and by companies. As a result, there is much evidence of job insecurity, which remains almost unchanged. The last liberal government of Zelaya (since 2006) took a more populist turn, expanded social programmes and minimum wages, and was subsequently ousted in 2009 by the military. After renewed presidential elections Lobo from the National Party was installed in 2010.

1.1 Macroeconomic environment, liberalization and trade imbalance

Honduras began to liberalize its international trade in 1990.[7] As a result, total imports increased enormously; almost 12 per cent per annum during 1990-95, and then even faster after this. At the same time, the growth of Honduran exports lagged well behind the surge in imports (see Figure 1). After the 1994 crisis where the exchange rate was drastically depreciated, GDP growth resumed and the country witnessed improved public finances, a reduction of inflation and an increase of international reserves (see Table 1).[8] Nevertheless, the trade imbalance continued to grow, real interest rates increased until 2002, and the real exchange rate continued to appreciate steadily until

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4 See Cardemil, Di Tata and Frantischek (2000).

5 US$71.5 million accumulated between 2005 and 2007 (Honduran Secretary of Finance).

6 In 2008, US$2.8 billion corresponding to 18 per cent of GDP (Central Bank of Honduras).

7 Through the Macroeconomic Policy Reform Law in March 1990.

8 Total GDP grew at an annual average rate of 4.5 per cent between 1994 and 1997, after which this trend was interrupted by hurricane Mitch. International reserves increased from US$205 million to US$1,248 million. The fiscal deficit, excluding international transfers, dropped almost 5 percentage points from 8 per cent to 3 per cent of the GDP during the period between 1994 and 2000.

the same year (see Appendix Table A4).[9] The appreciation of the real exchange rate (RER) seems to be linked to significant capital inflows received after hurricane Mitch and donor transfers for reconstruction, and more recently by increased remittances, aid and debt relief. Paz Cafferata (2003) argues that this happened despite sterilization policies of the central bank which proved to be insufficient.

The Honduran growth has been accompanied by low investment rates inducing a weak modernization in the productive sectors. These conditions did not facilitate an improved productivity. According to Lugones, Gutti and Clech (2007), the annualized change rate of the total factor productivity was -1.28 per cent between 1991 and 2003.[10] Figure 1 shows how GDP growth is closely correlated with the expansion in the total amount of working hours during the 1990s.[11] In contrast, the 2000s are characterized by higher rates of gross fixed capital formation and declining real interest rates (starting in 2002) and a divergence between the rates of expansion of labour and real GDP. This divergence may be the consequence of productivity improvements.[12] However, these averages do not let us see just how unequal the improvement (deterioration) of the labour productivity has been across the working population which we discuss below.

As in many developing countries (and in contrast to the richer middle-income economies of Latin America), the agricultural sector employs more people than any

Table 1
Relevant macroeconomic indicators for selected periods

	1991-99	1999-2005	2005-07
Remittances/GDP* (since 2000)	n/a	10.8	20.1
Exports of goods and services/GDP*	40.6	52.9	56.1
Imports of goods and services/GDP*	47.7	67.8	78.6
Current account balance/GDP*	-6.5	-5.6	-5.3
Average inflation rate	18.9	10.7	6.4
Max. inflation rate	28.8	30.8	7.2
Real exchange rate (2000=100)	121.79	99.82	99.00
Real interest rate	6.82	11.78	10.45
Overall balance central government/GDP*	-3.2	-3.48	-2.13
Debt/GDP*	120.79	69.05	32.55
Tax revenues/GDP*	13.22	14.08	15.39
Public social spending/GDP*	5.92	8.92	9.90
Public social security spending/GDP*	0.28	0.22	0.36

Note: * percentages.

Source: Based on WDI, Secretaría Ejecutive Consejo Monetario Centroamericano, Central Bank of Honduras (2010), ECLAC (1999).

9 See also Paz Cafferata (2003).

10 Total factor productivity is commonly understood, though not without controversy, as a proxy of technological change.

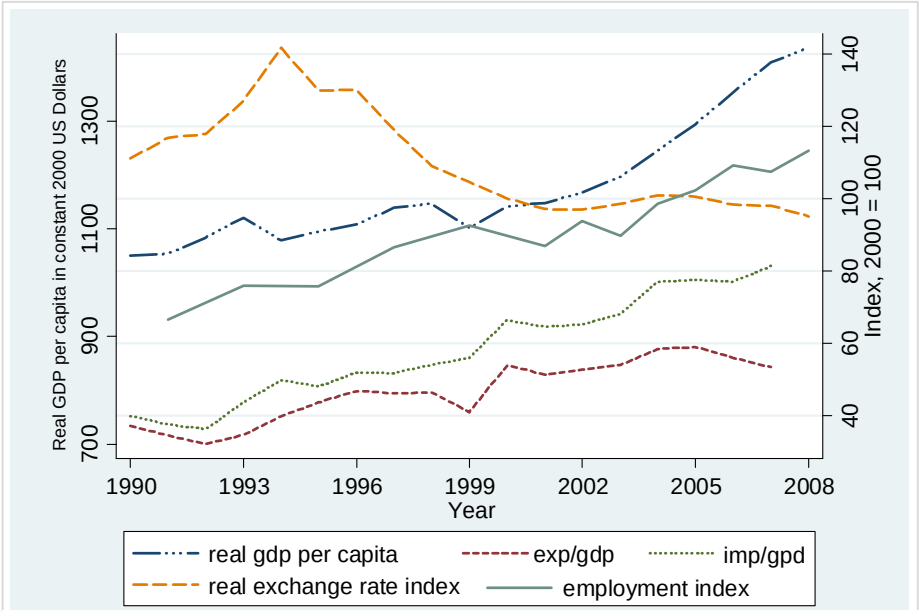
11 This employment index equals the unity in 2005 and represents 102.3 million working hours per week.

12 It is possible to observe in Figure 1 that the slope of the employment expansion is not decreasing over time.

other sector. Although other sectors have been gaining importance, the agricultural sector still provides over one-third of all jobs overall, and over 55 per cent in rural areas. Improvements in agrarian production have not translated into higher wages, presumably because of stagnant productivity given the low competitiveness of this sector, partly a consequence of the appreciated RER, insufficient capital investment and the effects of the hurricane Mitch on infrastructure and soil productivity.[13] After 2005, the commodity price booms in coffee and bananas significantly improved the situation in the agricultural tradables, a development that has continued to this day.[14]

Contrary to this, and consistent with the appreciation of the RER since the early 1990s, the non-tradable sector appears to gain momentum. During the last two decades, a shift in the productive path, value generation and wages can be observed. Household surveys show that wages in agriculture, as a share of total wages, declined from 28 per cent in 1991 to 20 per cent in 1999 and to 17 per cent in 2007, while the share of wages in non-tradable sectors such as commerce, transport, construction and basic services grew from 29 per cent in 1991 to 39 per cent in 2007. Other tradable sectors such as the manufacturing sector (*maquiladoras*) maintain a constant employment share.[15]

Figure 1
Selected macroeconomic indicators, 1990-2008, Honduras



Source: Based on Central Bank of Honduras and WDI data.

[13] For instance, between 1991 and 1999, the number of tractors per 100km^{2} increased by about 13 per cent, while the number of workers in the agricultural sector rose by 19 per cent during the same period. From 1991 to 2007, both figures have grown by about 40 per cent, also driven by rapid population growth. These facts may support the idea that the productivity of labour, at least within agricultural activities, has been decreasing during the 1990s in part because of a reduction of units of capital per worker.

[14] See Figure 1 in the appendix for a development of coffee and banana prices.

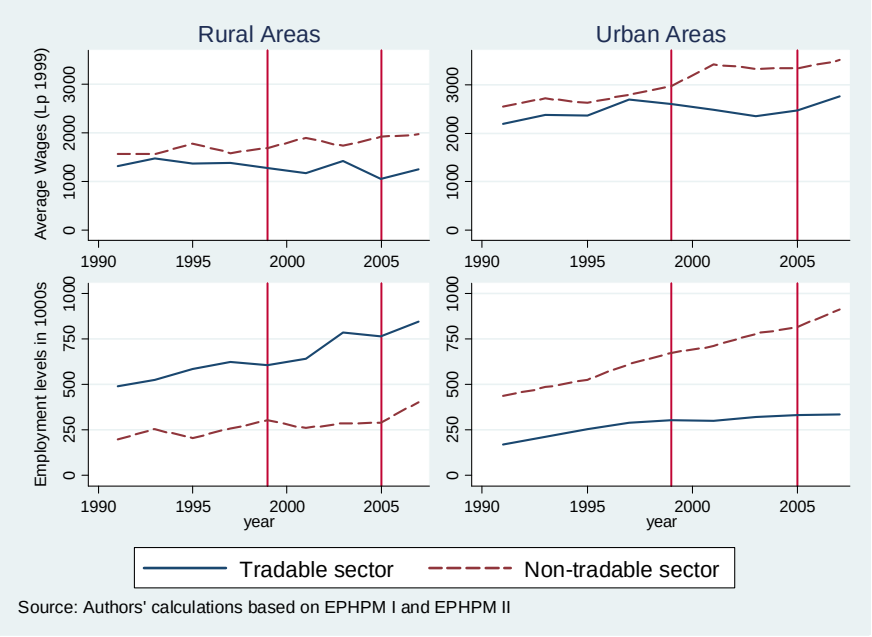
[15] Figures obtained based on EPHPM I and II.

1.2 Sectorial-related changes in earnings: tradables versus non-tradables

An overvaluation of the RER will induce a loss of relative competitiveness of the tradable sector while favouring the non-tradable sector. The tradable sector consists of formal and informal employment of agriculture and livestock activities, mining and manufacture. The non-tradable sector consists of formal and informal employment in basic services (electricity, water, gas) construction, commerce, transport, financing and other services. This hypothesis is supported in Figure 2, which shows that in both rural and urban areas, there is a rising gap between wages in the non-tradable and the tradable sectors. Remarkably, this is true even if considering the fact that a considerable share of non-tradable employment are informal sector activities with low earnings. In fact, it turns out that the in early 1990s, earnings at the low end of the earnings distribution of the non-tradable sector were below those at the low end in the tradable sector. By 2005, the earnings in the non-tradable sector were considerably above those in the tradable sector. Consequently, the tradable sector has declined over the last two decades. According to household surveys, the share of wages in the tradable sector in rural areas declined from 67 per cent of total wages in 1991 to 56 per cent in 2007 (and from 25 per cent and 22 per cent of wages in urban areas).

