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WIDER Working Paper 2015/071

The growth-employment-poverty nexus in Latin America in the 2000s

Brazil country study

Guillermo Cruces,¹ Gary Fields,² David Jaume,³ and Mariana Viollaz⁴

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Abstract: During the 2000s, Brazil experienced slow economic growth and a substantial improvement in labour market indicators. From 2001 to 2012, Brazil grew less than the Latin American average. However, the unemployment rate decreased, the employment composition improved, the educational level of workers rose, the share of registered workers increased, and average labour earnings went up. At the same time, poverty and inequality largely diminished. The international economic crisis had a mild effect on the Brazilian economy and some labour market indicators, but the negative effects had been reversed by 2011.

Keywords: Brazil, Latin America, inclusive growth, labour market, poverty

JEL classification: O15, J01, J30

Figures and tables: Provided at the end of the paper.

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1 Introduction

Latin America in the 2000s witnessed an unprecedented period of growth with poverty and inequality reduction. The region also suffered from the economic crises in Europe and the United States from 2007/08 onwards.

Economic development has been defined as a widespread improvement in the material standards of living of a country's people. Economic growth is defined as an increase in the total amount of goods and services produced in an economy.

This paper on labour markets and growth in Brazil since 2000 is one of sixteen studies of Latin American countries, each of which aims to answer the following broad questions: Has economic growth resulted in economic development via improved labour market conditions in Latin America in the 2000s, and have these improvements halted or been reversed since the Great Recession? How do the rate and character of economic growth, changes in the various labour market indicators, and changes in poverty relate to each other?

More specifically:

- What was the country's economic growth experience?
 - Characteristics of economic growth: breakdown by sector (agriculture, industry, services).
- How have the following indicators of labour market conditions changed in the course of each country's economic growth?
 - 1. Employment and unemployment:
 - a. Unemployment rate, using International Labour Organization definition.
 - b. Employment-to-population ratio.
 - c. Labour force participation rate.
 - 2. Employment composition:
 - a. Occupational group—professional, managerial, and clerical, etc.
 - b. Occupational position—wage/salaried employee, self-employed, unpaid family worker, etc.
 - c. Sector of employment—agriculture, manufacturing, services, etc.
 - d. Education level—low, medium, high.

- e. Registered/unregistered with the nation's social security system.
- 3. Labour market earnings, real:
 - a. Overall.
 - b. Disaggregated by gender.
 - c. Disaggregated by age (youth/non-youth).
 - d. Disaggregated by occupational group.
 - e. Disaggregated by occupational position.
 - f. Disaggregated by sector (agriculture etc.).
 - g. Disaggregated by education level (low, middle, high).

The answers to the preceding questions are by no means obvious. Claims have been made that economic growth in Latin America has been jobless, that productivity has grown at the expense of employment, and that Latin America, having even greater economic inequality than the United States, may have been following the US's course of rising incomes for those at the very top of the income distribution and stagnating or even falling incomes for the great majority, especially the poor. It has also been claimed that Latin America is caught in a middle-income bind, squeezed between the advanced economies on the one hand and emerging economies, especially China, on the other.

Recent evidence has shown that economic growth generally leads to an improvement in labour market conditions and reductions in poverty within developing countries (Fields 2012). The relatively scarce evidence for Latin America, however, indicates some heterogeneity at the country level. In the case of Argentina, the strong growth that followed the economic meltdown of 2001–02 was accompanied by large employment gains and increases in labour earnings, with higher gains (in relative terms) for less skilled workers. This process led to a large reduction in poverty in the 2003–06 period (Gasparini and Cruces 2010). In Brazil, economic growth during the period 1996–2004 was relatively low. In this context, unemployment remained high and labour earnings low, while poverty increased (Fields and Raju 2007). Nicaragua also experienced economic growth during the period 2001–06, and although there were increases in employment levels, overall poverty did not fall significantly (Gutierrez et al. 2008). The 2000–06 period of economic growth in Mexico was accompanied by improvements in employment composition, rising real labour earnings, and falling poverty, although the country also experienced rising unemployment levels in those years (Rangel 2009). The relatively long period of economic growth in Costa Rica (1976–2000) took place with increases in labour income, a reduction of employment in agriculture, and improvements in education, with a reduction in poverty levels (Fields and Bagg 2003). Finally, the period of economic growth in Colombia between 2002 and 2011 led to a reduction in unemployment and poverty levels (Ham 2013). This mixed evidence indicates that the growth-employment-poverty nexus is fairly complex and the experiences of Latin American countries are far from homogeneous.

Limited evidence is available on the mechanisms underlying the growth-labour markets-poverty nexus in Latin America. For instance, a World Bank (2011) study finds that the increase in men's labour income was higher than that of women's in the 2000s, and that this was the most important factor in lifting households out of poverty, even though World Bank (2013) shows that the increase in the labour force over this period was mainly led by women. Inchauste (2012) reports that job-related events were the main escape route from poverty for Latin American households over the same period, and these events included household heads getting a new job, other family members starting to work, and those employed achieving higher labour earnings than before.

Overall, previous studies generally show a positive association between economic growth, improvement in labour market indicators, and reduction in poverty in Latin American countries. However, the tightness of these relationships is not always clear from these studies. Moreover, these regional aggregates mask the heterogeneity at the country level, which implies that little can be said about the underlying mechanisms at play. This paper on Brazil is one of sixteen case studies which, taken together, will allow us to separate and identify country-specific from region-wide factors in the relationship between the economy's overall performance and labour market outcomes in the decade of 2000s.

2 Data and methodology

All the statistics in this paper are obtained using microdata from the Pesquisa Nacional por Amostra de Domicílios (PNAD) for the years 2001 to 2009, 2011, and 2012. The nationwide surveys were incorporated into the SEDLAC—Socio Economic Database for Latin American and the Caribbean (CEDLAS and the World Bank 2014); three of the authors of this paper were involved in this project at CEDLAS (Center for Distributive, Labor, and Social Studies), Universidad Nacional de la Plata in Argentina. The survey's sample size has increased over time; it went from 112,594 households in 2001 to 120,657 households in 2012 (Table 1). The major increase in sample size occurred in 2004 when the survey started to include the rural North of the country. However, the PNAD has always been representative of the total population of the country and the inclusion of rural North does not affect the comparability of statistics before and after 2004.

For this study, we processed the microdata from Brazil to construct time series of comparable data for a wide range of labour market and income distribution indicators. The resulting indicators are compiled into a large number of tables and figures, provided at the end of the paper, which form the basis for the text that follows.

Several definitions and classifications are used in order to assess whether the labour market has improved or deteriorated. Unemployment is defined as usual, i.e. the share of unemployed people over the economically active population. A person is unemployed if s/he is 15 years old or more and during the reference period (one week in the Brazilian survey), s/he was without work, available for work and seeking work. Youths are those between 15 and 24 years old, while adults are those between 25 and 65 years old.

Occupational groups are defined according to the following classification:¹ management; professionals; technicians and associate professionals; clerical; service and sales workers; agricultural, forestry and fishery workers; craft and related trades workers; plant and machine operators and assemblers; elementary and armed forces. Brazil has made use of the *Classificação Brasileira de Ocupações* (CBO) whose main groups match the classification system endorsed by the authors. The classification of employed workers by occupational groups can only be constructed from 2002 onwards. An improvement in the labour market would be implied by a decrease in the share of low-earning occupations and an increase in the share of high-earning occupations.

The occupational position is classified into four categories: employer, wage/salaried employee, self-employed and unpaid worker. Given the nature of labour markets in Latin America, the analysis of the employment structure according to occupational positions will identify a decrease of self-employment and an increase in wage/salaried employees as an improvement in the labour market.

The sector of employment was divided into: primary activities; industry; construction; commerce; utilities and transportation; skilled services; public administration; education and health; and domestic workers. When looking at the sectoral distribution of employment, an improvement in the labour market is implied by an increase in the share of the sectors with higher earnings.

Turning now to the educational level of employed workers, we define three categories for the analysis: low (eight years of schooling or less); medium (from nine to thirteen years of schooling); and high (more than thirteen years of schooling). An increase in the education level of the employed population is considered as an improvement in the labour market as the share of workers that are expected to receive high levels of earnings increases and the share of workers with low earnings' levels decreases.

We also classify employed workers according to whether they are registered with the social security system or not. We assume that it is better for employed workers to be registered, so an increase in this indicator will be interpreted as an improvement in the labour market.

Labour earnings are expressed on a monthly basis in 2005 purchasing power parity (PPP) dollars, and higher earnings represent an improvement in the labour market. To compute poverty and inequality statistics, we use the per capita household income. Household income is the sum of labour income plus non-labour income; included in non-labour incomes are capital income, pensions, public and private transfers, and the imputed rent from own-housing.

Poverty rates are estimated considering the international poverty lines of 4 dollars-a-day and 2.5 dollars-a-day and calculating the poverty headcount ratio for each.² We also calculate the share of working poor households (those with at least one member employed and a per capita family income

¹ This is the International Standard Classification of Occupations of 2008 (ISCO-08) at one digit level.

² In other country studies we also used national poverty lines to calculate the rate of moderate and extreme poverty. Brazil does not have these lines and only international lines are used in this paper.

below the 4 dollars-a-day poverty line). Income inequality is calculated using the Gini coefficient of per capita household income and labour earnings.

3 Empirical results

Brazil exhibited slow economic growth from 2000 to 2012. The economy stagnated from 2000 to 2003 but then experienced rapid economic growth until 2008, when it was affected by the international economic crisis. It recovered quickly in 2010, but slowed down over the next two years (Figures 1 and 2).

From 2000 to 2012, Brazil's economic growth was lower than the average for the Latin American region. GDP per capita increased by 29.8 per cent, while the average for the eighteen Latin American countries was 36.2 per cent during the same period. GDP (measured at PPP 2005) grew by 47.8 per cent, and GDP per employed person experienced a 12.0 per cent rise (Table 2). The annual growth rate of GDP per capita was 2.2 per cent, and it varied from -1.2 per cent in 2009 to 6.6 per cent in 2010.

In just twelve years, the Brazilian growth experience can be separated into four different stages. First, from 2000 to 2003 the economy was characterized by a volatile external environment along with concerns about the continuity of macroeconomic policies following the change in government in 2003. These factors led to a sharp decline in external capital flows, a depreciation of the local currency, and some inflationary pressures (IMF 2003). GDP per capita increased by only 1.0 per cent between 2000 and 2003, with two years in which it actually shrunk (-0.1 per cent in 2001 and -0.2 per cent in 2003). Second, rapid economic growth occurred from 2003 to 2008, with GDP per capita increasing by 19.9 per cent, equivalent to an annual growth of 3.7 per cent. The increased domestic demand (consumption and investment) was the driving force of the growth process between 2003 and 2008. Redistributive policies jointly with credit expansion encouraged the consumption of durable goods (Ferraz et al. 2010). To increase growth further, the government announced in 2007 the Growth Acceleration Program, which contains steps to increase public and private investment (IMF 2007). The country also managed to reduce the GDP volatility (a historical feature of Brazilian growth) making the economy more resilient to external shocks. That was possible through several transformations (Ferraz et al. 2010). First, the stock of public external debt was reduced. Second, the historical fiscal deficit was reversed to a surplus position. Third, export growth underpinned sustained external current account surpluses which, together with strong private capital inflows, allowed the authorities to build a cushion of foreign exchange reserves (IMF 2007; Blyde et al. 2010). Fourth, prices were stabilized. The third stage in the growth experience of Brazil during the 2000s was between 2008 and 2009, when the economy suffered the impact of the international crisis. GDP per capita fell by 1.2 per cent that year. The government implemented some countercyclical measures to mitigate the negative impacts of the crisis including the increase in wages of public sector employees, the increase in social expenditures and in the transfers to the private sector, and the reduction in taxes levied on certain goods (Mendonça de Barros 2010). Finally, the post-crisis period was characterized by a fast recovery, followed by a slowdown. In 2010, GDP per capita rose by 6.6 per cent, largely surpassing its pre-crisis level of 2008. Then, the GDP per capita growth rate slowed to 1.8 per cent in 2011 and experienced no change in 2012.