How would the expansion of the non-tradable sector affect inequality? The answer depends on the initial levels of inequality within and between the two sectors, and on how efficient labour markets are in reallocating workers from the tradable to the non-tradable sector. If workers can be reallocated easily, we would not expect large effects as workers move across sectors with little loss of earnings. Figure 3 shows evidence of this issue in rural areas. While low-earners in the tradable sector (top panels) suffered steep real wage declines between 1991 and 2005, low-earners in the non-tradable sector seem to maintain their earnings stable between 1991 and 1999, and even improved their performance between 1999 and 2005. Why were low-earners in the tradable sector not able to move to the non-tradable sector and profit from growing wages? The answer

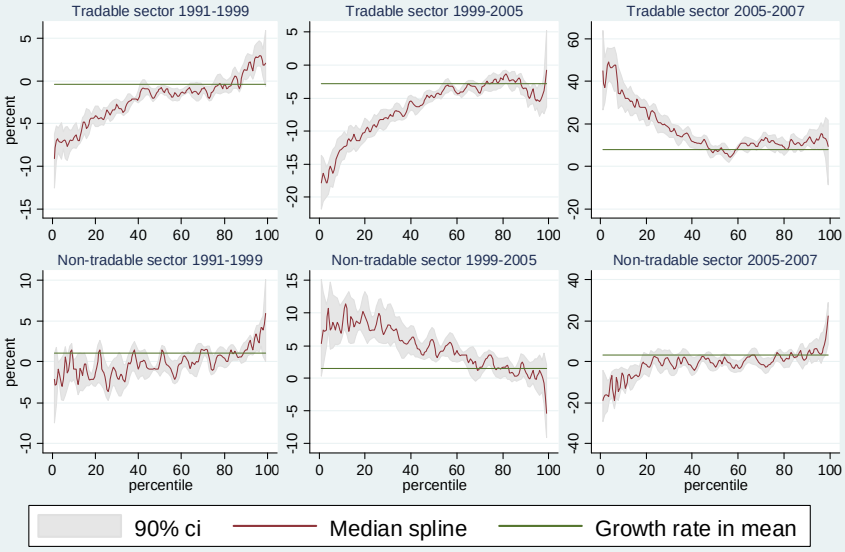
Figure 2
Wages and employment: tradable and non-tradable sectgors,1991-2007



Source: Authors' calculations based on EPHPM I and EPHPM II

may lie in the strong sector-occupational segmentation, which is partly related to a deficient educational system (see Barahona and Blas 2008). We devote the next section to describing how the distribution of education may have been affecting the labour earnings distribution.

Figure 3
Growth incidence curves: tradable and non-tradable sectors in rural areas, 1991-2007



Note different y-axis scales.
Source: Authors' calculations based on EPHPM I and EPHPM II

1.3 A dysfunctional educational system promoting rural-urban migration and inequality

Average education of the Honduran labour force has increased only marginally over time (see Table 2). At the country level, during the period 1991-2007, the number of years of education of the Honduran labour force rose from only 5.1 to a still very poor 6.0. Furthermore, education lagged behind in rural areas; in 1991, urban labour force participants had over seven years of education (at about a secondary education level) versus 3.6 years of education in rural areas (less than a primary education level). Second, there are also marked differences regarding changes in the structure of educational levels, most likely linked to different educational opportunities as well as rural-urban migration (see below). Although the proportion without formal education has been steadily declining in urban and rural areas alike, in the rural areas this was made up with increasing shares of people with intermediate education, while in urban areas the largest increase was among those with tertiary education. The accelerated expansion of tertiary education in urban areas dominates changes in the distribution of education at the country level. Given the (often convex) link between education and earnings, educational progress in urban areas may serve to disperse the labour income distribution.[16]

[16] The disequalization of the earnings distribution may occur even when the Gini coefficient of years of schooling shows a monotonic decreasing trend (1991-2007), which has been termed the 'paradox of progress.' In previous studies for Argentina and Mexico, the Gini for educational attainment declined while earnings inequality increased; see Gasparini, Marchionni and Sosa Escudero (2005) for Argentina and Legovini, Bouillón and Lustig (2005) for Mexico.

Table 2
Changes in the Honduran labour force educational structure, 1991-2007

	Per cent				Annualized change*		
Education structure	1991	1999	2005	2007	1991-99	1999-2005	2005-07
Country level							
Without	20.0	16.7	14.3	13.2	-0.41	-0.41	-0.57
Less than secondary	57.8	58.0	57.0	56.0	0.02	-0.16	-0.54
Less than tertiary	18.1	20.0	21.9	23.1	0.23	0.33	0.56
Tertiary	4.1	5.3	6.7	7.8	0.16	0.24	0.54
Years of schooling	5.1	5.4	5.8	6.0	0.04	0.06	0.11
Gini coefficient	45.4	43.0	41.3	40.3	-0.30	-0.20	-0.10
Rural areas							
Without	27.4	24.1	21.2	19.3	-0.42	-0.48	-0.92
Less than secondary	64.3	65.5	67.7	67.0	0.14	0.37	-0.35
Less than tertiary	7.8	9.6	10.3	12.2	0.23	0.12	0.96
Tertiary	0.5	0.9	0.9	1.5	0.05	0.00	0.31
Years of schooling	3.6	3.8	3.9	4.2	0.03	0.02	0.15
Gini coefficient	47.6	45.8	43.6	42.4	-0.20	-0.30	-0.20
Urban areas							
Without	10.6	8.7	7.0	6.4	-0.23	-0.30	-0.30
Less than secondary	49.3	49.8	45.6	43.8	0.05	-0.69	-0.94
Less than tertiary	31.4	31.3	34.4	35.1	-0.01	0.51	0.33
Tertiary	8.7	10.2	13.0	14.8	0.19	0.47	0.91
Years of schooling	7.1	7.2	7.8	8.0	0.01	0.10	0.10
Gini coefficient	37.2	35.4	33.1	32.4	-0.20	-0.30	-0.10

Note: * in percentage points; Gini coefficient based on the years of schooling distribution.
Source: Authors' calculations based on data from EPHPM1 and EPHPM II.

Education reforms and crisis during the 1990s

During the early 1990s, market-oriented reforms designed to pull economies out of a crisis were implemented in Honduras, including changes that affected educational policies. Barahona and Blas (2008) argue that reforms were implemented with the purpose of decentralizing and incorporating the private sector in the educational process.[17] Despite these efforts, the Honduran educational system is still deficient in coverage and quality.[18] Lack of funds, a shortage of teachers (particularly in rural areas), poor pedagogic training, and obsolete curricula are some problems which the Honduran educational system has to deal with.[19] Such problems are not surprising

[17] Private education has flourished during the last decades. Private schools do not have as much academic prestige in Honduras. Nevertheless, wealthy families choose to send their children to private schools because they still convey a higher social status and more amenities.

[18] Following Barahona and Blas (2008), coverage was one of the central goals of the reform implemented by the government of Carlos Reina. However, decentralization and fragmentation of the administrative structure ended up with a reduced investment in education during the 1990s. As a result of this, even to this day, coverage deficiencies are particularly notorious in preschool and secondary levels and in rural areas.

[19] Additionally, according to the background notes by the US Department of State, hurricane Mitch damaged more than 3,000 schools nationwide.

given the modest spending levels in education. Public spending in education in Honduras is far from the more advanced educational systems in Latin America. While public spending in education per capita in Honduras reached US$40 in 2000, Argentina and Chile were respectively spending US$520 and US$208, respectively. [20] However, just within the last decade, public spending in education in 2008 has doubled in absolute terms, reducing the gap to other countries. Unfortunately, public spending on education in Honduras is already quite high as a share of the GDP, which means that enhancing educational resources further will require considerable complementary financial flows.

1.4 Rural-urban migration

Changes in the structure of education of the labour force are a consequence of fertility rates, efficiency and coverage of the schooling system and migration. While fertility rates and the nature of the schooling system tend to change slowly over time, internal migration may have an extraordinary impact on origin and destination areas (rural and urban areas). In order to understand the contribution of internal migration on changes in the educational distribution and thus on inequality, we estimate migration flows in the origin controlling for the fact that, after migration, migrants in urban areas may decide to enrol or to continue current studies, and consequently, ex-post estimates of the structure of education overstate the education attainment of rural-urban migrants at the time of migration. For this reason, we estimated a structural model for internal migration based on the extended Roy model.[21]

Table 3 compares the educational structure of the net migrant group with the observed structure in rural and urban areas in 1994 and 1999.[22] By comparing both structures, it is clear that rural-urban migration increases educational inequality in urban areas, as the share of migrants with no education far exceeds the share of urban residents with no education. In contrast, migration should reduce educational inequality in rural areas as

Table 3
Structures of education for migrants and destination areas, Honduras, 1994-99

	Urban areas		Rural areas		Internal migrants	
	1994	1999	1994	1999	Net migrants	Structure
Without	9.34	8.88	22.49	22.07	43,799	23.74
Less than secondary	52.40	50.88	67.39	67.03	110,056	59.65
Less than tertiary	32.05	32.44	9.76	10.36	30,519	16.54
Tertiary	6.21	7.80	0.36	0.54	135	0.07

Note: * Structures in percentage.
Source: Authors' calculations based on EPHPM I and EPHPM II.

[20] According to ECLAC, Social Development Division.

[21] The extended Roy model finds a suitable counterpart in a switching regression model, presented by Goldfeld and Quandt (1973) with endogenous switching (Maddala and Nelson 1975; Maddala 1983). Technical details about the estimation procedure are available upon request.

[22] The household survey allows us to define migrants based on 1994 and 1999 as reference years; therefore, this migration flow may be considered as a proxy for the 1991-99 flow.

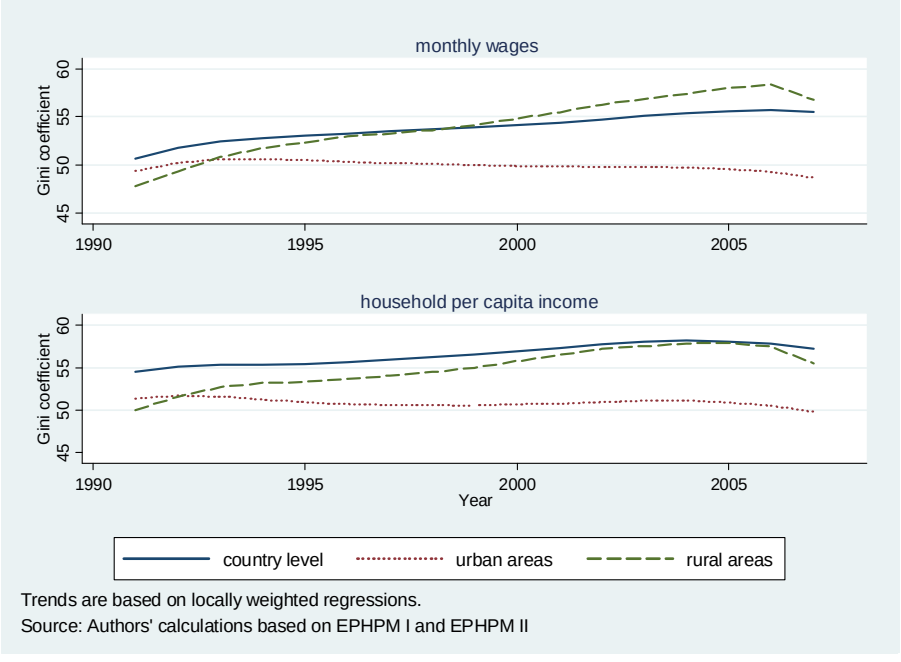
migrants are disproportionately drawn from the low (no education) and high end (more than secondary) of the rural educational distribution. When interpreting changes in inequality, this has to be borne in mind.

1.5 Inequality change in Honduras

Figure 4 depicts inequality trends in household per capita income and labour earnings. Inequality in household per capita income increased steadily since 1991 over a period of more than ten years and started to decrease after 2005, a trend which appears to have continued beyond 2007, the last comparable dataset in our analysis. The inequality increase appears to be heavily influenced by an increase of rural inequality (and possibly rural-urban shifts), while urban inequality changed very little during that time period. Moreover, changes in inequality at the country level appear to be closely related to increasing labour earnings inequality, which also reaches its peak in 2005.[23]

Based on the discussion above, our hypothesis about inequality trends is that extremely low levels of human capital accumulation, particularly in rural areas, together with neoliberal labour market institutions and an appreciated real exchange rate worsened rural incomes, in particular, those at the bottom of the distribution of the tradable sector. To analyse inequality change using various decomposition techniques, we divide our analysis into three periods, 1991-99 (just after hurricane Mitch), 1999-2005 (the year of highest inequality) and 2005-07.

Figure 4
Monthly wages and household per capita income inequality trends, 1991-2007



Trends are based on locally weighted regressions.
Source: Authors' calculations based on EPHPM I and EPHPM II

[23] The inequality peak is not driven by outliers. In order to check the robustness of our Gini estimates, we excluded the top and bottom 5 per cent of observations from the income distributions. Trends are not affected by outliers and confirm the finding that in 2005, income inequality reached its highest level within the period of observation.

2 Micro-econometric decomposition I: the proximate determinants of changes in income inequality

In this section, we present evidence regarding the relative importance of demographics, labour markets, (international) remittances, government transfers (social policies) and other non-labour incomes (principally capital incomes and domestic private transfers) in explaining inequality changes in the distribution of household per capita income between 1991 and 2007. Following the methodology proposed by Barros et al. (2006), we are able to identify and quantify these determinants using a series of counterfactual simulations. In this study, our extended methodology allowed us to assess the impact of government transfers, remittances and other non-labour incomes on inequality changes.

Putting technical aspects of the decomposition aside, the empirical approach is based on the following tree of identities:

$$y = a*r \quad (1)$$

$$r = o + t \quad (2)$$

$$t = u * w \quad (3)$$

$$o = rem + soc + nrs \quad (4)$$

Hence,

$$y = a * [(rem + soc + other) + u * w)] \quad (5)$$

Where *y* is the household per capita income, *r* the household income per adult, *o* corresponds to the household non-labour incomes per adult and *t* represents the household labour income per adult. Finally, in this extended specification (Identity (5)) *a* corresponds to the proportion of working adults in the household. Remittances per adult in the household are symbolized by *rem*, while government transfers per adult in the household are represented by *soc*, and *other* represents other household non-labour incomes per adult. The variable *u* represents the proportion of working adults in the household and *w* is the labour income per working adult in the household. As mentioned by Barros et al. (2006), since we are dealing with identities, any change in the income distribution must be related to changes in the joint distribution of these proximate determinants.

To clarify our notation in Table 4, in the decomposition presented by Identity (1), for example, we define Δ_a as the proportion of change of the Gini coefficient, resulting from changes in the distribution of the percentage of adults in the household.[24] In the same way Δ_r is the proportion of change of the Gini coefficient, resulting from changes in the distribution of the household income per adult. Finally, $\Delta_{a \to r}$ captures the proportion of change of the Gini coefficient resulting from changes in the association between the proportion of adults in household *a* and the household income per adult *r*. Using the same notation, the contribution caused by changes in the remaining proximate determinants, and their respective associations on changes in labour income inequality, are illustrated in Table 4 (Identity (5)). Appendix Tables A5 and A6 show separate results for urban and rural areas.

[24] Since we estimate whole distributions, we strictly decompose distributional changes (which are evaluated using the Gini coefficient), rather than a direct change in the Gini coefficient.

Table 4
Percentage contribution of the proximate determinants to inequality changes of the household per capital income
Honduras, 1991-2007

	ΔGini = 2.7 points 1991-99			ΔGini = 4.2 points 1999-2005				ΔGini = -5.2 points 2005-07				
Determinant	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(5)
$\Delta_{r\rightarrow a}$	-10.77	-10.77	-10.77	11.49	11.49	11.49	11.49	1.87	1.87	1.87	1.87	1.87
Δ_{a}	0.04	0.04	0.04	-3.16	-3.16	-3.16	-3.16	-2.93	-2.93	-2.93	-2.93	-2.93
Δ_{r}	110.73			91.67				-98.94				
$\Delta_{o\rightarrow t}$		11.10	11.10		-0.54	-0.54	-0.54		-2.72	-2.72	-2.72	-2.72
Δ_{o}		-24.23	-24.23		0.80	0.80			-51.15	-51.15		
Δt		123.86			91.41				-45.07			
$\Delta_{u\rightarrow w}$			-47.86			3.61	3.61			19.11	19.11	19.11
Δ_{u}			-2.18			10.29	10.29			-6.90	-6.90	-6.90
Δ_{w}			173.89			77.51	77.51			-57.28	-57.28	-57.28
$\Delta_{rem\rightarrow nrem}$							5.10				18.78	18.78
Δ_{rem}							-7.32				-43.63	-43.63
Δ_{nrem}							3.02				-26.32	
$\Delta_{soc\rightarrow other}$												10.22
Δ_{soc}												-11.74
Δ_{other}												-24.79
ΔTotal	100	100	100	100	100	100	100	-100	-100	-100	-100	-100

Note: Δ_r is decomposed in $\Delta_{o\rightarrow t} + \Delta_o + \Delta_t$ as Δ_t in $\Delta_{u\rightarrow w} + \Delta_u + \Delta_w$, Δ_o in $\Delta_{rem\rightarrow nrem} + \Delta_{rem} + \Delta_{nrem}$ and Δ_{nrem} in $\Delta_{soc\rightarrow nsoc} + \Delta_{soc} + \Delta_{nsoc}$

Source: Authors' calculations based on EPHPM I and EPHPM II.

2.1 First subperiod—the 1990s (1991-99): labour market-driven inequality increase

During this period, demographic changes *a* and their association with the distribution of the household income per adult $\Delta_{a\rightarrow r}$ contributed towards equalizing the per capita household income distribution *y*, while the distribution of the household incomes per adult r explains about 110 per cent of the disequalizing trend during this decade. By decomposing *r*, it is possible to assess the role of the household labour and non-labour incomes per adult, *t* and *o* respectively. While non-labour incomes were equalizing, labour incomes are the main driver in the observed inequality increase. When looking at household labour incomes per adult *t*, the decomposition presented in column (3) allows us to assess the role of changes in the proportion of working adults *u* and the importance of changes in monthly earnings per working adult *w*. While *u* is not capable of explaining any inequality change, changes in monthly wages are by far the greatest contributor to the disequalization of *y*. The association between the distribution of employment and wages reduces, to some extent, this extraordinary disequalizing force.

While in urban areas the slight equalization of the household per capita income distribution is driven by changes in non-labour incomes per adult, the story in rural

areas seems to be pretty much the same as what we observe at the country level, where the distribution of monthly wages is the main disequalizing factor.

2.2 Second subperiod—the 1990s (1999-2005): labour market-driven inequality increase

This second period shows similar results as the decade of the 1990s; monthly wages are by far the main inequality driver. The only notable difference is that in urban areas, the distribution of employment explains almost one-fourth of the 2.4 Gini points increase between 1999 and 2005. Information regarding the reception of remittances at a household level became available in the household surveys since 1997; this information enables us to assess the impact of remittances on the distribution of household per capita income. Initially, the decomposition shown in column (3) shows a limited impact of non-labour incomes on inequality changes. This impact is broken down in column (4) into remittances, on the one hand, and other non-labour incomes (government transfers, capital incomes and other private transfers) on the other. At a country level and in rural areas, the impact is almost nonexistent while in urban areas the impact is slightly disequalizing.

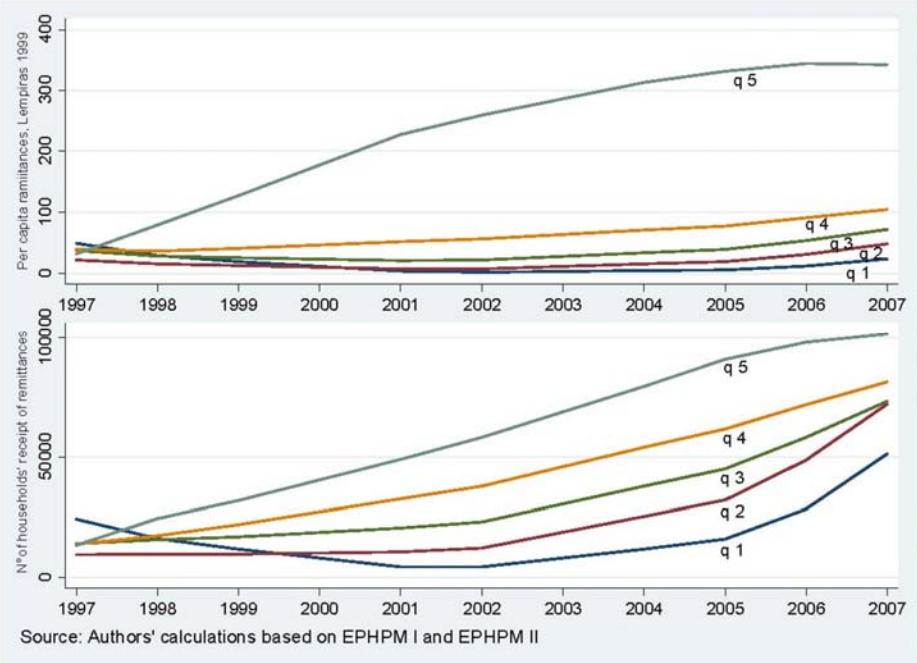
2.3 Third subperiod—inequality decrease (2005-07): recovery of the tradable sector, equalizing remittances and expanding social transfers

The period between 2005 and 2007 is characterized by a strong equalization in the household per capita income distribution with a decrease of 5.2 Gini points at the country level, and of 7.3 and 3.2 Gini points in rural and urban areas, respectively. It is worth noting that changes in labour earnings and non-labour incomes are responsible, almost in equal proportions, for the equalization pattern observed at the country level during this period. However, labour earnings appear to be more relevant in rural areas than in urban areas as a driver for reducing inequality. On the other hand, non-labour incomes are extraordinarily equalizing in all areas, explaining about 43 per cent of the equalization in rural areas and about 80 per cent in urban areas.

What explains the equalizing effect of labour markets? Why are they now producing more equity after having done the opposite in previous periods? The period between 2005 and 2007 is characterized by the commodity boom that also affects Honduras' main exports, coffee and bananas (see Appendix Figure 1), thereby improving conditions in the tradable sector for the first time.

By decomposing the equalizing impact of non-labour incomes per adult, we are able to assess the impact of remittances on inequality. Columns 4 and 5 show that non-labour income accounts for 51 per cent of equalization and that almost 44 per cent of this equalization can be attributed to remittances, almost 25 per cent to private transfers and capital incomes, and almost 12 per cent to government transfers. The association between the aforementioned proximate determinants tends to disequalize the household per capita income distribution diminishing, to some extent, the equalizing trend, suggesting that government transfers and private transfers, while both being equalizing on their own, increase inequality due to the rising association between them. Remittances have a stronger impact in rural areas, but the net impact, considering the association between the distribution of remittances and other non-labour incomes, is almost the same in both areas (about 30 per cent).

Figure 5
Amount and distribution of remittances across quantiles



Why do we observe different impacts of remittances between the periods 1999-2005 and 2005-07? Figure 5 presents information regarding the distribution of remittances amongst quantiles of households. The first panel in the figure shows the per capita amount of remittances for each quantile (including households that did not receive remittances). Between 1997 and 2001, remittances across quantiles seem to diverge, while from 2005 to 2007, the remittance levels across quantiles clearly converge. For instance, while the richest households stabilized on average around 350 *lempiras* of 1999, during the period between 2005 and 2007, the first quantile increased the average amount of remittances from 3 to 26 *lempiras* of 1999.[25] The observed increase is not only explained by an increase in the amount received by each household who receives remittances, but also by an increased number of poor households, which receive remittances (bottom panel in Figure 5). Comparing Figure 5 with Table 4 confirms that the distributional impact of remittances was small between 1999 and 2005 while the participation and the benefits of lower quintiles from international remittances has served to equalize incomes after 2005.