The sector composition of the economy did not exhibit major shifts, and the crisis mainly impacted agriculture and industry. Throughout the period, the largest sector in the Brazilian economy was the service sector. This sector represents on average 66.2 per cent of GDP, and its share increased slightly from 66.7 per cent in 2000 to 68.5 per cent in 2012, dropping to its lowest level in 2004 at 63.0 per cent (Table 2). The second sector in importance was industry. Its share was 27.9 per cent on average, increasing from 27.7 per cent in 2000 to 30.1 per cent in 2004, and then falling to 26.3 per cent in 2012. The share of the agricultural sector in GDP did not change significantly: it stood at 5.6 per cent in 2000 and 5.2 per cent in 2012. Agriculture and industry were affected by the international crisis: from 2008 to 2009 their value added (measured at PPP 2005) decreased by 3.1 per cent and 5.7 per cent respectively, while the service sector grew by 2.0 per cent during the same period. Both the agriculture and industry sectors recovered their pre-crisis value added in 2010.

The unemployment rate decreased overall, for youth and adults, and for both men and women. The unemployment rate increased during the international crisis but quickly dropped when the crisis receded, falling below its pre-crisis level by 2010 (Figure 3).

The unemployment rate (measured as the ratio of unemployment to labour force) fell from 9.3 per cent in 2001 (7,578,615 unemployed people) to 6.2 per cent in 2012 (6,149,025 unemployed people). This reduction was not monotonic. Unemployment stood at 9.3 per cent on average between 2001 and 2005, decreased to 7.1 per cent in 2008, went up to 8.3 per cent during the international crisis (1,299,282 new unemployed people between 2008 and 2009), and fell to 6.2 per cent in 2012, the year in which it reached its lowest level during the period of analysis. The rise in the unemployment rate during the international crisis took place in a context of an increasing number of persons in the labour force and an increasing number of employed people (1,654,748 and 355,466 persons respectively). Lay-offs grew more than hiring in 2009, leading to the increase in the number of unemployed persons and leaving new entrants into the labour market without a job (Pochmann 2009). The recovery following the international crisis was very quick and by 2011 (no data were available for 2010) the unemployment rate had dropped below its pre-crisis level.

The unemployment rate dropped for youth and adults and for both men and women. However, all groups were affected by the international crisis. Between 2001 and 2012, the youth unemployment rate fell from 17.9 per cent to 14.6 per cent, decreasing by 3.3 percentage points. For adults, these figures were 6.7 per cent and 4.2 per cent, a fall of 2.4 percentage points. For both youth and adults, unemployment increased during the crisis, going from 15.5 per cent to 17.8 per cent for youth and from 4.9 per cent to 5.9 per cent for adults between 2008 and 2009. By 2011, unemployment rates were lower than they had been before the crisis. The unemployment rate by gender also mirrored the aggregate trend. The unemployment rate for women over the period was higher than for men, but women benefited most from the decreasing trend in unemployment. The unemployment rate among women was 11.9 per cent in 2001 and 8.2 per cent in 2012 (3.7 percentage point decrease). On the other hand, the unemployment rate among men was 7.5 per cent in 2001 and it fell to 4.6 per cent in 2012 (2.9 percentage point decrease). The rise in unemployment rates during the recession affected both men and women, but by 2011 they were lower than in 2008.

The composition of employment by occupational group improved over the period as workers moved from low-paid occupations such as elementary jobs to better paying occupations, such as professional jobs. Young and adult workers and women benefited from the improving trend, while men suffered a slight worsening. The international crisis of 2008

did not affect the improving trend in the employment structure by occupation, but impacted on the relative shares of low- and mid-paid occupations (Figure 4).

From 2002 (the first year for which occupational breakdowns are available) to 2012, the share of low-earning occupations (elementary, plant and machine operators, and services and sales occupations) fell by 2.3 percentage points, while there was an increase of 2.8 percentage points in the share of high-paid occupations (management, professional, and armed forces) and a small change in the share of mid-paid occupations (technical jobs, clerical, agricultural, forestry and fishery occupations, and crafts and related trades) which declined by 0.5 percentage points (Tables 3 and 6). The occupations that exhibited the largest shares' reductions over the period were: elementary occupations which shrank steadily from 25.8 to 18.3 per cent (7.5 percentage points), and agricultural, forestry and fishery workers (a middle-paid occupation in Brazil) which fell from 6.8 per cent to 4.7 per cent (2.1 percentage points). On the other hand, the occupations whose shares increased were professionals (3.0 percentage points), services and sales workers (2.8 percentage points), plant and machine operators (2.4 percentage points), and clerical (2.2 percentage points). The international crisis led to a pause in the downward trend of the share of low-paid occupations in total employment. The share of mid-paid occupations continued to decrease, while the share of high-paid occupations exhibited a small increase between 2008 and 2009. The previous configuration, with a downward trend in the share of low-paid sectors, an upward trend in the share of high-paid sectors, and a share of mid-paid sectors with small annual changes, was recovered in 2012.

The improvements in occupational composition were especially large for youth and women, but there was also an improvement for adults and a slight worsening for men. There was a decrease in the share of low-paid occupations for youth and adults, but the decrease was more significant for youth. From 2002 to 2012, the share of low-earning occupations among employed youth diminished by 6.9 percentage points, while middle-paid occupations increased by 4.8 percentage points and high-paid occupations grew by 2.1 percentage points. For adults, during the same period low-earning occupations fell by just 0.9 percentage points, middle-paid occupations declined by 1.4 percentage points, and high-earning occupations grew by 2.2 percentage points. When broken down by gender, the share of low-earning occupations fell for women and increased for adults. For women, the share working in low-earning occupations diminished by 6.9 percentage points, while the shares in middle- and high-paid occupations rose by 1.9 and 5.1 percentage points respectively. For men, the share working in low-earning occupations increased by 1.3 percentage points, the share in middle-paid occupations fell by 2.2 percentage points, and the share of men working in high-earning occupations increased by 0.9 percentage points. The downward trend in the share of low-paid occupations stalled during the international crisis for young and adult workers and for women, the share of middle-paid occupations suffered a small reduction and, consequently, the share of high-paid occupations increased for them. On the other hand, the pre-crisis trends in the male occupational structure of employment were not affected by the international crisis. Young and adult workers and women recovered the pre-crisis trends in 2012.

The employment structure by occupational position improved, with workers moving from unpaid jobs to paid ones. This occurred for all population groups, especially among youth and women. The international crisis impacted negatively on the downward trend of the share of self-employed workers (Figure 5).

From 2001 to 2012, there were changes in the employment structure by occupational position, especially in the shares of unpaid workers and wage/salaried employees. The share of the largest category—wage/salaried employees— increased from 63.0 per cent to 68.9 per cent, while the share of unpaid workers decreased from 10.0 per cent to 6.6 per cent. The share of the self-employed also dropped from 22.7 per cent in 2001 to 20.8 per cent in 2012, while the share of employers shrank from 4.3 per cent to 3.8 per cent (Table 4). These changes in the structure of employment by occupational position can be interpreted as an improvement as the share of high-earning positions (wage/salaried employees and employers) increased (rise of 5.4 percentage points) and the share of low-earning positions (self-employed and unpaid workers) fell. The international crisis negatively affected the downward trend of the share of self-employed workers in total employment. Between 2008 and 2009, the share of self-employed workers stopped decreasing and suffered a slight increase that was counterbalanced by a smaller increase in the share of wage/salaried employees and a small reduction in the share of employers. That could be explained by the absence of a guaranteed income system for all the new unemployed persons that emerged during the crisis and led some of them to develop activities as self-employed workers (Pochmann 2009). By 2012, the downward trend was recovered but the share of self-employed workers was still above the pre-crisis level.

The employment structure by occupational position improved for all population groups and the international crisis of 2008 led to a temporary increase in the share of self-employed workers for all of them. The share of wage/salaried employees increased more for youth and women, but it increased also for men and adults. In the case of young and female workers, there was a move away from unpaid occupations, while adults and men shifted away from self-employment. The share of wage/salaried employees rose from 2001 to 2012 by 7.2 percentage points for youth and by 6.6 percentage points for adults. For youth, the rise in the rate of wage/salaried employees was compensated for by a reduction in the rate of unpaid family workers mainly (drop of 6.4 percentage points), while adults saw a drop in self-employment (3.4 percentage points) and in unpaid workers (2.4 percentage points). The occupational structure of employment changed by gender as well. From 2001 to 2012, there was an increase in the share of wage/salaried employees of 7.3 percentage points for women and 4.7 percentage points for men. For women, the category that diminished the most was unpaid family workers (6.4 percentage points), while for men it was self-employment (2.4 percentage points) and unpaid workers (1.4 percentage points). The international crisis impacted mainly on the downward trend of the share of self-employed workers in total employment. In 2009, that share exhibited a slight increase for all population groups. By 2012, all groups recovered the downward trend but for adult workers and men the shares of self-employed were still above their pre-crisis levels. Young workers and women recovered their pre-recessionary levels.

The employment composition by economic sector improved over the course of the period studied. Youth particularly benefited, but so did women, adults, and men. The international crisis brought this trend to a standstill (Figure 6).

The period from 2001 to 2012 was marked by major changes in the sectoral composition of employment in Brazil. The share of workers in low-earning sectors (domestic workers, primary activities, and low-tech industry) diminished by 8.6 percentage points from 2001 to 2012. On the other hand, there were increases in the shares of mid-earning (high-tech industry, construction, commerce, and utilities and transportation) and high-earning sectors (public administration, skilled services, and education and health) of 3.5 and 5.0 percentage points respectively (Tables 5 and 6). The sectors that registered the largest reductions over the period were primary activities and

domestic workers (drop of 5.8 percentage points and 3.4 percentage points respectively), while skilled services showed the largest increase (5.0 percentage points). During the international crisis of 2008, the trends described above stalled, but they resumed during the post-crisis period. Consistent with previous evidence showing that the industry sector suffered the largest negative impact on its value added during the international crisis (compared to the agricultural and service sectors), low- and high-tech industry sectors exhibited among the largest declines in their shares in total employment during such episode. This impact was counteracted by the increase in the share of commerce in total employment. The different situation of the commerce sector in comparison to the industry sectors was due to increases in real wages and expenditure, and led consequently to a small total change in the share of mid-earning sectors in total employment during the international crisis.

Turning now to demographic disaggregation, youth was the group that most benefited from the reduction in the share of low-earning sectors, followed by women, men, and adults. The share of low-earning sectors among employed young workers dropped by 13.5 percentage points between 2001 and 2012, while the shares of mid- and high-earning sectors increased by 7.4 and 6.1 percentage points respectively. Adult workers enjoyed a fall in the share of low-earning sectors in total employment of 7.2 percentage points, and the main increase was in the share of high-earning sectors (4.5 percentage points), followed by mid-earning sectors (rise of 2.8 percentage points). When broken down by gender, the share of low-earning sectors among employed women decreased by 8.8 percentage points, while the shares in mid- and high-earning sectors increased by 4.7 and 4.0 percentage points respectively. In the case of men, their share in low-earning sectors fell by 8.6 percentage points, while the main increase was in the share of high-earning sectors (rise of 5.3 percentage points) followed by mid-earning sectors (rise of 3.3 percentage points). The international crisis of 2008 affected all groups equally by bringing the trends described above to a standstill, but the previous trends resumed for all groups after the crisis.

The educational level of the employed population improved over the period for all population groups, especially young workers. The economic crisis did not have an effect on this trend (Figure 7).

The share of employed workers with low educational levels (eight years of schooling or less) dropped from 63.8 per cent in 2001 to 45.0 per cent in 2012, while the share of employed workers with middle and high educational levels (nine to thirteen years of schooling and over thirteen years of schooling) grew from 27.5 per cent in 2001 to 40.5 per cent in 2012 and from 8.7 per cent to 14.6 per cent respectively. This improving trend in the educational level of the employed population was not affected by the international crisis.³ We interpret this result as an improvement for the employed population as the level of education is an important predictor of labour earnings. Consequently, the changes in the employment structure by educational level implied an increase in the share of workers

³ The most frequent value of years of education for employed workers in Brazil was 11 for the entire period under study (around 23.4 per cent of employed workers had eleven years of education).

that tend to have high levels of earnings and a decline in the share of workers with low earnings' levels.⁴

All population groups benefited from the increase in the educational level of the employed population over the period. For the young population, the share of employed workers with low educational levels went from 56.1 per cent in 2001 to 32.5 per cent in 2012 (drop of 23.6 percentage points). The shares of young workers with medium and high educational levels grew by 19.9 and 3.7 percentage points respectively. The reduction in the share of adult employed workers with low educational levels was also large (drop of 18.9 percentage points over the period), resulting in an increase in the shares of adult workers with medium and high educational levels (rises of 13.0 and 5.9 percentage points respectively). The reduction in the share of employed workers with low educational levels was similar for men and women (drops of 17.9 and 19.7 percentage points respectively), while the share of workers with high levels of education increased more for women (7.8 percentage points) than for men (4.3 percentage points).