Regarding policy changes, the period between 2005 and 2007 is of extraordinary interest due to the political transition that occurred in Honduras at the beginning of 2006, when the government switches from a centre-right conservative political party, headed by Ricardo Maduro, towards a left inspired government led by Manuel Zelaya. In particular, cash transfer policies are critical here. Already in the early 1990s, a government conditional cash transfer programme (PRAF) was created to minimize the undesirable effects produced by the neoliberal adjust programmes implemented during the 1990s. The first version of the programme (PRAF-I) was implemented between 1992 and 1998. The Inter-American Development Bank (IADB) criticized PRAF-I for

25 In 1999, US$1 corresponds to 14.35 *lempiras*.

its leakage and poor targeting, as well as for ignoring supply side weaknesses (Moore 2008). An adjusted programme, PRAF-II was launched in 1998, being better targeted to rural areas. The programme was aimed to support areas with the weakest infrastructure in the country. This design more importantly considered the supply-side incentives. It appears that the rural poor were still underrepresented in the beneficiary composition (Moore 2008).

A third IADB loan programme was launched under Zelaya's government in 2007 (PRAF-III).[26] His government aimed to adapt existing components and to create new ones, to fight low levels of human capital and chronic poverty. Indeed, previously existing PRAF components had not been able to solve these problems.[27] Conclusions from previous experiences were taken into account when designing the new programme, particularly regarding the targeting of extremely poor households and the amount of transfers. During Zelaya's government, approximately 18-20 per cent of PRAF expenditures were transferred to extreme poor rural households (Moore 2008). In Table 5, Zelaya's approach to transfers can be clearly distinguished from today's (2011) policies and those from 2005 and 2006 in terms of scope and transferred amounts per beneficiary.

Table 6 shows how the structure of income changed considerably between 2005 and 2007. While labour incomes became less important, non-labour incomes grew substantially, mainly because of a considerable increase in government transfers,

Table 5
PRAF programme for selected periods

	2005	2006	2007	2008	2011
Total number of beneficiaries	628,476	566,977	672,619	969,744	436,000
Total investment (1000 lempiras)	407,706	370,009	573,527	639,517	313,830
Total investment (Mio. current US$)	21.6	19.6	30.3	33.8	16.5
Investment per beneficiary (current US$)	34.3	34.5	45.1	34.9	37.8

Source: Baed on PRAF and Ministry of Finance (n.d.).

Table 6
Income categories, 2005 and 2007
(in *lempiras* of 1999)

	Amount		Structure %	
Income categories	2005	2007	2005	2007
Total per capita labour incomes	680.39	787.74	78.49	76.71
Total per capita non-labour incomes	186.50	239.16	21.54	23.29
Government transfers (mainly PRAF)	45.12	63.02	5.20	6.14
Remittances	90.16	112.55	10.40	10.96
Other income (private transfers & capital incomes)	50.58	63.33	5.84	6.17

Source: Authors' calculations based on EPHPM I and EPHPM II.

[26] It may be argued that this credit was possible because Honduras reached the HIPC (heavily indebted poor countries) completion point and benefit from the MDRI (Multilateral Debt Relief Initiative) in 2006.

[27] For more information about the PRAF components, outcomes and expenditures see Moore (2008).

followed by remittances. Consistent with Table 4, social policy was starting to have an impact on inequality; but the scope of the programme appears to have been cut back since as shown in Table 5.[28]

Even when the IADB loan contributed towards significantly expanding the PRAF programmes, the impact on inequality depended on the targeting design and the implementation of the transfers. Barros' decomposition gives us information regarding both issues. Our results show that the contribution of government transfers appears to equalize the income distribution; however, their rising association with other non-labour incomes cancelled out this impact. This means that even when government transfers, for the most part, are equalizing, they are received mainly by households, which increasingly also rely on other non-labour income sources such as remittances, private transfers and capital incomes.

In summary, non-labour incomes are strongly equalizing the income distribution at the country level, driven by the rising equalization of remittances, private transfers, and government transfers. When examining rural and urban areas separately, labour incomes are much more important drivers of equalization in rural areas while remittances and other transfers in urban areas play a relatively larger role. Government transfers also contribute towards equalization in both areas, but the impact remains modest.

3 Micro-econometric decomposition II: determinant of changes in labour income inequality

As illustrated in our previous decomposition, changes in the distribution of labour incomes are by far the greatest contributor to the disequalization of the household per capita income distribution between 1991 and 2005, particularly at the country level and in rural areas where most of the inequality change took place.[29] For this reason, by using another decomposition technique, we analyse inequality changes of labour earnings more thoroughly.

Table 7 shows that inequality in labour earnings rose by more than 7 per cent between 1991 and 1999, and then again, by 4.5 per cent between 1999 and 2005. In the two years that followed, labour inequality decreased by more than 3 per cent. Gini coefficients for urban and rural areas show very different behaviours over time. Changes in inequality seem to be extremely accentuated in rural areas, while there are no significant trends in urban areas. Table 3 in the appendix shows rates of pro-poor growth in labour earnings observed during the periods between 1991-99, 1999-2005 and 2005-07. Earning changes were biased against the poor between 1991 and 2005, while in the subsequent

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28 One may wonder why inequality appears to have continued its decline after 2007. It is likely to have been largely driven by the commodity boom which promoted the tradable sector; due to incomparability in the data, this cannot be investigated formally.

29 According to household survey data, about 94 per cent, 88 per cent, 78.5 per cent and 76.7 per cent of the household per capita income have been generated through labour activities in 1991, 1999, 2005 and 2007 respectively.

Table 7
Gini coefficient changes of monthly wage distribution in Honduras

	Whole country	Urban areas	Rural areas
1991	50.80	49.08	49.15
1999	54.52	49.99	55.13
Change %	7.3	1.9	12.2
1999	54.52	49.99	55.13
2005	57.00	49.46	60.88
Change*, %	4.5	-1.1	10.4
2005	57.00	49.46	60.88
2007	55.01	49.19	55.88
Change*, %	-3.5	-0.5	-8.2

Source: Authors' calculations based on EPHPM I and EPHPM II.

period (2005-07) they were strongly pro-poor. Changes in the slope of the growth incidence curves are mainly driven by what happened within low-earners (vulnerable) in rural areas.

Many different forces exist behind the long-run changes in income distributions or, more generally, distributions of economic welfare, within a population. Some of these forces have to do with changes in the distribution of factor endowments and socio-demographic characteristics, while others have to do with the returns these endowments produce, and others with changes in population behaviour, such as labour supply, consumption patterns or the decision of whether or not to have children. These forces are not independent from each other. This is what makes it difficult to identify fundamental causes and mechanisms behind the dynamics of income distribution.

Decomposition techniques are used to identify drivers of distributional changes. Traditional techniques explain differences in scalar summary measures of distributions rather than in full distributions. The best known of these techniques is the Oaxaca-Blinder decomposition of differences in mean incomes across population groups with different characteristics (Blinder 1973; Oaxaca 1973) and the variance-like decomposition property of the so-called decomposable summary inequality measures (Bourguignon 1979; Cowell 1980; Shorrocks 1980). To assess the relevance of the various factors on income inequality changes, handling whole distributions instead with averages, a microeconometric decomposition methodology first proposed by Bourguignon, Ferreira and Lustig (1998) was adjusted and applied to the Honduran case.[30] In particular, we will concentrate principally on returns to education and changes in education structure at the individual and household level, as well as changes in the returns to occupations and sectors, which reflect the shifts between tradable and non-tradable sectors.[31]

[30] Variants of the basic methodology have been applied in Altimir, Beccaria and González Rozada (2000), Bourguignon, Fournier and Gurgand (2001), Gasparini, Marchionni and Sosa (2005), Legovini, Bouillon and Lustig (1998) and Ferreira and Paes de Barros (1998), amongst others. See the basics of this decomposition in the appendix. See also Bourguignon and Ferreira (2005).

[31] Note that our methodology allowed us to control for composition effects of factors not subject to structure simulation. Composition effects are implicitly considered in the contribution of changes in working hours.

3.1 Estimation strategy

Changes in inequality are always dependent on the years being compared. For this reason, it is crucial to provide reasons for the selection of years. We decided to decompose changes in Gini of labour incomes for the periods comprised between 1991 to 1999, 1999 to 2005 and 2005 to 2007. We include 1991 and 2007 because we want to have the broadest possible perspective that our data allow. We additionally include 2005 because, as shown above, this is where labour income inequality reaches its peak. Through the inclusion of this turning point in the decomposition, it is possible to study the determinants of the equalization, rather than the disequalization of the labour income distribution. We include 1999 in the decomposition because it offers the possibility to control for the impact of the 1998 hurricane Mitch on the labour income distribution.

Let β be the vector of parameters determining market hourly wages and λ the vector of parameters affecting employment outcomes (hours of work and participation). In order to estimate equation for wages and working hours, it is necessary to estimate the vector parameters β and λ. Since we do not have a socio-economic panel survey for Honduras, we have to rely on a procedure which allows to replicate the structure of observed and unobserved characteristics of the year t into the year t_2 and vice versa.

H_i is the number of working hours by worker i and w_i indicates the hourly wage received by the same individual. In a process of utility maximization H_i is the optimal number of working hours, being determined based on market conditions. Heckman (1974) states that it is possible to derive an estimable reduced form, starting from a structural system obtained from a utility maximization problem of labour-consumption decisions. Individuals allocate hours to work and leisure to maximize their utility given their wealth, wages, time and other constraints. The solution to this problem of maximization can be characterized as consumption and leisure functions given relevant prices.

Under general conditions, it is possible to invert these functions to obtain prices and wages as functions of consumed quantities and worked hours. In particular, the wages obtained in this way *(w*)* can be interpreted as marginal valuations of labour, which are a function of personal characteristics, hours worked (amongst others) and represent the minimum wage for which the individual would work for a determined number of hours. On average, if the individual decides to work, the number of hours worked should be equal to their marginal value w^* with the wage effectively received. Conversely, an individual decides not go to work if the marginal value is greater than the wage offered.

Consequently, our model consists of two equations; one for hourly wages (w^*) and one for the number of worked hours (H^*). These equations are a function of exogenous vectors taken as given, affecting wages (X_1) and hours of work (X_2), which are allowed to have elements in common. The equation for working hours includes composition variables, which will reflect in the simulated working hours, compositional changes, or in other words, changes between the relative size of sectors, occupations, etc.[32]

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[32] Note that vector X_2 also contains variables indicating occupation, economic sector, regions, gender, wage work, current enrolment, marital status, employment status of other household members and urban/rural area.