The overall share of employed workers registered with the social security system increased as a whole and for all population groups. The international crisis did not affect this upward trend (Figure 8).

The social security system in Brazil is composed of three contributory regimes, one semi-contributory scheme for rural workers and non-contributory benefits (Robles and Mirosevic 2013). The contributory regimes are the *Regime Geral de Previdência Social* (RGPS), *Regime Próprio de Previdência Social* (RPPS), and the complementary social security. The RGPS is mandatory for private workers, while the RPPS is mandatory for public workers and the military. Both are publicly administered and financed with contributions made by employers, employees, and the state. The complementary social security is voluntary and privately administered by for-profit and not-for-profit entities which invest the contributions made by the affiliated members. The semi-contributory scheme for rural workers appeared to guarantee an equal treatment between urban and rural workers. In order to receive its benefits, it is not necessary to have made prior contributions. Finally, the non-contributory benefits include the *Benefício de Prestação Continuada da Assistência Social*. This programme is an unconditional cash transfer targeted at poor families (family income below a fourth of the minimum wage) with an elderly or disabled member and sets the household income at the level of the minimum wage.

The social security records show a major increase in the percentage of workers registered with the contributory regimes over the period. The share of employed workers registered with social security grew steadily from 46.9 per cent in 2001 (34,481,096 registered workers) to 60.2 per cent in 2012 (56,554,251 registered workers). The upward trend continued even during the international crisis of 2008. Several factors have been presented as determinants of the sustained increase in the share of registered workers in Brazil during the 2000s (Berg 2010; ILO 2011; Maurizio 2014). First, the sustained economic growth process that allowed for a more foreseeable functioning of the labour

⁴ The improvement in the employment structure by educational level is related to changes in the relative demand and supply of workers with high educational levels with corresponding implications for the wage gap by educational group and the unemployment rate of each educational level. We introduce a discussion about the role of these factors in Brazil in the paragraph on labour earnings.

market, favouring the growth of long-term contracts, and reducing the expected probability of lay-offs and consequently the probability of employers having to face relatively higher costs when firing a formal worker compared to an informal one. Second, the implementation of programmes and incentives for formalization. The Individual Entrepreneur Law of 2009 enabled self-employed workers to access the social security system at an affordable cost, and gave them a tax identification number to access credit and business transactions in the formal economy. Third, the cost of non-registration faced by employers increased as a result of the strengthening of labour inspections in the country.

The aggregate pattern of increased enrolment in social security also applies when the employed population is broken down by age and gender. Young workers were the least likely to be registered in the social security system but their share increased more than for adults; 38.8 per cent of young workers were registered in 2001 and 53.7 per cent in 2012 (increase of 14.9 percentage points), while the figures for adult workers were 51.0 per cent and 63.5 per cent respectively (increasing by 12.6 percentage points). Besides the reasons presented above, another explanation for the increase in the registration rate for young workers lies in the process of demographic transition that Brazil is experiencing. The decrease in the number of youths in the overall population and in the labour market, coupled with the incentives to poor families to keep their adolescent children in school through the *Bolsa Família* programme, resulted in a labour market with less supply pressure from youths and fewer precarious jobs (Berg 2010). The share of workers registered with the social security system was very similar among men and women. For men, the increase was from 47.5 per cent in 2001 to 59.7 per cent in 2012. For women, the share of registered workers rose from 46.1 to 61.0 per cent over the period. The upward trend in the share of registered workers continued even during the international crisis for all population groups.

Real labour earnings increased steadily from 2001 to 2012, with only a slowdown during the 2008 international crisis. This applied to almost all groups, especially the most disadvantaged ones (Figure 9).

Average monthly earnings, expressed in dollars at 2005 PPP, increased by 26.0 per cent, from US\$540 in 2001 to US\$680 in 2012 (Table 6). This increase was not even throughout this period. Labour earnings decreased by 7.7 per cent between 2001 and 2004 and increased by 36.5 per cent from 2004 to 2012, with an average annual increase of 4.6 per cent. The years of the international crisis (2008 and 2009) were marked by a slowdown in yearly growth, but it was still positive and above 2.0 per cent (labour earnings increased by 2.0 per cent and 2.3 per cent in 2008 and 2009 respectively). The continuous adjustments in the minimum wage over the period were responsible for the increase in labour earnings. In the first half of the 2000s, the minimum wage increased in real terms by 3.8 per cent annually. Between 2005 and 2011, the increases were 3.0 per cent a year (Robles and Mirosevic 2013). In 2007, a policy was set in place to adjust the minimum wage according to both the variation of GDP and inflation (IPEA 2011). In 2009, as part of the efforts to alleviate the impacts of the crisis, the minimum wage was also nominally adjusted by 12.0 per cent (Berg 2009).

When broken down by population groups and employment categories, labour earnings increased for almost all groups. The only groups that experienced a drop in their earnings were workers with high educational levels and workers in the skilled services sector. For workers with high educational levels, labour earnings decreased by 11.2 per cent, and the reduction was 16.3 per cent for workers

in the skilled services sector. The groups with the largest increase in earnings were: women (increase of 31.4 per cent between 2001 and 2012); youth (increase of 38.0 per cent); self-employed workers (increase of 33.5 per cent); workers in the primary activities sector and construction (rises of 57.2 and 48.4 per cent respectively); workers with low educational levels (increase of 30.9 per cent); workers in elementary occupations (increase of 60.2 per cent); workers in armed forces (rise of 47.4 per cent); plant and machine operators and assemblers (rise of 44.1 per cent); workers in crafts and related trades (increase of 43.8 per cent); agricultural, forestry and fishery workers (increase of 39.8 per cent); and services and sales workers (rise of 38.1 per cent).

The evidence of falling labour earnings for workers with high educational levels and labour earnings increases for workers with medium and low levels of education can be interpreted in light of previous findings of improving employment structure by occupational group and economic sector over the period and improving educational level of the employed population. The improving employment structure by occupational group and economic sector implied an increase in the share of occupations and sectors that can be expected to use workers with high and medium educational levels, such as professional and clerical occupations, and public administration and skilled services sectors, and a reduction in the share of occupations and sectors that employ workers with low educational levels, such as elementary, agricultural, and craft and trades occupations, and domestic workers and primary activity sectors. This evidence indicates that the demand for workers with high and medium educational levels relative to those with low educational levels increased between 2001 and 2012. On the other hand, the educational level of people in the labour force improved over the same period, indicating an increase in the relative supply of workers with high and medium levels of education (Table 8). The prediction of a supply and demand analysis is that the relative wages of workers with high and medium educational levels relative to those with low educational levels will rise or fall depending on which effect dominates (increase in the relative demand versus increase in the relative supply). In the Brazilian labour market the relative wages of workers with high and medium educational levels relative to those with low educational levels fell over the period, and the relative wages of workers with high educational levels relative to those with medium educational levels also decreased (Table 7). The adjustment process also led to a reduction in the unemployment rate of all educational groups that was larger for workers with medium and low levels of education compared to the reduction for workers with high levels of education (Table 9).

The international crisis led to a drop in labour earnings of some specific groups, but earnings increased for the great majority. Workers in the low-tech industry and commerce sectors witnessed a drop of 1.7 and 1.3 per cent in their labour earnings between 2008 and 2009 respectively. Among occupational categories, labour earnings decreased for technicians and associate professionals (drop of 2.8 per cent) and workers in crafts and related trades (drop of 1.3 per cent). The upward trend in labour earnings was not interrupted by the international crisis for all other population and occupational groups. Those who were negatively affected by the international crisis recovered their pre-crisis level of income by 2011.

The poverty rate and the rate of working poor households decreased substantially between 2001 and 2012 (Figure 10).

The poverty rate based on the 4-dollars-a-day international line fell from 43.1 per cent in 2001 to 21.5 per cent in 2012; the poverty rate based on the 2.5-dollars-a-day line went from 27.4 per cent to

10.4 per cent, and the percentage of the working poor (defined as the proportion of persons in the population living in poor households, according to the 4-dollars-a-day poverty line, where at least one household member works) decreased from 29.1 to 12.3 per cent over the same period. These poverty indicators decreased steadily between 2001 and 2012, even during the international crisis. The downward trend of all poverty indicators during the Great Recession is consistent with the previous finding of increasing labour earnings during that episode due to minimum wage and nominal wage increases, and with the use of the minimum wage as a reference value for social security benefits and anti-poverty programmes adjustments. Pochmann (2009) also highlighted that the recession was concentrated in the industrial sector where, in general, work conditions are better. As such, the increase in unemployment during the international crisis affected mainly non-poor families.

Cash transfer programmes have played an important role from the late 1990s in poverty reduction in Brazil (Ravallion 2009). They included a series of programmes, which were later consolidated under *Bolsa Família*—the main conditional cash transfer programme—and the unconditional cash transfer *Benefício de Prestação Continuada*. Both seem to be extraordinarily well-targeted and have helped decisively to reduce income inequality and poverty (Ferreira de Souza 2012). Ferreira et al. (2010) estimated that in the absence of these transfer policies the poverty rate in Brazil would have been about 5.0 percentage points higher in 2004. Soares et al. (2010) showed that *Bolsa Família* was responsible for a reduction of 16.0 per cent and 33.0 per cent in extreme and moderate poverty between 2003 and 2010.

The pattern of reducing poverty in Brazil over the 2000s can be understood by examining incomes from various sources. Household labour earnings, pensions, and government transfers all increased substantially over the period studied (Figure 11). Within the period, the increase in labour earnings and pension started in 2004. Incomes from government transfers increased especially during the international crisis of 2008, and incomes from capital were erratic.

Inequality of household per capita income and labour earnings diminished substantially over the period studied, and this trend did not change with the international crisis (Figure 12).

The Gini coefficient of household per capita income fell from 0.588 in 2001 to 0.523 in 2012, dropping with each consecutive year. The Gini coefficient of labour earnings among employed workers declined from 0.563 in 2001 to 0.496 in 2012. It also decreased with each passing year and was always below the Gini for household per capita income. This reduction in labour earnings inequality is in keeping with the fact that earnings increased more for most disadvantaged employment categories such as self-employed workers, workers with low educational levels, and workers in the primary activity sector and in elementary jobs. However, it is interesting to notice that earnings declined for some high-earning employment categories. Consequently, the reduction in labour earning inequality over the period in Brazil occurred at the expense of income losses for some categories. The crisis did not alter the downward trend: during the international crisis, inequality fell for both household per capita income and labour earnings at the same rates as they had before.

Changes in household per capita income inequality in Brazil during the 2000s have been explained by changes in both labour and non-labour incomes at the household level, with both having

approximately equal weight. Barros et al. (2010) found that 51.0 per cent of the decline in household per capita income inequality between 2001 and 2006 was explained by the growth in average labour income per adult worker and a small decline in its inequality. The remaining 49.0 per cent was due to a reduction in the inequality of household non-labour incomes. Among non-labour incomes, government transfers had an equalizing and large effect, while changes in the distribution of incomes from assets and private transfers were unequalizing. Bergolo et al. (2011) confirmed the equalizing effect of government transfers for the period 2001–08 that stemmed primarily from the expansion in their coverage. Azevedo et al. (2013b) extended the analysis of the decline in household per capita income inequality for the 2001–11 period. Through a decomposition approach they found an equalizing effect of labour incomes, incomes from transfers, incomes from pensions, and other non-labour incomes along with an equalizing effect of the share of adults in the household.

The literature on labour earnings inequality in Brazil provides some explanations for its decline during the 2000s. Barros et al. (2010) for the period 2001–06 and Azevedo et al. (2013a) for the period 2001–09 used decomposition approaches and found: 1) a reduction in the wage differential between workers of different educational levels ('price effect'); and 2) a fall in the inequality of the distribution of educational levels ('quantity effect'). Gasparini et al. (2011) explained the fall in the skill premium during 2001–09 through the increase in the relative supply of skilled workers, combined with a reduction in their relative demand and institutional factors, such as increases in the minimum wage. Maurizio (2014) added the increase in the registration rate of workers as an inequality reducing factor. Regarding the finding of a more equal distribution of educational levels, there is a discrepancy in the literature. Battistón et al. (2014), who used a microsimulation approach for the period 2002–09, found an inequality-increasing quantity effect.

4 Conclusions

During the 2000s, Brazil has exhibited a rare mix: slow economic growth accompanied by substantial improvements in labour market indicators. During the period 2001 to 2012, Brazil achieved less economic growth than the average Latin American country: GDP per capita increased by 29.8 per cent while the average growth for the eighteen Latin American countries was 36.2 per cent.

The labour market exhibited a marked improvement from 2001 to 2012. The unemployment rate decreased while the composition of jobs improved for all of the indicators used in this paper. The distribution of employment by occupational group showed a decline in the share in elementary occupations and an increase in the share in better paying occupations. There was an increase in the share of wage/salaried employees and a reduction in the share of self-employed and unpaid workers. The share of workers in low-earning sectors diminished, while the share of workers in mid- and high-paid sectors rose. Moreover, the educational composition of the employed population improved steadily. The share of workers registered with the social security system increased. Average labour earnings rose. Poverty and inequality diminished substantially.

The Brazilian economy was affected by the international economic crisis of 2008, from which it recovered quickly. During this period, the unemployment rate increased, the employment structure by occupational position deteriorated slightly, the improving trend in the composition of

employment by economic sector hit an impasse, and the upward trend in labour earnings slowed down. However, all labour market indicators had recovered either their pre-crisis level or were heading in that direction by 2011.

Young workers and women had worse labour market outcomes over the period compared to adults and men respectively, but all population groups were evenly affected by the international crisis. The unemployment rate was higher for young compared to adult workers, the shares of young employed workers in low-earning economic occupations and sectors were larger than the shares of adult workers, the percentage of young workers registered with the social security system was lower when compared to adults, and labour earnings of young workers were below those of adults. On the other hand, the share of low-earning positions among young workers was below the share for adult workers. The international crisis of 2008 impacted more adversely on the unemployment rate of young workers compared to adults, but the temporary worsening in the employment structure by occupational position was larger for adults compared to youths. Disaggregating by gender, we found that men had better labour market outcomes than women, with the exceptions of the share of workers in low-earning positions that was larger among men and the share of registered workers that was similar for both gender groups. Men and women were evenly affected by the international crisis. While the unemployment rate suffered a larger increase for women, the worsening in the structure of employment by occupational position was larger for men.

In summary, notwithstanding the slow economic growth exhibited by Brazil during the 2000s and the international crisis of 2008, Brazilian labour market conditions were in a better state in 2012 than they were at the start of the millennium.

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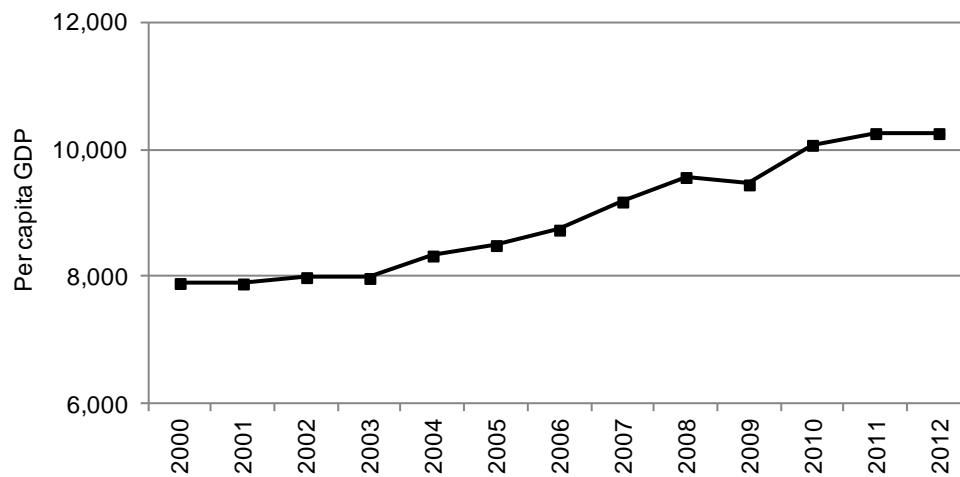
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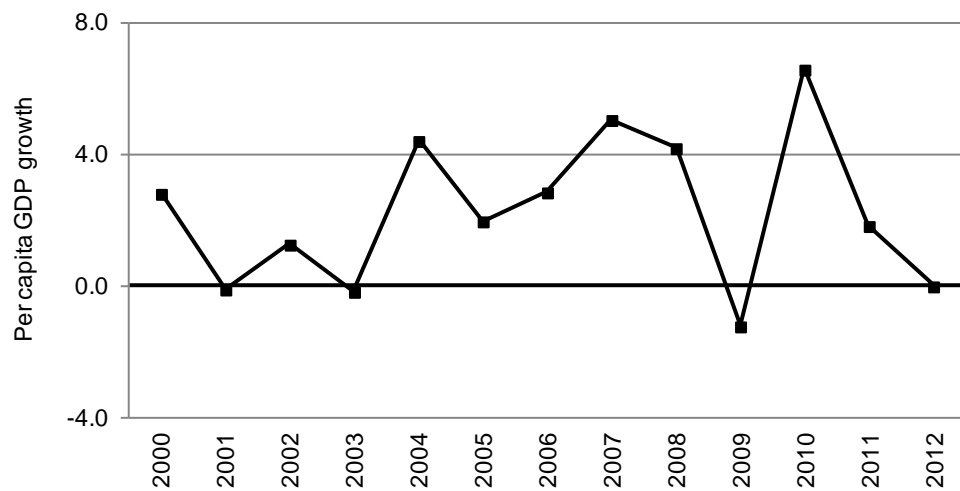
Figures

Figure 1: GDP per capita at PPP dollars of 2005, 2000–12



Source: World Development Indicators (the World Bank 2014).

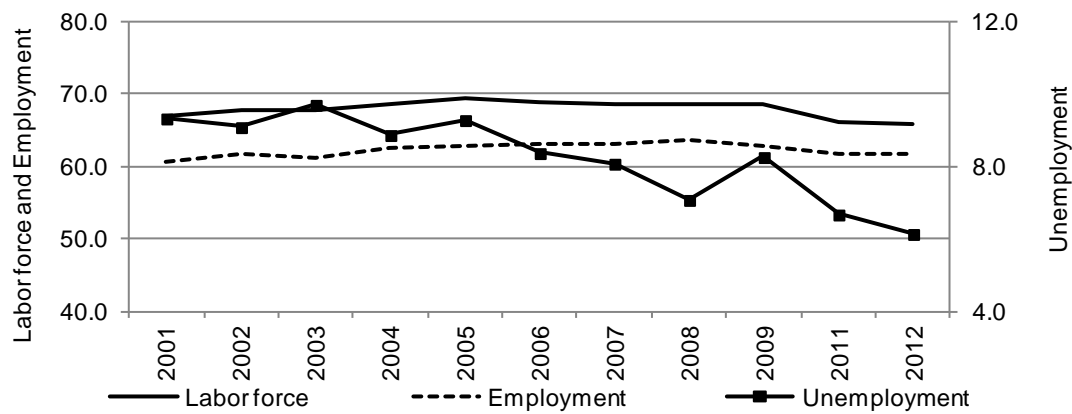
Figure 2: Annual growth of GDP per capita at PPP dollars of 2005, 2000–12



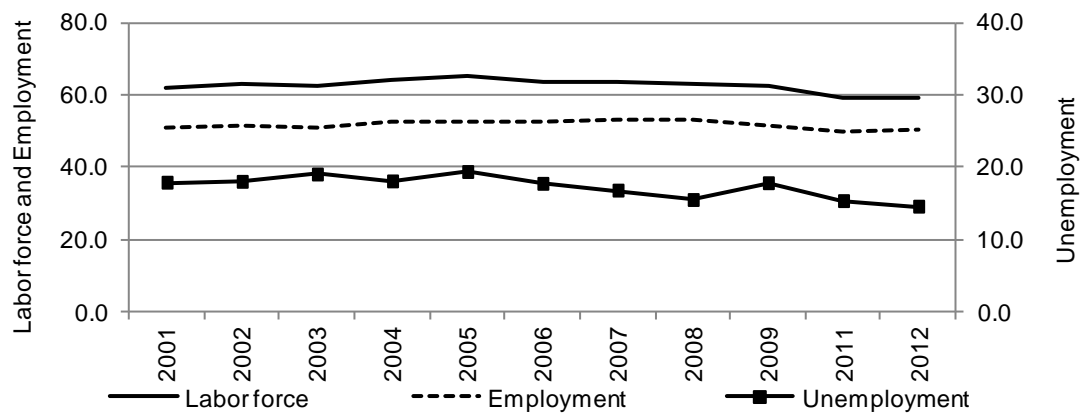
Source: World Development Indicators (the World Bank 2014).

Figure 3: Labour force rate, employment-to-population rate and unemployment rate: population 15 years old or more, 2001–09 and 2011–12

(a) All



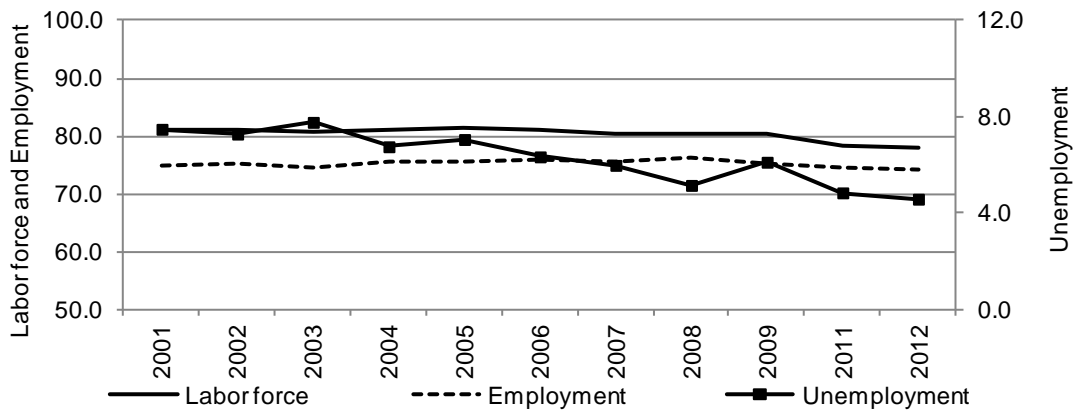
(b) Youth (15 to 24 years old)



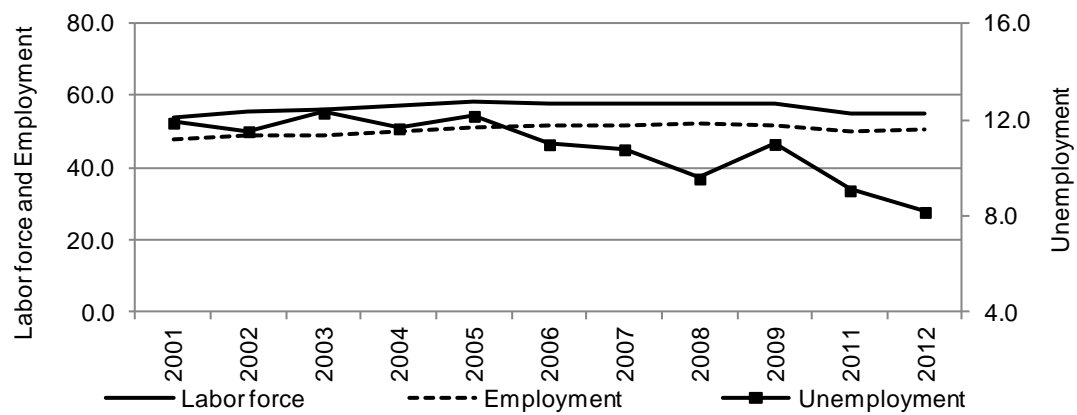
(c) Adults (25 to 64 years old)