Under this framework, the error terms ε_1 and ε_2 represent unobservable factors, which affect the determination of endogenous variables. In order to specify our model, for individual *i*, we observe positive values for *w** and *H** only if the individual actually works; if not, we only know that the reservation wage is higher than the offered one:

$$w_i^* = X_{1i}\beta + \varepsilon_{1i} \quad i = 1, \dots, N \tag{6}$$

$$H_i^* = X_{2i}\lambda + \varepsilon_{2i} \tag{7}$$

We then have the following observation rule:[33]

$w_i = w_i^*$ if $H_i^* > 0$

$w_i = 0$ if $H_i^* \leq 0$

$H_i = H_i^*$ if $H_i^* > 0$

$H_i = 0$ if $H_i^* \leq 0$

Regarding estimation issues, we assume that the terms ε_1 and ε_2 are bi-variate normal distributed with $E(\varepsilon_{1i})$=$E(\varepsilon_{2i})$=0 and variances σ_{12} and σ_{22} are correlated with correlation coefficient ρ. This specification corresponds to the Tobit type-3 model in Amemiya's classification.[34] Even though it is possible to estimate all the parameters using a full information maximum likelihood method, we adopt a limited information approach that has notable computational advantages. We estimate the hours of work equation by means of a Tobit type I model in Amemiya's classification in which the variable is observed only if it is positive. The parameters of interest can be estimated using a standard censored regression Tobit model.[35] In order to control for behavioural responses within the household, each simulation of hourly wages and working hours requires conditional estimations for spouses conditional on the behaviour of the head of household, and for other household members conditional on heads and spouses.[36]

3.2 Returns to education

Figure 6 illustrates the evolution of the returns and relative supply of workers by educational levels and areas.[37] Returns to schooling increased slightly between 1991

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33 Consistent with the data used for the estimation, observed wages for a non-working individual are zero.

34 See Amemiya (1985).

35 This strategy is consistent but not fully efficient. In any case, the efficiency loss is not necessarily significant for a small sample. Technical details about the estimation procedure are available upon request.

36 Each simulation represents a whole distribution of labour earnings; therefore, based on these simulated distributions, it is possible to obtain a variety of other inequality indexes. These can be provided upon request by the authors.

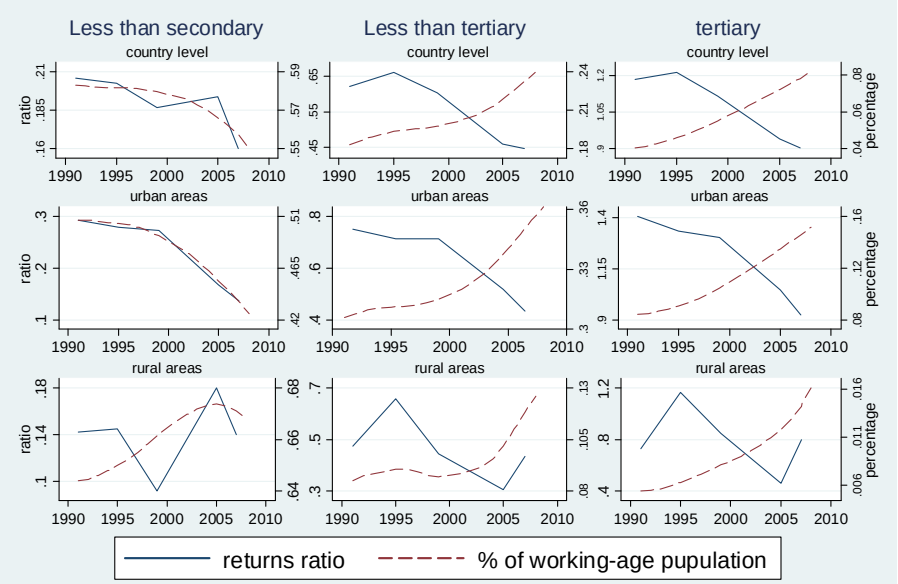
37 Returns are obtained from the Heckman ML wage regression (excluded category 'without formal education).

and 1994;[38] however, between 1994 and 2005, returns to education declined substantially. Why did this trend take place?

Between 1991 and 1994, the demand for skills in rural areas outpaced the supply, which remained almost constant throughout this period. Consequently, the skill premium increased considerably during this period of real exchange rate devaluation. Subsequently, slowly rising supply (combined with stagnant of falling demand) appears to be driving the falling returns to education between 1995 and 2005. From 2005 onwards, returns to high levels of education increased even when a significant expansion of a higher level of education took place. In urban areas, the situation appears to be much simpler; declining returns are explained principally by the educational upgrade.

Looking at the results of the decomposition in Table 8, changes in the returns to education had an equalizing effect between 1991 and 2005 across the country. Then, the period between 2005 and 2007 is characterized by disequalizing returns in rural areas and (slightly) equalizing returns in urban areas. Why do we observe different patterns in urban and rural areas during this last period? We may find some explanation in the commodity boom mentioned before. The upsurge of the tradable sector (see Figure 3) could have increased the demand for skills in rural areas. However, we also need to study the impact of changing endowments to get a more complete picture.

Figure 6
Structure and returns to education, 1991-2007



Return ratios are relative to returns for those with no formal education. Note different y-axis scales.
Source: Authors' calculations based on EPHPM I and EPHPM II

3.3 Structure of education

The educational upgrading of the labour force may also have an impact on the distribution of earnings. For instance, there is evidence for Brazil, Mexico and Peru, where improvements in the distribution of schooling attainment led to an equalization of

[38] This trend is also observed in Mexico; see López-Calva and Lustig (2010).

the earnings distribution.[39] However, as documented in Bourguignon, Ferreira and Lustig (2005), the equalization in years of schooling may yield in the short run to disequalize the income distribution (dubbed the 'paradox of progress').

At least during the 1990s, we expect that the net flow of migrants from rural to urban areas disequalize the urban distribution (see Table 3). Moreover, given the fact that the educational upgrading in urban areas is driven by an expanding tertiary education, we expect a strong disequalization due to changes in the structure of education. From 1999 onwards, *a priori*, it is difficult to predict a clear pattern regarding expected inequality changes. Even when the expansion of tertiary education speeds up, this effect is superseded by an extraordinary upgrading at the bottom of the distribution.

In rural areas, structural changes are working in the opposite direction. While the expansion of tertiary education in rural areas is almost absent, improvements in the bottom tail of the skill distribution took place (albeit, slowly and insufficiently). Moreover, individuals placed on average at the extremes of the skill distribution are more likely to migrate to urban areas (see Table 3).[40] Consequently, changes in the structure of rural education, including rural-urban migration, are expected to equalize the rural distribution of earnings.

Decomposition results in Table 8 confirm this. Changes in the structure of education in urban areas were strongly disequalizing during the 1990s and also dominated country-level changes. In rural areas, as expected, changes in the structure of education were strongly equalizing for all three periods. With both education endowments and returns pointing towards equalization in rural areas, other factors must have dominated these trends to produce the drastic increase in labour income inequality between 1991-2005.

3.4 Returns by sectors and occupations as well as sectoral change

In Table 8, we group the inequality impact on the labour income distribution caused by changes in returns to different economic sectors and occupations.[41] The combination of sectors and occupations yield a rich labour market division in many ‘sector-occupations’ of different scopes, with a great number of workers such as agricultural labourers and very small groups, such as, for example, management staff in agriculture. Conditional to education and other covariates, our results show that in rural areas, the change in returns per sector-occupation is the main inequality driver during the 1990s and one of the most important drivers between 1999 and 2005.

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39 López-Calva and Lustig (2010).

40 In rural areas, the upper tail of the skill distribution corresponds to those with at least a secondary education.

41 We identify the following four sectors: agriculture and related sub-sectors; manufacturing; financing, communication and personal services; and other sectors. The occupations are: professional and technicians; directors; office workers; agricultural workers; drivers; manufacturing workers; transport workers; and service workers.

Table 8
Decompositions of the change in the Gini coefficient, labour earnings,
1991-99, 1999-2005, and 2005-07
Honduras

	Country level			Rural areas			Urban areas		
	1991-99	1999-2005	2005-07	1991-99	1999-2005	2005-07	1991-99	1995-2005	2005-07
Returns									
Individual	-1.35	-1.24	0.62	-1.95	-1.44	1.69	-1.76	-1.29	-0.29
Household education	-0.34	-1.01	0.59	0.80	-1.09	0.35	-0.52	-1.20	0.33
Experience (potential)	-0.69	0.80	-0.10	-1.02	-0.85	0.62	-0.68	3.27	-0.62
Sectorial occupation	0.36	2.42	-1.52	8.06	2.82	-1.83	-0.15	0.87	0.11
Other	0.20	0.48	-0.48	1.27	0.48	0.00	-0.16	-1.08	0.22
Endowment									
Individual education	2.73	-0.75	-0.91	-5.91	-0.99	-3.67	1.48	-0.21	-1.24
Household education	-0.11	-0.18	-0.01	-0.11	-0.02	-0.09	-0.03	-0.16	-0.01
Experience (potential)	-0.01	-0.04	-0.03	-0.02	-1.15	-0.01	-0.04	-0.14	-0.03
Population structure	-0.28	-0.42	-0.09	0.21	-0.48	-0.13	-0.35	0.44	0.02
Unobservables (returns & endowments	3.35	3.43	-2.31	5.92	6.89	-4.77	2.18	2.97	-0.88
Hours of work, intensity	0.42	-2.72	1.14	-3.78	3.30	0.15	2.66	-6.77	0.24
Hours of work, employment	-0.91	1.68	0.84	0.24	-0.95	1.98	-0.93	2.24	1.56
Residual	0.35	0.03	0.26	2.29	-0.78	0.72	-0.78	0.53	0.32
Total Gini change	3.72	2.48	-1.99	5.98	5.75	-5.00	0.91	-0.53	-0.27

Technical note: This table shows the average contribution to the observed GINI change produced by the observed change in each determinant. Averages come from changing the base year from *t* to *t'* (two earnings simulations required). See Bourguignon and Ferreira (2005). Each earning simulation is a product of an observed or simulated hourly wage and an observed or simulated working hours distribution. The average contribution is obtained base on a sequential procedure, which is depicted in the decomposition procedure in the Appendix. The simulation of working hours was estimated using a Tobit I model. The simulation of hourly wages was estimated using a Heckman ML model.

Tobit model variables: Educational levels(D), average years of household education (excluding the individual), gender(D), age, age squared, attending school(D), urban(D), married(D), number of children, employed head of household(D), employed spouse(D), self-employment (D). Each simulated distribution was estimated for head of household, spouses and other household members in urban and rural areas, departmental, sectorial and occupational controls.

Heckman ML model variables: Educational levels(D), average years of household education (excluding the individual), gender(D), experience, experience squared, attending school(D), urban(D), married(D), number of children, employed head of household(D), employed spouse(D), self-employment (D). Each simulated distribution was estimated for head of household, spouses and other household members in urban and rural areas, departmental, sectorial and occupational controls.

Excluded categories: Without education, male, do not attend school, rural non-married, Altántida department, wage work, servants, mining.

Source: Authors' calculations based on data from EPHPM I and EPHPM II.

By comparing two groups of workers from different sector-occupations, it can clearly be seen how returns for specific sector-occupations are driving disequalization. Consider the first group of agricultural workers with less than secondary education (including those who never attended school). They earned, in real terms, 28 and 30 *lempiras* per hour in 1991 and 1999, respectively. A second group of workers in the

finance, communication and services sector, with more than secondary education earned 75 and 111 *lempiras* per hour, for the same respective years. While the first group increased their real hourly wages by 8 per cent in eight years, the second group's wages increased by 48 per cent. Note that the first group belongs typically to the more 'traditional' agricultural sector, while the second group is part of the dynamic non-tradable sector.

In order to confirm the existence of a growing wage gap between the tradable and non-tradable sectors, we estimate hourly wages for those with less than secondary education (including no school attendance). Returns to the tradable and the non-tradable sectors increased by 13 per cent and 23 per cent per hour, respectively, during period 1991-99. This means that, after controlling for education, working in the tradable sector makes a huge difference.