(d) Men

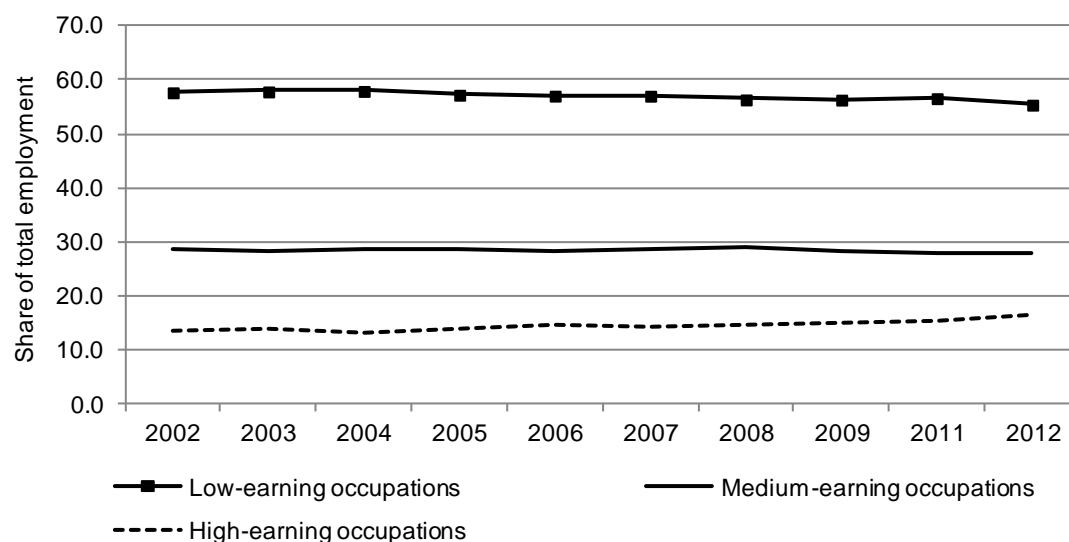


(e) Women



Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

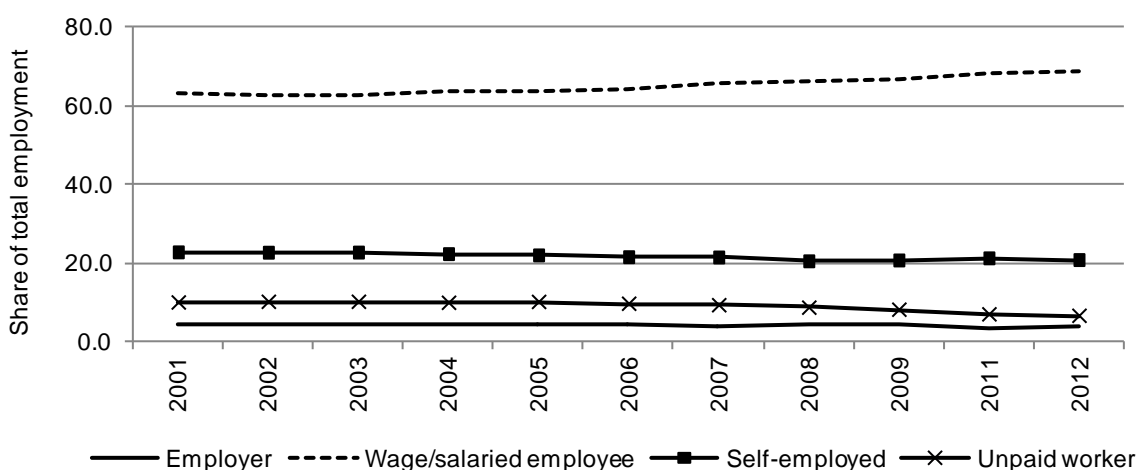
Figure 4: Share of employment by occupational group (categories grouped by earning levels): all employed workers, 15 years old or more, 2001–09 and 2011–12



Note: Low-earning occupations: elementary, services and sales, plant and machine operators and assemblers. Medium-earning occupations: agricultural, forestry and fishery occupations, craft and trades jobs, technicians and associate professionals, clerical. High-earning occupations: management, professionals, armed forces.

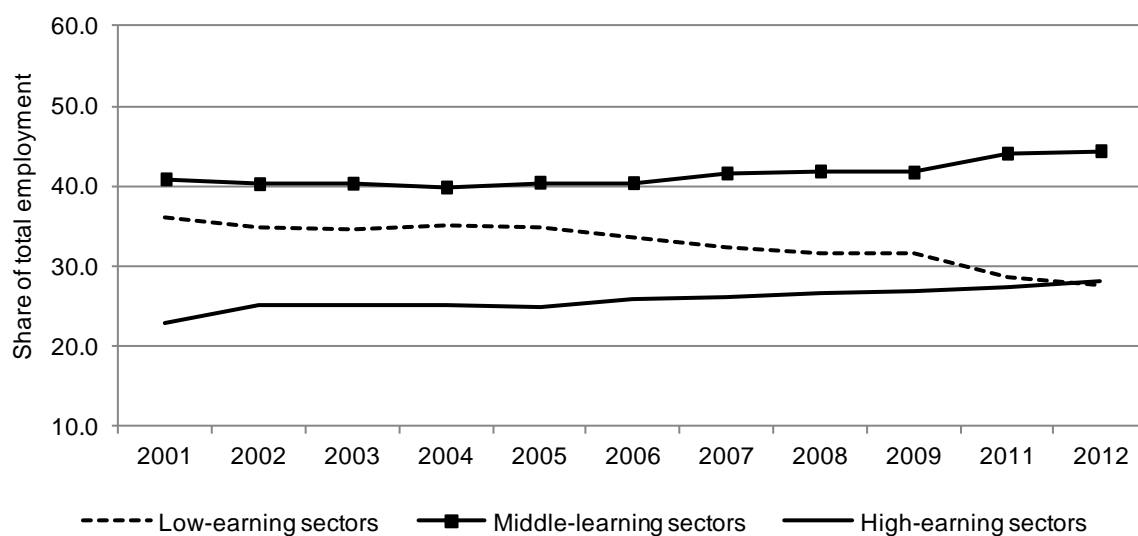
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 5: Share of employment by occupational position: all employed workers, 15 years old or more, 2001–09 and 2011–12



Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 6: Share of employment by economic sector (categories grouped by earning levels): all employed workers, 15 years old or more, 2001–09 and 2011–12

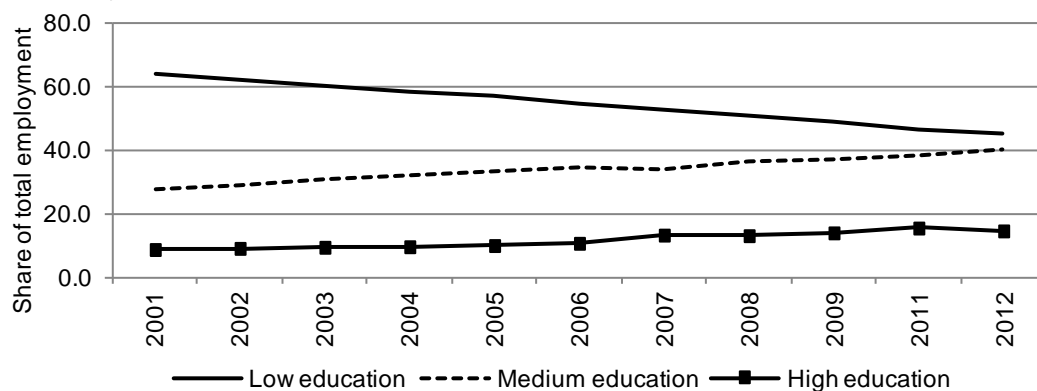


Note: Low-earning sectors: domestic workers, primary activities, low-tech industry. Middle-earning sectors: construction, commerce, high-tech industry, utilities and transportation. High-earning sectors: public administration, skilled services, education and health.

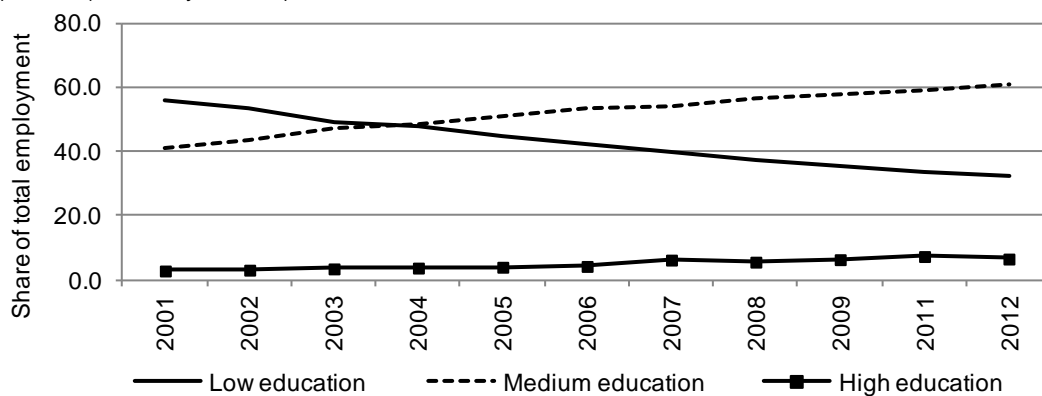
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 7: Share of employment by educational level: employed workers, 15 years old or more, 2001–09 and 2011–12

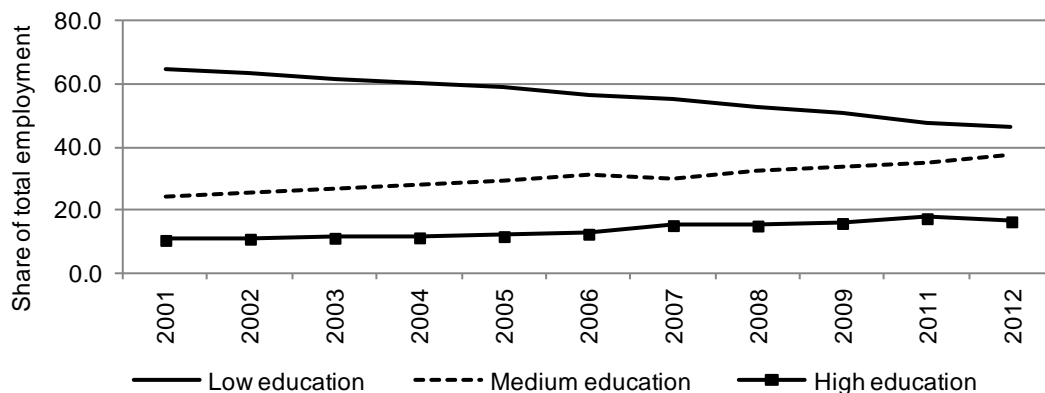
(a) All employed workers



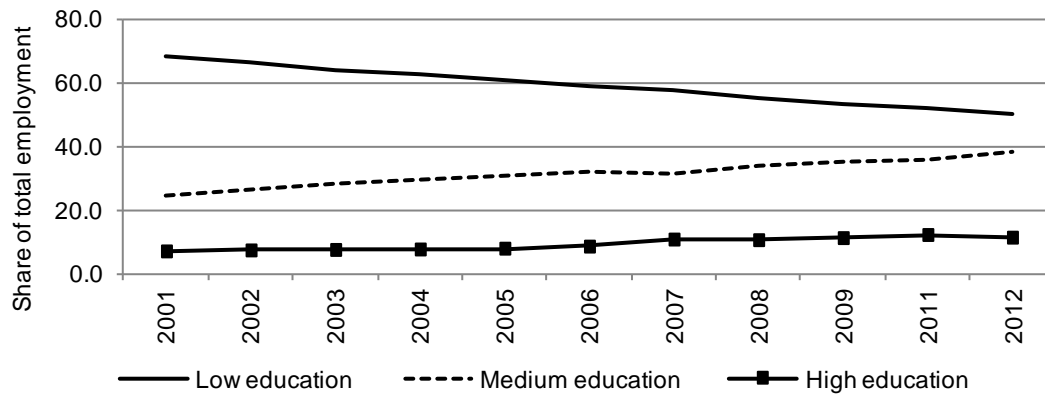
(b) Youth (15 to 24 years old)



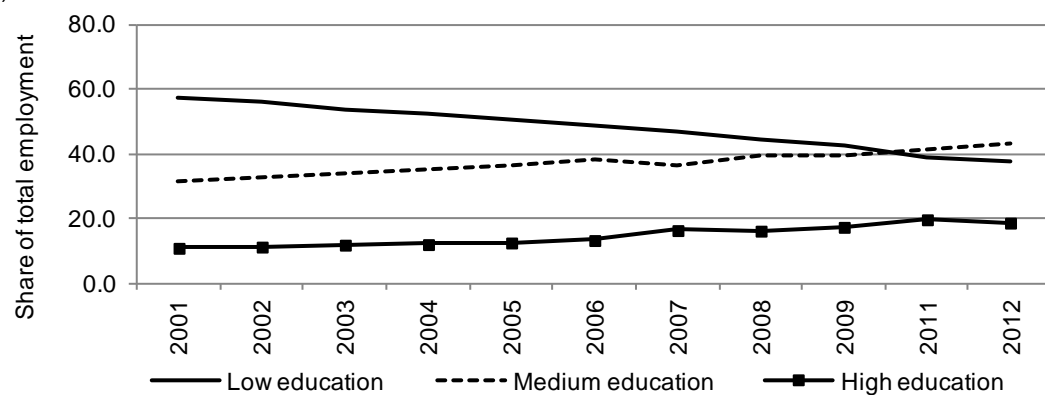
(c) Adults (25 to 64 years old)



(d) Men



(e) Women

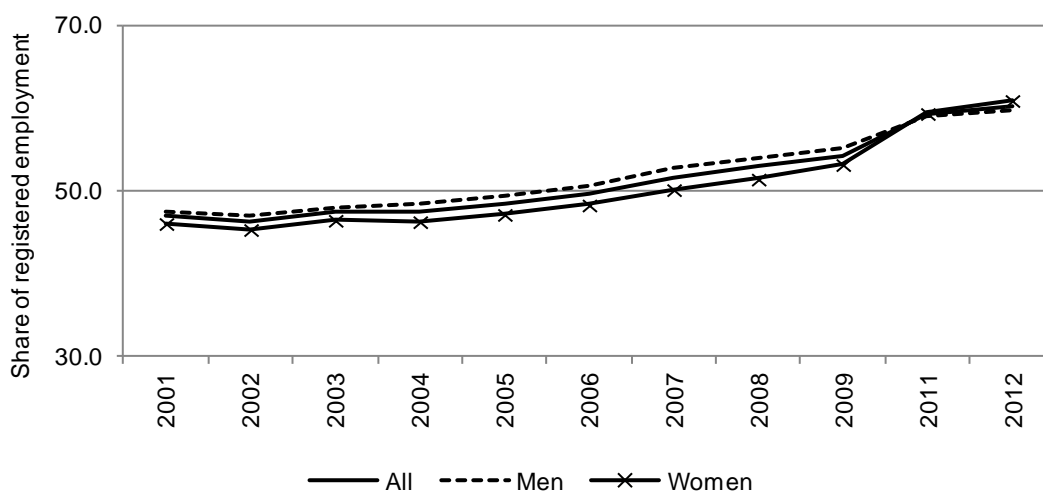


Note: Low: eight years of schooling or less. Medium: from nine to thirteen years of schooling. High: Over thirteen years of schooling.

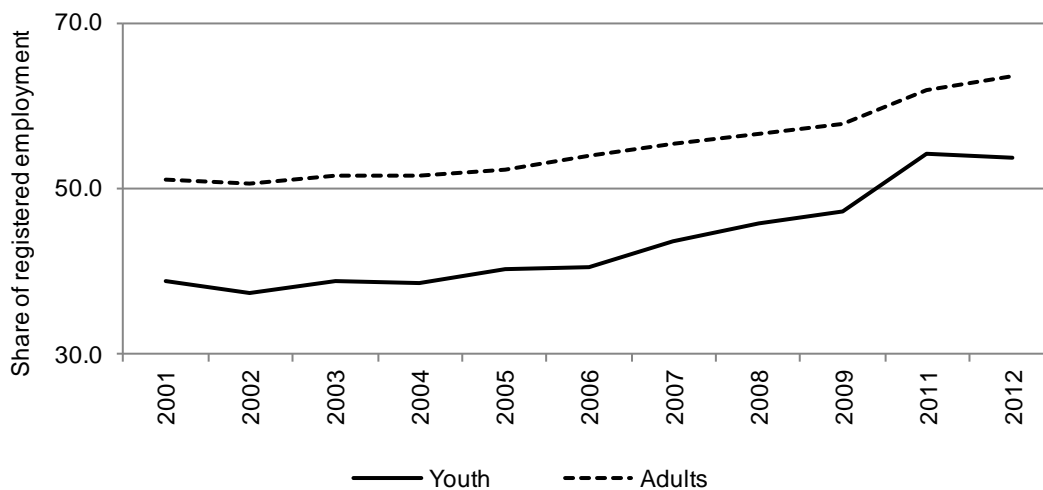
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 8: Share of employment registered with the national social security system: employed workers, 15 years old or more, 2001–09 and 2011–12

(a) Overall and by gender



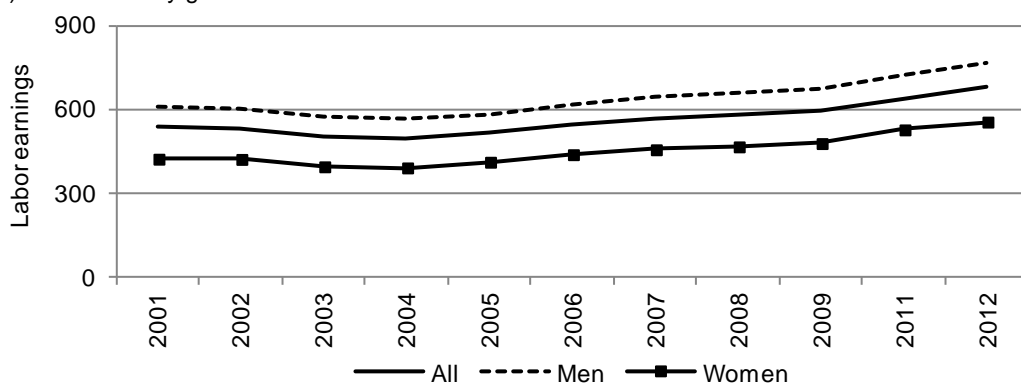
(b) By age group



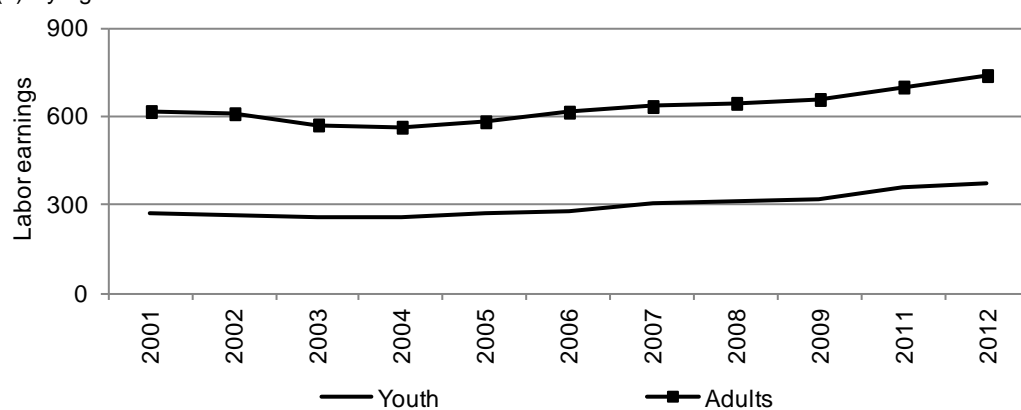
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 9: Monthly labour earnings at PPP dollars of 2005, 2001–09 and 2011–12

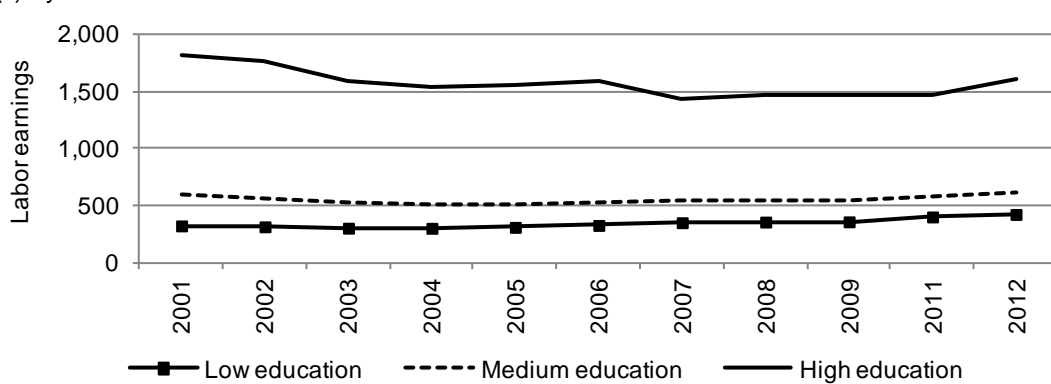
(a) Overall and by gender



(b) By age

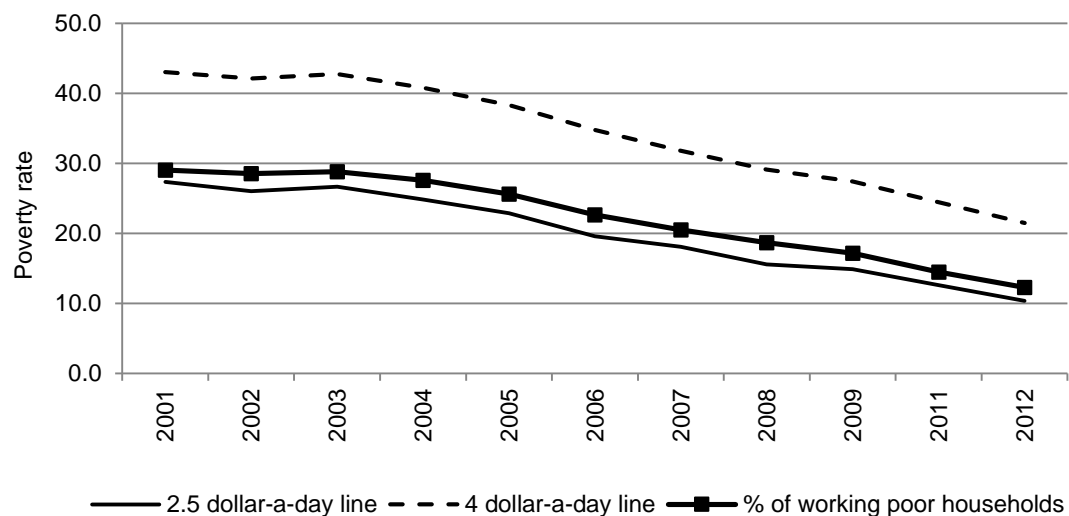


(c) By educational level



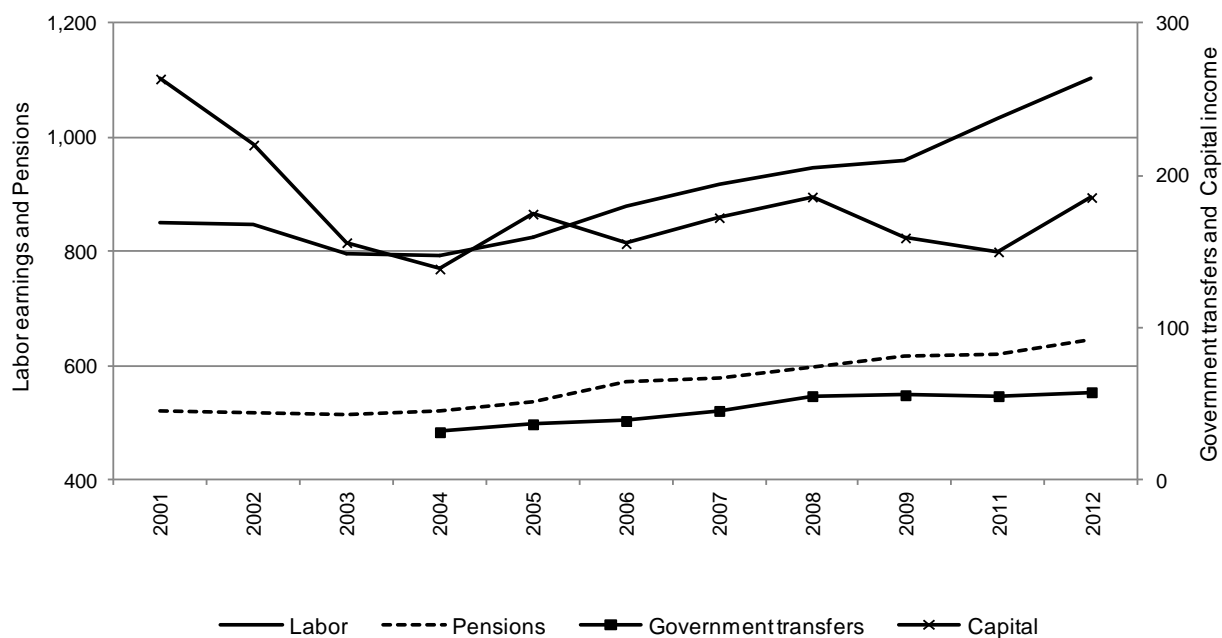
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 10: Poverty rates and working poor households, 2000–09 and 2011–12



Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

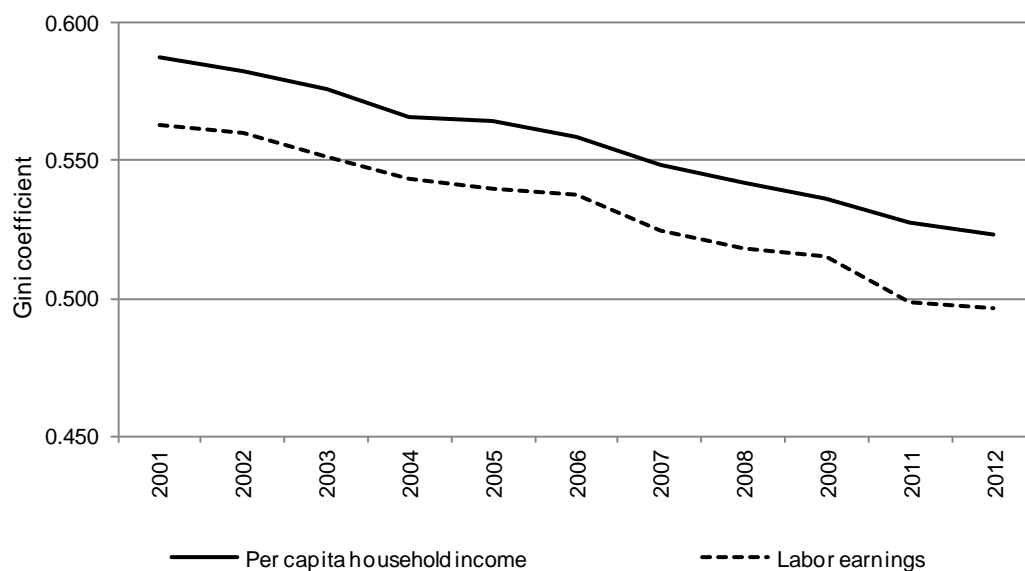
Figure 11: Sources of monthly household total income at PPP dollars of 2005, 2001–12



Note: Government transfers include incomes from *Bolsa Família* (estimated value) and *Benefício de Prestação Continuada*. Data on incomes from *Bolsa Família*, the main government transfer, could be estimated from 2004 onwards.

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 12: Gini coefficient of household per capita income and labour earnings, 2001–09 and 2011–12



Note: Gini coefficients of household per capita income and labour earnings are calculated among persons with positive household per capita income and positive labour earnings respectively.

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Tables

Table 1: Household surveys' description

	Number of households	Number of persons
2001	112,594	378,837
2002	115,432	385,431
2003	117,008	384,825
2004	122,513	399,342
2005	126,552	408,148
2006	128,882	410,241
2007	126,145	399,955
2008	125,224	391,868
2009	129,333	399,387
2011	117,796	358,919
2012	120,657	362,451

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Table 2: Macroeconomic variables, 2000–12

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GDP ^{1,2}	1,379,575	1,397,715	1,434,838	1,451,292	1,534,218	1,582,643	1,645,243	1,745,528	1,835,760	1,829,734	1,967,579	2,021,343	2,038,984
GDP per capita ¹	7,906	7,898	7,998	7,985	8,338	8,502	8,745	9,187	9,573	9,456	10,079	10,264	10,264
GDP per person employed ¹	18,086	18,192	18,002	17,950	18,015	18,066	18,382	19,247	19,585	19,378	20,171	20,316	20,263
GDP growth	4.31	1.31	2.66	1.15	5.71	3.16	3.96	6.10	5.17	-0.33	7.53	2.73	0.87
GDP per capita growth	2.81	-0.10	1.27	-0.17	4.42	1.97	2.85	5.06	4.20	-1.22	6.59	1.83	0.00
Exports of goods and services ^{1,2}	81,131	89,283	95,906	105,878	122,070	133,460	140,189	148,878	149,690	136,030	151,699	158,509	159,260
Agriculture, value added (% of GDP)	5.60	5.97	6.62	7.39	6.91	5.71	5.48	5.56	5.91	5.63	5.30	5.46	5.24
Industry, value added (% of GDP)	27.73	26.92	27.05	27.85	30.11	29.27	28.75	27.81	27.90	26.83	28.07	27.53	26.29
Services, value added (% of GDP)	66.67	67.10	66.33	64.77	62.97	65.02	65.76	66.63	66.18	67.54	66.63	67.01	68.47
Agriculture, value added ^{1,2}	35,204	37,338	39,793	42,104	43,078	43,206	45,281	47,473	50,471	48,899	51,995	54,024	52,759
Industry, value added ^{1,2}	195,712	194,509	198,644	201,256	217,051	221,562	226,368	238,391	248,126	234,064	258,431	262,370	260,192
Services, etc., value added ^{1,2}	426,924	435,055	448,782	452,290	475,016	492,115	512,913	544,431	571,247	582,725	615,414	632,071	642,335
Total population ²	174.50	176.97	179.39	181.75	184.01	186.14	188.13	190.00	191.77	193.49	195.21	196.94	198.66
Working age population (15-64) ²	113.28	115.48	117.57	119.56	121.47	123.34	125.14	126.88	128.59	130.27	131.96	133.66	135.35

1: Purchasing power parity dollars of 2005.

2: In millions.

Source: World Development Indicators (the World Bank 2014).

Table 3: Share of employment by occupational group: all employed workers, 15 years old or more, 2001–09 and 2011–12

(a) All employed workers

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Crafts & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2002	5.93	6.83	8.34	8.90	22.65	6.77	4.48	9.40	25.78	0.92
2003	5.70	7.06	8.10	9.12	22.97	6.73	4.34	9.46	25.57	0.94
2004	5.52	6.90	8.05	9.28	23.28	6.90	4.38	9.19	25.62	0.89
2005	5.88	7.11	8.22	9.34	23.26	6.45	4.79	8.80	25.33	0.83
2006	6.05	7.57	8.25	9.49	23.90	6.12	4.45	9.02	24.30	0.85
2007	5.64	7.81	8.66	9.73	24.28	5.53	4.68	9.42	23.50	0.75
2008	5.89	7.85	8.26	10.20	23.92	5.41	5.02	10.62	21.98	0.86
2009	5.60	8.60	8.23	10.38	24.04	5.21	4.60	10.52	21.92	0.90
2011	4.98	9.44	7.66	9.81	26.15	5.48	5.02	11.38	19.21	0.86
2012	5.61	9.87	7.44	11.13	25.42	4.67	4.77	11.81	18.31	0.97

(b) Youth (15 to 24 years old)

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Crafts & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2002	1.71	3.74	7.71	14.37	24.55	2.02	5.62	9.18	30.23	0.88
2003	1.88	4.10	7.36	14.85	24.60	2.10	5.29	9.09	29.73	1.00
2004	1.83	3.90	7.33	14.78	25.22	2.10	4.95	8.76	30.04	1.08
2005	1.93	3.94	7.58	15.34	25.51	1.87	5.99	8.63	28.28	0.92
2006	1.82	4.09	7.64	15.70	26.72	1.82	5.35	8.92	26.87	1.06
2007	2.08	4.19	8.10	16.62	26.87	1.52	5.83	9.36	24.57	0.84
2008	2.23	3.87	7.85	18.01	27.13	1.54	6.04	10.59	21.73	1.01
2009	1.89	4.59	7.93	18.34	27.43	1.27	5.58	10.50	21.41	1.07
2011	1.72	5.12	6.84	17.65	30.63	1.74	6.13	11.85	17.29	1.04
2012	1.82	5.35	7.19	19.99	28.72	1.39	5.97	12.16	16.14	1.28

(c) Adults (25 to 64 years old)

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Crafts & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2002	7.30	7.94	8.80	7.55	22.44	7.34	4.23	9.71	23.71	0.98
2003	6.90	8.10	8.59	7.75	22.86	7.25	4.19	9.81	23.59	0.97
2004	6.71	7.95	8.51	7.98	23.08	7.47	4.32	9.56	23.56	0.87
2005	7.10	8.18	8.69	7.93	23.02	6.97	4.56	9.09	23.62	0.84
2006	7.30	8.68	8.68	8.12	23.57	6.50	4.33	9.30	22.69	0.83
2007	6.66	8.91	9.06	8.23	23.94	5.88	4.47	9.66	22.43	0.76
2008	6.87	9.01	8.64	8.59	23.44	5.67	4.89	10.86	21.18	0.86
2009	6.56	9.72	8.55	8.81	23.61	5.47	4.47	10.76	21.15	0.89
2011	5.76	10.56	8.02	8.33	25.57	5.59	4.86	11.50	18.96	0.85
2012	6.48	11.01	7.65	9.49	25.07	4.85	4.58	11.98	17.96	0.94

(d) Men

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Crafts & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2002	7.07	5.13	7.71	6.57	20.13	10.77	6.71	16.12	18.22	1.57
2003	6.66	5.12	7.54	6.82	20.39	10.66	6.56	16.17	18.48	1.60
2004	6.50	5.00	7.69	6.80	20.35	10.97	6.59	15.78	18.83	1.50
2005	6.80	5.12	7.91	6.83	20.62	10.35	7.20	15.22	18.53	1.42
2006	7.05	5.55	7.99	6.86	21.04	9.84	6.84	15.68	17.69	1.45
2007	6.49	5.78	8.40	7.08	21.11	8.85	7.17	16.33	17.51	1.28
2008	6.77	5.61	7.99	7.17	20.17	8.63	7.63	18.45	16.13	1.45
2009	6.45	6.10	8.30	7.33	19.90	8.32	7.07	18.39	16.64	1.51
2011	5.68	6.49	7.63	6.96	21.28	8.13	7.73	19.79	14.87	1.44
2012	6.33	6.72	7.44	7.39	20.64	7.36	7.35	20.64	14.50	1.64

(e) Women

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Crafts & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2002	4.44	9.05	9.15	11.93	25.92	1.57	1.56	0.67	35.61	0.08
2003	4.45	9.60	8.83	12.13	26.35	1.60	1.45	0.69	34.81	0.08
2004	4.27	9.33	8.52	12.46	27.04	1.67	1.54	0.74	34.32	0.10
2005	4.71	9.61	8.62	12.50	26.60	1.52	1.75	0.70	33.90	0.09
2006	4.79	10.11	8.58	12.78	27.48	1.46	1.46	0.67	32.57	0.10
2007	4.58	10.35	8.99	13.03	28.25	1.37	1.57	0.78	31.00	0.08
2008	4.78	10.67	8.61	14.03	28.65	1.34	1.73	0.73	29.36	0.11
2009	4.54	11.72	8.14	14.22	29.23	1.32	1.51	0.67	28.53	0.13
2011	4.10	13.17	7.70	13.41	32.30	2.14	1.59	0.78	24.69	0.12
2012	4.70	13.80	7.43	15.81	31.41	1.31	1.54	0.77	23.09	0.14