Table 8 also shows the impact of hours of work in different sectors and occupations (dubbed 'employment'), effectively modelling the impact of sectoral and occupational change, as well as hours within a sector (dubbed 'intensity'). The results show no clear and persistent trends in the country overall, or in urban and rural areas. This implies that inter-sectoral and occupational mobility has not been a major factor explaining inequality in labour earnings, supporting the claim of a relatively rigid labour market with little inter-sectoral mobility.

3.5 Unobservables

Many characteristics of workers and circumstances cannot be observed. Our methodology allows us to control for omitted variables. Motivation, ethnicity and soft skills, amongst others, may be behind significant changes in the distribution of earnings. Some of these could be a direct consequence of unobserved differences in quality of education or technological change affecting demand for unobservable skills.

During the 1990s, a technological change took place in Honduras during the liberalization phase. Operating new technologies requires skills, but the supply of highly-skilled labour was very limited. In such an environment (and given the problems of the education system), skills may be less related to education than to the (unobserved) ability to adapt to these new work environments in the modern non-tradable (e.g. high end services) sectors.

Our results in Table 8 confirm the disequalizing role of unobserved characteristics between 1991 and 2005, most importantly in rural areas. However, how do unobservable characteristics transform into an equalizing force between 2005 and 2007? We could speculate that the upsurge of the tradable sector, mainly based on agricultural (rural) supply, thinned out the inter-sector wage gap, reducing the price of non-observed (modern) skills and increasing relative returns of old-fashioned (traditional) formal education. An interesting hypothesis would be that, on the one hand, the tradable sector demands relatively more traditional skills, highly correlated with years of education; while the non-tradable sector, on the other hand, demands, for instance, higher levels of soft skills (mostly uncorrelated with the poorly rural education). Therefore, increasing profitability gaps between the tradable and non-tradable sectors may also intensify the disequalizing power of unobservable characteristics, and vice versa.

In order to investigate this issue, the final analytical section presents a methodology to assess the role of the tradable and non-tradable wage gap in explaining labour earnings inequality changes.

4 Microeconometric decomposition III: linking the microeconomic evidence to the macroeconomic story

In this section, we present a model for linking findings from the microeconometric decomposition above with the macroeconomic story. Our central argument regarding macroeconomic events and inequality trends was that the effects of trade liberalization in the 1990s, combined with a large inflow of remittances and donor capital, in response to the destruction caused by natural disasters, led to a highly overvalued currency that depressed the tradable sector. Adverse commodity prices and the destruction caused by hurricane Mitch further damaged agricultural exports considerably. The story changes during the mid-2000s as a consequence of higher commodity prices recovering the highly depressed wages in the tradable sector.

We link the macro- and the micro-results using a 'Lewis-Type' model. The concept behind our model is that there is underemployment in the tradable sector, and labour-market segmentation restricts the access to the predominantly modern non-tradable sector. Consequently, a wage gap between both sectors emerges, depending on relative labour demand conditions and levels of productivity. In the tradable sector, given adverse international market conditions—such as depressed commodity prices and overvalued exchange rates—it may not pay to increase productivity in this sector and wages will stagnate. In contrast, the same conditions will increase wages and revenues in the non-tradable sector of investments there, which are also favoured by the external environment.

As known from the Harrod-Balassa-Samuelson model, tradable wages should equal non-tradable wages in a perfectly functioning labour market.[42] However, in this model, we assume long-run insufficient mobility of workers between tradable and non-tradable sectors (inducing a positive sloped non-tradable labour supply). Therefore, different equilibrium wages across sectors determine the observed wage gap between sectors.

The key issue in this methodology is to decompose a distributional change of rural earnings (which is the sum of the tradable and non-tradable sectors) into two determinants. On the one hand, a 'within-sector' determinant (*WS*), that is, a determinant of inequality changes, which is not directly correlated with returns to the tradable and non-tradable sectors,[43] and on the other, a 'between-sector' determinant

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[42] Note that the empirical evidence in Honduras is that wage equalization between the tradable and non-tradable sectors is nonexistent; however, this evidence is not conclusive enough to reject the Harrod-Balassa-Samuelson effect.

[43] Imagine that rural earnings are built-up by adding the tradable and non-tradable distributions. This determinant would reflect inequality changes that may arise by changes in the shapes of both wage density functions.

(*BS*), which captures inequality changes due to variations in the relative returns to the sectors (given a fixed structure of endowments and their returns).[44]

The *BS* determinant captures the effect of a structural change in key macroeconomic variables. Given the structure of endowments (observed and unobserved) and their returns, these determinants reflect the direct contribution to inequality changes from 'macroeconomic' variables, which may alter the relative sector competitiveness.[45] For instance, a reduction of import barriers, an appreciation of the nominal exchange rate, an increasing public deficit, the non-reposition of the obsolete or damaged export infrastructure and declining prices of commodities are only a few examples of institutional and market changes, partially driven by adverse climatic events, that can have an impact on the real exchange rate.

The impact of a change in the *BS* determinant can be depicted as a horizontal shift of the tradable or non-tradable wage density function. Consequently, the rural wage distribution changes its shape even when the sector wage density functions do not experience any change in their respective shapes. Based on this decomposition idea, we present a methodology for decomposing the distributional change in a structural macroeconomic BS effect (wage gap effect) and in a *WS* effect, as a result of changes in endowments and returns (including those caused indirectly by macroeconomic changes, see below). More formally, we propose an Oaxaca-Blinder type of decomposition, which can be illustrated as follows:

$$\Delta D = D(WS', BS') - D(WS, BS) \tag{8}$$

where the second period is denoted by '′'. The distributional change may be decomposed sequentially as follows:

$$\Delta D = [D(WS', BS') - D(WS', BS)] + [D(WS', BS) - D(WS, BS)] \tag{9}$$

Equation (9) indicates that the distributional change may be decomposed in a wage gap effect (between sector) in t' and a within sector effect as in t.[46] In order to perform the decomposition, we need to isolate the wage gap change between sectors maintaining the shapes of the wage density functions constant. In other words, we need to find the maximal horizontal shift of the tradable wage density function in t' which is consistent with the observed rural wage density function in t. More precisely, while holding the position of the non-tradable wage density function unchanged as in t' we need to find and isolate the horizontal shift of the tradable wage density function (from t' to t) which combined then with the change in the shape of both sectorial wage density functions from t' to t consistently reproduce the whole rural distribution in t or:

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44 The 'between-sector' determinant captures inequality changes resulting from the horizontal shift of one or both wage density functions, keeping the shapes of their density function constant.

45 However, such macroeconomic variables or events may also have an indirect contribution to inequality changes. This contribution works through affecting other relevant prices of the labour market. In this case, the indirect impact will be captured by the WS determinant (changes in the shape of the wage density function).

46 As we can see, there is no path dependence arising in this methodology. As ΔD is observed, the decomposition only requires an estimation of $D(WS'BS)$ in the right-hand side term in (9).

$$g = \min\{|g(q)|, \overline{WS'}\} \quad (10)$$

... where q stands for quantile and *g(q)* is a function indicating the wage gap change as a function of the quantile and $\overline{WS'}$ represents fixed endowments and returns in both sectors in *t'*. If the wage gap change is positive, then the minimum wage gap change will disequalize the distribution of rural earnings; however, if the wage gap change is negative, then the minimum wage gap change will equalize the distribution. Even when the solution of the above minimization problem may yield closed-form first-order and second-order conditions, in the case of non-monotonic wage gap change functions, we rely in a non-parametric technique to find the solution.

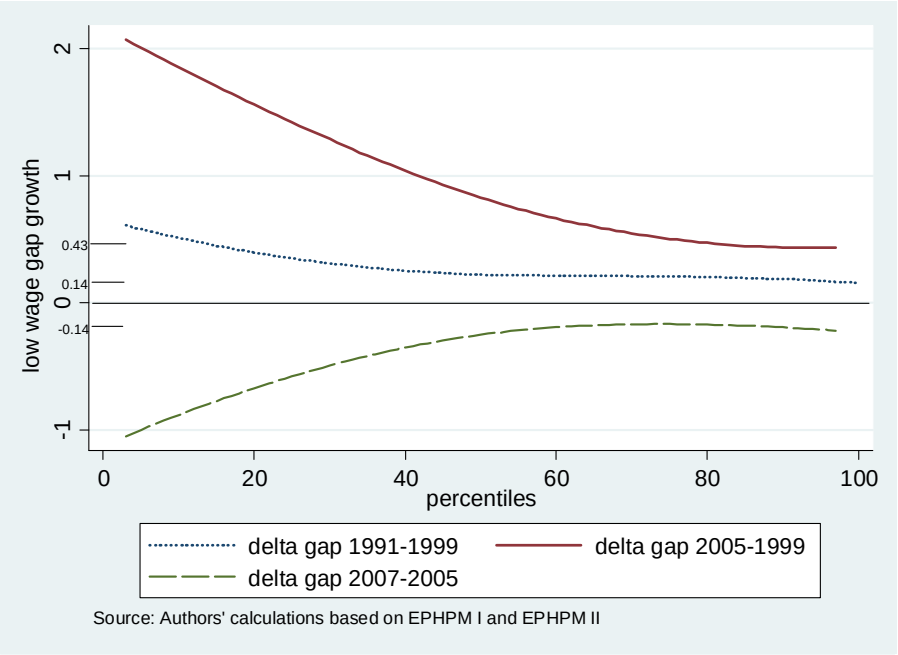
By calculating and constructing sectorial Pen's parades, it is possible to derive a growth incidence curve of the between-sector wage gap *g(q)*. Each Pen's parade is estimated for the tradable and non-tradable labour earnings distributions in *t* and *t'*. Figure 7 is a representation of the mentioned growth incidence curve for the three periods analysed. Once g in the Equation (10) is derived, we shift the tradable distribution by adding g to the entire distribution of earnings in the tradable sector in *t'*. Thus, we simulate $D(WS', BS)$ in (9), which is the simulated rural distribution with returns and endowment in *t'* and the wage gap in t. As we already know $D(WS, BS)$, which is the observed rural distribution in *t*, and $D(WS', BS')$, which is the observed rural distribution in *t'*, it is possible to estimate equation (9), and decompose labour inequality changes as mentioned.

One should emphasize that this method is likely to underestimate the complete impact of macro conditions on the sectoral distribution of wages. In particular, one can well imagine that the macro conditions that caused a favourable shift towards the non-tradable sector not only shifted the entire wage distribution to the right but also affected different portions of the wage distribution differently. For example, the shift towards non-tradables and the adverse shift from tradables might have worsened the employment conditions of poorly paid agricultural workers more than better paid workers in the tradable sector. In that sense, our analysis likely represents a lower bound.

We can now examine to what extent the gap in earnings between the two sectors is actually driving changes in the labour earnings distribution. In Figure 7 below, we show changes in the wage gap between the tradable and non-tradable sectors by quantiles of the earnings distribution in rural areas. While the shapes of the curves are also a consequence of changing returns to skills in the two sectors, the minimum vertical shift of the curves can be understood as the contribution of the general shift of conditions favouring the tradable vs. the non-tradable sector. Between 1991 and 2005, this shift increases, widening the gap between the two sectors; between 2005 and 2007, however, the gap is shrinking.[47]

[47] Using the above methodology, g is equal to 0.43, 0.14 and -0.14 log points for the periods 1999-91, 2005-1999 and 2007-05, respectively.

Figure 7
Growth incidence curers f the inter-sectorial wage gap in rural areas



Source: Authors' calculations based on EPHPM I and EPHPM II

Table 9 shows the (minimum) contribution to inequality changes as a result of an exogenous change in the wage gap between the tradable and non-tradable sectors (Simulation I) and between the tradable and non-tradable occupations (Simulation II).[48] As expected, the contribution to inequality changes of increasing conditional gaps is consistent with the observed inequality changes over time. In other words, given a structure of endowments and their returns, an exogenous change favouring the non-tradable sector (occupation), yields to higher levels of labour earnings inequality and vice versa. Between 1991 and 1999, results show that the exogenous macroeconomic shift between the tradable and non-tradable sectors (occupation) explains a minimum of 7.5-14.5 per cent of the observed disequalization at the country level, depending on the simulation. The contribution tends to be higher in the later periods, contributing up to 50 per cent of the disequalization between 1999 and 2005.[49] However, many other intra-sectoral and inter-occupational gaps exist, which are not controlled for. In this sense, our results point out the disequalizing effect of other occupational sorting, some of which was indirectly induced exogenously by trade, but some that could be related to other shifts in demand for different types of labour within the sectors. This finding suggests that the shifts between tradable and non-tradable sectors, plus structural shifts that increase the demand for unobservables, combined with structural rigidities in labour markets that limit mobility, combine to drive up labour earnings inequality between

48 Tradable sector includes many occupations, which are not related directly with trade activities (e.g. personnel transport in agriculture). On the other hand, tradable occupations include only occupations, which are directly related with trade activities (e.g., agricultural workers in the same sector). Here, the tradable occupation should narrowly reflect the consequences on inequality arising from changes in the relative Honduran export competitiveness.

49 Note that the effects are larger at the country level than in rural areas as the rural income distribution is at the bottom of the overall country distribution and a widening of it has a larger proportionate effect on the overall country distribution.

1991 and 2005. After 2005, the commodity boom seems to have reversed the tradable-non-tradable shift, but whether it is able to overcome the other structural causes of rising inequality, is hard to predict at present.

Table 9
The 'macroeconomic' (between sector) wage-gap effect
on labour income inequality changes (using Ginis)

	Observed distributions		Simulation I Tradable		Simulation II Trade-Tradable		% of change			
							Tradable		Trade-Tradable	
	Rural	Country	Rural	Country	Rural	Country	Rural	Country	Rural	Country
1991	49.15	50.80	—	—	—	—	—	—	—	—
1999	55.13	54.52	54.95	54.24	54.73	53.98	3.06	7.53	6.74	14.52
2005	60.88	57.00	60.44	56.03	60.00	55.73	7.66	39.11	15.31	51.21
2007	55.88	55.01	56.50	55.68	56.66	55.60	12.38	33.67	15.60	29.65

Source: Authors' calculations based on data from EPHPM I and EPHPM II.

5 Conclusions and remaining challenges

In Honduras, increasing income inequality throughout the last two decades has mainly been a rural phenomenon, occurring within a context characterized by a fall in demand for tradables (linked to an overvalued exchange rate) trade-induced skill-biased technological change and a low labour mobility between a shrinking and increasingly less dynamic tradable sector and the more dynamic non-tradable sector. A lack of policies oriented towards the promotion of exports, an appreciated real exchange rate, increasing flows of capital and more recently, remittances after hurricane Mitch, have contributed towards supporting a trade deficit, encouraged by the disappointing performance of commodity exports (coffee during the 1990s and bananas during the 2000s). All these elements establish the framework, which helps to explain the inequality increase during the 1990s and the first part of the 2000s.

A variety of decomposition methodologies were used to understand the determinants and drivers of observed income inequality changes. First, we implemented an extended methodology proposed by Barros et al. (2006), finding that distributional changes in labour incomes are a strong determinant of inequality changes in the household per capita income. However, between 2005 and 2007, the decrease in inequality is a consequence of equalizing trends in labour as well as non-labour incomes; for changes in non-labour incomes, remittances played a significantly equalizing role. However, HIPC debt relief and the resulting increased social transfer policies of the Zelaya government played only a relatively small equalizing role.

Second, the use of a micro-econometric decomposition methodology, based on Bourguignon, Ferreira and Lustig (2005), helped to assess factors determining inequality changes in labour earnings between 1991 and 2007. Changes in unobservable (prices and endowments) and in the structure of education, together with a pronounced occupational sorting associated with an increasing productivity gap between the tradable and non-tradable sectors, represent the main drivers of the disequalization between 1991 and 2005. Regarding unobservable factors, it is plausible that the relative expansion of the non-agricultural sector during the 1990s, which demands a wider set of skills, is

behind the extraordinary contribution of the unobservable to the increase in labour income inequality. Contrary to this, during the 2000s, the equalizing contribution of changes in the structure of formal education, together with a recovery of the tradable sector—driven by favourable external conditions and improved export revenues—promote equality by increasing wages in the tradable sector, expressed as a reduction in the price to occupations (occupational sorting), and an equalizing impact of changes in unobservable factors on inequality.

We argue that the underlying determinant of the disequalization is the low mobility between sectors and occupations, where typically a poor agricultural worker is unable to abandon his sector and change to other sectors or occupations. As shown in our model, improvements in productivity tend to cancel the wage-gap between the tradable and non-tradable sectors and also ensure higher labour income levels, while improvements in mobility between sectors leads to an accelerated decrease in this gap. We argue that the rising international competitiveness through policies promoting the productivity of the tradable sectors, at the expense of other sectors, increases the standard of living in the country, when compared with treating the other sectors equally.

Regarding the structure of education, and contrary to a general Latin American trend since the second half of the 1990s, where many countries were able to compensate the increasing negative impact of technological change in income inequality by having simultaneously achieved a more equal distribution of education, Honduras did not begin this compensation process until the mid-2000s. Additionally, we present evidence linking internal migration and labour income inequality changes. Based on a structural probability model, it was possible to estimate that the educational structure of migrants at the origin (1999) actually affects the structure of education in urban and rural areas. As a result, educational structure worsened in urban areas and improved in rural areas. In addition, the impact of educational shifts in urban and rural areas at the country level are extremely disequalizing during the period between 1991 and 1999. Furthermore, a lack of income generation opportunities in rural areas—partly due to a depressed tradable sector—contributed to the formation of urban poverty ghettos encouraging high levels of criminality and prompting people to leave the country.

Given the fact that inequality is partly a consequence of declining rural tradable wages and inter-sectorial and inter-occupation immobility, policies oriented towards increasing labour force mobility and productivity, together with encouraging the competitiveness of the tradable sector are highly recommended in order to achieve desirable social-economic outputs. Given that almost 80 per cent of the extremely poor live in rural areas, most of them working in the agricultural sector, it is critical to increase smallholder competitiveness, including export promotion policies, an adjustment of the real exchange rate and investments in rural infrastructure. However, a more promising step towards increasing rural earnings equity in the long run is to provide a non-segmented education with productive and non-discriminatory values in rural areas.

The observed inequality decrease between 2005 and 2007 should not be misunderstood as an already guaranteed change from the previous disequalizing trend. The inequality evolution will depend heavily on the impact of the current international crisis, commodity prices and the flow of remittances. Even if social policies have so far shown an only a neutral impact on inequality, they should be reinforced, since their possible success offers a limited set of tools to partly overcome the purely exogenous character of inequality trends so far.

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Appendix: The basic model of decomposition of a distributional change

The decomposition of a distributional change essentially consists of contrasting representations of the income-generation process (evaluating differences in estimated parameters) for two different distributions (two points in time) on the one hand, and accounting for changes in the joint distribution of endowments, on the other. Consider that monthly earnings *y* depends on hourly wages *w* and monthly hours of work *H*. Using counterfactual's distributions for hourly wages and working hours, estimates of the contribution to the observed distributional change ΔD between *t* and *t'* due to the change in prices β, endowments *X*, preferences related to working hours λ, residuals ϵ and possibly of all changes taken together may be found through a Oaxaca-Blinder type of decomposition, which can be depicted as:

$$\Delta D = D(w'H') - D(w,H) = D(\beta', X', \epsilon', \lambda') - D(\beta, X, \epsilon, \lambda) \quad (11)$$

This distributional change can be decomposed into price effects $\Delta\beta$, the effect of changing unobservable factors $\Delta\epsilon$ (after having changed prices), changes in endowments ΔX (after having changed prices and unobservable factors) and the effect of changing working hours $\Delta\lambda$ (after having changed all other factors). The change from the distribution of labour income from *t* to *t'* can be defined as:

$$\Delta D = [D(\beta', X', \epsilon', \lambda') - D(\beta, X', \epsilon', \lambda')] + [D(\beta, X', \epsilon', \lambda') - D(\beta, X', \epsilon, \lambda')] + [D(\beta, X', \epsilon, \lambda') - D(\beta, X, \epsilon, \lambda')] + [D(\beta, X, \epsilon, \lambda') - D(\beta, X, \epsilon, \lambda)] \quad (12)$$

simplifying notation:

$$\Delta D = D_{\Delta\beta}(X', \epsilon', \lambda') + D_{\Delta\epsilon}(\beta, X', \lambda') + D_{\Delta X}(\beta, \epsilon, \lambda') + D_{\Delta\lambda}(\beta, X, \epsilon) \quad (13)$$

Equation (13) represents a sequential decomposition of a distributional change between *t* and *t'* in price, unobservable factors, endowments and working hours. This equation does not keep final conditions *t'* constant in all terms on the right hand side (steps for simulations). Nevertheless, with the use of some algebra, this equation can be rewritten as:

$$\Delta D = D_{\Delta\lambda}(\beta', X', \epsilon') + D_{\Delta\beta}(X', \epsilon', \lambda') + D_{\Delta\epsilon}(\beta', X', \lambda') + D_{\Delta X}(\beta, \epsilon, \lambda') + R \quad (14)$$

Where R is the remainder, in other words, *R* is the distributional change that has not been isolated in this multidimensional space. It is possible to observe that the first three terms on the right side of the equation (14) consider *t'* as the base year. Due to the path dependency property in this decomposition, it is also necessary to calculate all simulated distributions using *t* as the base year.[50]

[50] See Bourguignon and Ferreira, in the technical chapter of *The Microeconomics of Income Distribution Dynamics in East Asia and Latin America* (Bourguignon, Ferreira and Lustig 2005). In order to keep initial conditions *t* constant, we use: $-\Delta D = D_{\Delta\lambda}(\beta, X, \epsilon) + D_{\Delta\beta}(X, \epsilon, \lambda) + D_{\Delta\epsilon}(\beta, X, \lambda) + D_{\Delta X}(\beta', \epsilon', \lambda) + R$

Appendix tables

Appendix Table A1
Selected characteristics of the Honduran labour force, 1991-2007

	Per cent				Annualized rate of change		
Dependency ratio*	1991	1999	2005	2007	1991-99	1999-2005	2005-07
Household-country level	0.66	0.62	0.56	0.54	-0.65	-1.63	-2.16
Household-rural areas	0.72	0.69	0.65	0.60	-0.51	-1.05	-4.20
Household-urban areas	0.59	0.56	0.48	0.48	-0.53	-2.39	0.00
	Occupation						
Country level							
Wage employment	51.48	53.60	57.18	53.74	0.51	1.11	-3.01
Self-employment	46.67	40.78	39.62	43.27	-1.58	-0.47	4.61
Mixed Activities	1.85	5.62	3.19	2.99	25.47	-7.21	-3.13
Rural areas							
Wage employment	37.12	42.59	46.94	45.12	1.84	1.70	-1.94
Self-employment	61.23	53.18	50.43	52.56	-1.64	-0.86	2.11
Mixed activities	1.65	4.24	2.63	2.32	19.62	-6.33	-5.89
Urban areas							
Wage employment	68.29	64.07	66.60	62.47	-0.77	0.66	-3.10
Self-employment	29.62	29.00	29.68	33.87	-0.26	0.39	7.06
Mixed activities	2.09	6.93	3.72	3.66	28.95	-7.72	-0.81
	Wages (*lempiras* 1999)						
Country level	1,829	2,178	2,277	2,418	2.38	0.75	3.10
Rural areas	1,321	1,432	1,400	1,508	1.05	-0.38	3.88
Urban areas	2,424	2,887	3,084	3,338	2.39	1.13	4.12

Note: The indicator of age-dependency used in this table relates the number of individuals aged less than 10 and of those aged 65 and over to the population aged between 10 to 64 years.

Source: Authors' calculations based on data from EPHPM I and EPHPM II.

Appendix Table A2
Gini coefficient for household per capita income and monthly wages, 1991-2007

	Household per capita income			Monthly earnings		
Gini coeff.	Country	Urban	Rural	Country	Urban	Rural
1991	54.01	51.16	49.81	50.80	49.08	49.15
1992	55.29	50.77	51.80	51.30	49.59	47.85
1993	56.32	53.45	53.23	52.86	52.11	49.58
1994	55.49	52.45	54.18	53.60	51.77	53.43
1995	57.36	51.68	56.99	56.04	52.00	57.34
1996	53.72	48.68	51.50	51.47	49.10	50.56
1997	55.36	50.93	52.22	54.06	51.50	53.13
1998	54.58	48.24	53.93	51.69	47.68	52.87
1999	56.68	50.18	54.45	54.52	49.99	55.13
2001	58.01	50.80	54.56	53.36	48.75	51.94
2002	60.06	52.48	59.72	56.26	50.26	56.10
2004	58.90	50.68	58.72	55.99	49.99	58.02
2005	60.92	52.57	61.43	57.00	49.46	60.88
2006	58.71	51.11	58.40	55.15	48.56	58.11
2007	55.73	49.41	54.15	55.01	49.19	55.88

Note: EPHPM 2003 presents a high degree of measurement errors.

Source: Authors' calculations based on data from EPHPM I and EPHPM II.

Appendix Table A3
Pro-poor growth rates in Honduras

	Country level			Urban areas			Rural areas		
Percentile\period	1991-99	1999-2005	2005-07	1991-99	1999-2005	2005-07	1991-99	1999-2005	2005-07
10th percentile	-16.43	0.52	54.20	-6.93	2.07	3.17	-27.96	0.32	79.35
15th percentile	-11.30	-0.19	45.60	-3.04	2.06	5.64	-20.01	-0.78	67.51
20th percentile	-8.37	-0.46	39.96	-0.95	1.95	6.90	-15.68	-1.21	59.28
25th percentile	-6.38	-0.54	35.90	0.29	1.89	7.70	-12.87	-1.44	53.46
30th percentile	-4.93	-0.50	32.72	1.13	1.84	8.19	-10.85	-1.57	49.01
Growth rate in mean	4.74	2.17	5.46	5.28	2.19	3.83	2.53	1.63	9.53
Growth rate at median	4.40	0.59	12.98	5.62	1.43	7.47	1.34	-0.93	17.53
Mean percentile growth rate	3.24	0.64	17.82	5.17	1.61	7.15	0.74	-0.76	27.98

Source: Authors' calculations based on EPHPM 1991, 1999, 2005, 2007.

Appendix Table A4
Macoeconomic variables, Honduras, 1980-2007

	Trade balance	Current acc. balance	Terms of	Real exchange	Inflation	Real interest
Year	(as % of GDP)		trade*	rate*	rate	rate
1990	-2.7	-1.7	78.0	111.2	21.2	23.3
1991	-3.1	-5.6	83.7	116.8	26.0	34.0
1992	-4.1	-7.6	79.0	117.9	9.1	8.8
1993	-9.0	-8.9	87.4	127.0	13.6	10.8
1994	-10.0	-10.0	89.1	141.7	28.8	21.7
1995	-4.4	-5.1	96.3	129.9	24.8	29.5
1996	-5.1	-8.3	89.6	130.1	22.9	23.8
1997	-5.6	-5.8	110.8	119.0	22.2	20.2
1998	-7.7	-2.8	113.4	109.0	11.6	13.7
1999	-15.0	-4.5	106.3	104.6	11.5	11.7
2000	-12.5	-7.2	100.0	100.0	30.8	11.1
2001	-13.2	-6.3	94.8	97.1	8.0	9.7
2002	-12.5	-3.6	92.0	97.0	5.1	7.7
2003	-14.1	-6.7	88.0	98.5	5.7	7.7
2004	-18.6	-7.7	87.2	100.9	6.4	8.1
2005	-18.5	-3.1	87.2	100.7	7.2	8.8
2006	-21.0	-3.7	83.2	98.3	5.3	5.6
2007	-28.0	-9.0	81.6	98.1	6.7	6.9

Note: *2000=100

Source: Based on Central Bank of Honduras data.

Appendix Table A5
Percentage contribution of the proximate determinants to inequality changes of household per capita income, rural areas, Honduras, 1991-2007

	ΔGini = 4.6 points 1991-99			ΔGini = 7.0 points 1999-2005				ΔGini = -7.3 points 2005-07				
Determinant	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(5)
$\Delta_{r\rightarrow a}$	-36.01	-36.01	-36.01	8.84	8.84	8.84	8.84	12.25	12.25	12.25	12.25	12.25
Δ_a	-0.56	-0.56	-0.56	-0.93	-0.93	-0.93	-0.93	-2.72	-2.72	-2.72	-2.72	-2.72
Δ_r	136.57			92.09				-109.53				
$\Delta_{o\rightarrow t}$		11.08	11.08		1.36	1.36	1.36		-0.87	-0.87	-0.87	-0.87
Δ_o		-23.49	-23.49		-1.33	-1.33			-42.94	-42.94		
Δ_t		148.98			92.06				-65.73			
$\Delta_{u\rightarrow w}$			12.39			11.09	11.09			22.89	22.89	22.89
Δ_u			1.83			4.73	4.73			-8.82	-8.82	-8.82
Δ_w			134.76			76.24	76.24			-79.80	-79.80	-79.80
$\Delta_{rem\rightarrow nrem}$							13.10				23.70	23.70
Δ_{rem}							-6.09				-53.45	-53.45
Δ_{nrem}							-8.34				-13.18	
$\Delta_{soc\rightarrow nsoc}$												11.64
Δ_{soc}												-13.77
Δ_{nsoc}												11.05
ΔTotal	100	100	100	100	100	100	100	-100	-100	-100	-100	-100

Note: Δ_r is decomposed in $\Delta_{o\rightarrow t} + \Delta_o + \Delta_t$ as Δ_t in $\Delta_{u\rightarrow w} + \Delta_u + \Delta_w$, Δ_o in $\Delta_{rem\rightarrow nrem} + \Delta_{rem} + \Delta_{nrem}$ and Δ_{nrem} in $\Delta_{soc\rightarrow nsoc} + \Delta_{soc} + \Delta_{nsoc}$

Source: Authors' calculations based on EPHPM I and EPHPM II.

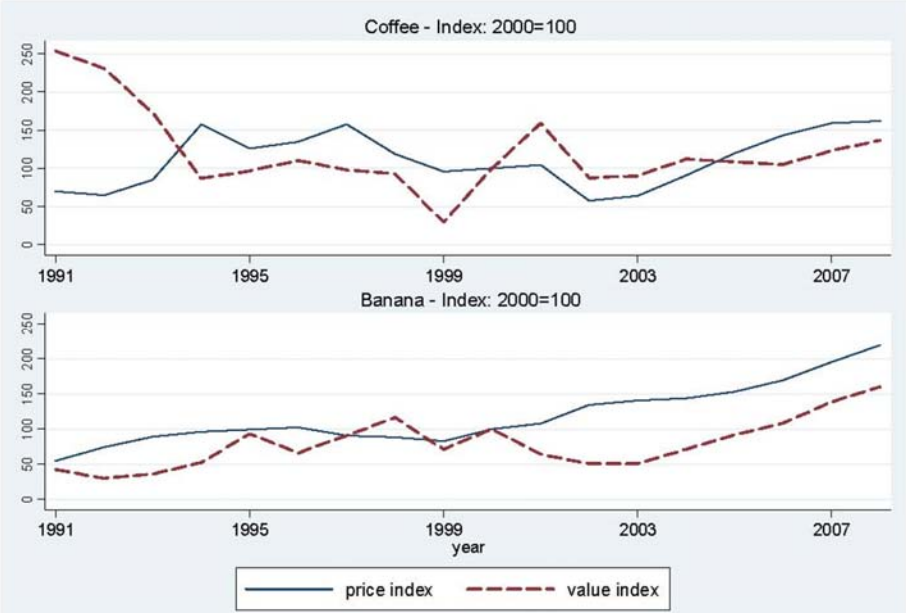
Appendix Table A6
Percentage contribution of the proximate determinants to inequality changes
of household per capita income, urban areas,
Honduras, 1991-2007

	ΔGini = 1.0 points 1991-99			ΔGini = 2.4 points 1999-2005				ΔGini = -3.2 points 2005-07				
Determinant	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(5)
$\Delta_{r\rightarrow a}$	45.29	45.29	45.29	10.83	10.83	10.83	10.83	-7.84	-7.84	-7.84	-7.84	-7.84
Δ_a	-3.65	-3.65	-3.65	-9.74	-9.74	-9.74	-9.74	-1.55	-1.55	-1.55	-1.55	-1.55
Δ_r	-141.65			98.91				-90.61				
$\Delta_{o\rightarrow t}$		-15.91	-15.91		-1.09	-1.09	-1.09		4.40	4.40	4.40	4..40
Δ_o		-109.32	-109.32		16.27	16.27			-80.04	-80.04		
Δ_t		-16.41			83.73				-14.96			
$\Delta_{u\rightarrow w}$			-159.27			5.48	5.48			11.23	11.23	11.23
Δ_u			-12.87			23.13	23.13			-5.82	-5.82	-5.82
Δ_w			155.72			55.12	55.12			-20.37	-20.37	-20.37
$\Delta_{rem\rightarrow nrem}$							7.70				4.43	4.43
Δ_{rem}							-11.33				-34.76	-34.76
Δ_{nrem}							19.91				-49.72	
$\Delta_{soc\rightarrow nsoc}$												15.53
Δ_{soc}												-16.26
Δ_{nsoc}												-48.99
ΔTotal	100	100	100	100	100	100	100	-100	-100	-100	-100	-100

Note: Δ_r is decomposed in $\Delta_{o\rightarrow t} + \Delta_o + \Delta_t$ as Δ_t in $\Delta_{u\rightarrow w} + \Delta_u + \Delta_w$, Δ_o in $\Delta_{rem\rightarrow nrem} + \Delta_{rem} + \Delta_{nrem}$ and Δ_{nrem} in $\Delta_{soc\rightarrow nsoc} + \Delta_{soc} + \Delta_{nsoc}$

Source: Authors' calculations based on EPHPM I and EPHPM II.

Appendix Figure A1
Principal Honduran export markets, coffee and bananas, 1991-2007



Source: Authors' calculations based on data from FAO Statistics Division.

Appendix Figure A2
Growth incidence curves, monthly earnings, 1991-2007