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Table 4: Share of employment by occupational position: all employed workers, 15 years old or more, 2001–09 and 2011–12

(a) All employed workers

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2001	4.33	63.00	22.72	9.95
2002	4.35	62.90	22.63	10.12
2003	4.28	62.93	22.67	10.12
2004	4.20	63.66	22.27	9.87
2005	4.32	63.65	21.95	10.09
2006	4.53	64.36	21.49	9.62
2007	3.83	65.51	21.41	9.25
2008	4.55	66.39	20.44	8.63
2009	4.36	66.87	20.66	8.11
2011	3.43	68.44	21.20	6.93
2012	3.80	68.89	20.76	6.55

(b) Youth (15 to 24 years old)

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2001	0.79	74.78	9.51	14.92
2002	0.71	74.27	9.97	15.05
2003	0.79	74.06	9.93	15.22
2004	0.79	74.37	9.59	15.25
2005	0.87	75.03	9.47	14.63
2006	0.84	76.11	9.30	13.74
2007	0.69	77.11	9.25	12.94
2008	0.83	78.88	8.80	11.49
2009	0.79	79.30	8.87	11.05
2011	0.60	81.54	8.54	9.32
2012	0.66	81.95	8.81	8.57

(c) Adults (25 to 64 years old)

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2001	5.22	61.33	25.93	7.52
2002	5.32	61.41	25.61	7.66
2003	5.15	61.64	25.57	7.64
2004	5.04	62.50	25.11	7.35
2005	5.14	62.39	24.74	7.72
2006	5.40	63.31	23.96	7.34
2007	4.53	64.53	23.69	7.26
2008	5.33	65.40	22.44	6.83
2009	5.11	66.04	22.57	6.28
2011	3.93	67.41	23.14	5.52
2012	4.36	67.97	22.53	5.14

(d) Men

	Employer	Wage/salaried employee	Self- employed	Unpaid worker
2001	5.61	61.18	27.05	6.16
2002	5.50	61.38	27.07	6.05
2003	5.52	61.11	27.12	6.25
2004	5.37	61.90	26.47	6.25
2005	5.52	62.30	26.03	6.16
2006	5.81	62.71	25.39	6.08
2007	4.89	63.85	25.13	6.13
2008	5.74	64.86	23.75	5.64
2009	5.62	64.92	24.02	5.44
2011	4.27	65.51	25.28	4.94
2012	4.70	65.92	24.63	4.75

(e) Women

	Employer	Wage/salaried employee	Self- employed	Unpaid worker
2001	2.48	65.63	16.46	15.43
2002	2.72	65.05	16.39	15.84
2003	2.55	65.47	16.43	15.54
2004	2.58	66.09	16.47	14.86
2005	2.69	65.49	16.38	15.44
2006	2.81	66.57	16.23	14.39
2007	2.38	67.75	16.39	13.47
2008	2.94	68.44	15.97	12.65
2009	2.68	69.48	16.16	11.68
2011	2.30	72.45	15.62	9.64
2012	2.58	72.93	15.51	8.99

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Table 5: Share of employment by economic sector: all employed workers, 15 years old or more, 2001–09 and 2011–12

(a) All

	Primary activities	Low-tech Industry	High-tech Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2001	20.43	5.59	6.98	6.69	21.57	5.60	3.90	4.97	14.13	10.13
2002	20.13	6.81	6.90	7.26	20.92	5.16	6.80	5.03	13.21	7.79
2003	20.34	6.59	7.14	6.63	21.39	5.14	7.03	5.09	12.92	7.73
2004	20.62	6.72	7.32	6.45	20.96	5.10	6.90	5.09	13.14	7.71
2005	20.03	7.01	7.27	6.59	21.52	5.04	6.96	5.02	12.82	7.73
2006	19.16	6.90	7.19	6.65	21.47	5.06	7.38	5.11	13.44	7.65
2007	18.06	6.83	7.74	6.82	21.72	5.29	7.48	5.06	13.53	7.45
2008	17.34	6.98	7.51	7.55	21.33	5.44	7.83	4.98	13.84	7.20
2009	16.96	6.76	7.19	7.53	21.70	5.28	7.81	5.21	13.77	7.80
2011	15.70	5.69	7.00	8.43	22.73	5.90	8.77	5.51	13.14	7.13
2012	14.66	6.15	7.12	8.75	22.54	5.95	8.85	5.52	13.68	6.77

(b) Youth (15 to 24 years old)

	Primary activities	Low-tech Industry	High-tech Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2001	20.24	7.18	8.17	5.97	25.56	4.39	4.29	3.17	10.89	10.14
2002	20.18	7.42	7.64	6.06	25.45	4.23	6.71	3.12	10.73	8.47
2003	20.71	7.37	7.86	5.69	26.24	4.18	6.78	3.30	9.88	7.98
2004	21.41	7.24	8.45	5.29	25.43	4.04	6.81	3.21	10.54	7.58
2005	20.03	7.78	8.24	5.47	26.91	3.97	7.06	3.21	9.94	7.40
2006	18.94	7.77	8.16	5.56	26.70	4.08	7.45	3.61	10.57	7.17
2007	17.38	7.72	8.92	5.81	27.59	4.29	7.90	3.44	10.53	6.43
2008	15.77	7.63	8.84	6.86	27.69	4.39	8.88	3.31	10.88	5.74
2009	15.57	7.44	8.22	6.88	28.79	4.01	8.59	3.28	11.16	6.07
2011	13.64	6.84	8.16	8.17	29.96	4.53	9.90	3.70	10.25	4.86
2012	12.69	6.94	8.52	8.54	29.77	4.61	9.97	3.74	10.76	4.46

(c) Adults (25 to 64 years old)

	Primary activities	Low-tech Industry	High-tech Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2001	18.81	5.24	6.82	7.06	20.66	6.14	3.83	5.68	15.44	10.33
2002	18.47	6.70	6.89	7.76	19.82	5.58	6.97	5.76	14.27	7.77
2003	18.56	6.43	7.13	7.06	20.23	5.57	7.27	5.78	14.13	7.85
2004	18.78	6.61	7.22	6.91	19.93	5.53	7.07	5.79	14.23	7.93
2005	18.39	6.83	7.19	7.05	20.28	5.50	7.10	5.69	13.99	7.99
2006	17.48	6.74	7.14	7.08	20.37	5.48	7.52	5.67	14.54	7.98
2007	16.75	6.62	7.65	7.20	20.44	5.69	7.53	5.63	14.61	7.88
2008	16.15	6.84	7.39	7.85	19.96	5.85	7.76	5.55	14.90	7.74
2009	15.72	6.61	7.14	7.82	20.30	5.69	7.79	5.83	14.69	8.41
2011	14.77	5.46	6.90	8.63	21.39	6.31	8.67	6.05	14.06	7.77
2012	13.76	5.99	6.97	8.94	21.18	6.36	8.76	6.06	14.59	7.38

(d) Men

	Primary activities	Low-tech Industry	High-tech Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2001	23.67	5.42	9.54	11.04	22.70	8.37	3.77	5.42	6.58	3.50
2002	23.06	5.30	9.59	12.10	21.72	7.83	7.44	5.57	6.44	0.95
2003	23.68	5.08	9.74	11.12	22.22	7.76	7.70	5.52	6.32	0.87
2004	24.25	5.20	10.06	10.86	21.55	7.72	7.48	5.51	6.50	0.88
2005	23.35	5.49	9.97	11.14	22.21	7.55	7.70	5.37	6.30	0.91
2006	22.46	5.47	9.95	11.26	22.04	7.64	8.08	5.53	6.66	0.90
2007	21.39	5.44	10.67	11.52	22.20	7.92	8.04	5.43	6.58	0.80
2008	20.62	5.48	10.33	12.71	21.49	8.16	8.32	5.32	6.77	0.81
2009	20.61	5.21	9.89	12.80	21.75	7.92	8.39	5.52	6.97	0.95
2011	19.08	4.58	9.32	14.23	21.93	8.88	9.18	5.67	6.22	0.92
2012	18.16	4.88	9.56	14.78	21.63	8.99	9.12	5.62	6.36	0.91

(e) Women

	Primary activities	Low-tech Industry	High-tech Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2001	15.77	5.83	3.29	0.43	19.93	1.63	4.09	4.33	25.01	19.68
2002	16.01	8.93	3.13	0.46	19.80	1.42	5.89	4.28	22.70	17.39
2003	15.68	8.70	3.51	0.37	20.24	1.47	6.08	4.51	22.13	17.31
2004	15.63	8.80	3.56	0.38	20.14	1.49	6.10	4.51	22.28	17.11
2005	15.53	9.07	3.60	0.41	20.58	1.62	5.96	4.54	21.69	17.01
2006	14.72	8.82	3.48	0.46	20.71	1.59	6.43	4.54	22.54	16.72
2007	13.58	8.71	3.79	0.49	21.08	1.74	6.73	4.56	22.92	16.41
2008	12.93	8.99	3.71	0.61	21.11	1.79	7.16	4.54	23.35	15.81
2009	12.08	8.83	3.58	0.49	21.64	1.75	7.03	4.81	22.85	16.93
2011	11.10	7.20	3.84	0.52	23.82	1.84	8.22	5.29	22.57	15.61
2012	9.93	7.88	3.81	0.59	23.78	1.83	8.48	5.38	23.61	14.71

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Table 6: Monthly labour earnings at PPP dollars of 2005, 2001–09 and 2011–12

(a) All employed workers, by gender, age group, occupational position, and educational level

	All	Gender		Age		Occupational position			Educational level		
		Men	Women	Youth	Adults	Employer	Wage/salaried employee	Self-employed	Low	Medium	High
2001	539.9	613.1	423.1	270.5	617.1	1746.0	488.2	461.1	325.2	589.7	1822.1
2002	533.6	604.7	422.3	266.6	609.6	1734.8	487.7	436.8	317.1	569.2	1764.8
2003	503.8	573.6	395.7	255.2	571.5	1633.9	459.6	417.8	305.1	520.7	1590.4
2004	498.4	568.7	391.8	258.0	563.9	1607.0	457.2	413.2	304.1	506.9	1543.4
2005	515.8	584.4	412.2	270.1	582.3	1631.1	476.0	414.7	312.4	512.8	1560.4
2006	546.4	619.2	439.2	279.6	614.9	1756.7	501.5	433.1	329.2	529.6	1598.3
2007	569.1	645.7	456.8	303.8	634.0	1768.2	525.1	492.5	353.3	538.9	1428.5
2008	580.3	658.0	467.2	310.3	644.9	1733.0	538.2	468.2	358.8	542.1	1465.9
2009	593.9	674.3	479.1	319.1	658.0	1767.1	556.9	471.8	360.9	545.8	1474.9
2011	641.3	720.5	528.1	359.2	700.1	1987.4	598.8	569.9	403.7	572.3	1477.6
2012	680.1	767.9	556.1	373.4	739.0	2105.5	624.3	615.6	425.6	607.3	1618.7

(b) By economic sector

	Primary activities	Low-tech Industry	High-tech Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2001	306.3	418.6	687.1	402.3	531.5	673.7	1225.1	925.0	654.8	217.4
2002	312.0	382.0	690.4	420.1	501.1	678.7	932.6	900.4	660.7	176.8
2003	319.2	356.9	650.5	386.4	458.0	640.1	851.2	829.1	641.4	170.2
2004	329.5	350.1	623.9	377.7	458.8	667.8	808.8	861.3	618.8	170.4
2005	331.4	362.8	653.4	408.1	474.8	648.3	845.2	873.1	654.2	177.9
2006	353.2	412.4	670.9	423.8	501.4	668.3	867.8	960.7	676.6	190.6
2007	374.5	406.3	681.5	454.4	522.7	710.9	876.1	997.4	697.8	201.8
2008	391.1	427.2	691.7	466.3	528.2	698.9	879.5	1026.2	708.1	208.4
2009	397.2	420.0	714.3	472.0	521.2	746.2	925.2	1079.9	740.2	220.3
2011	438.8	456.8	738.9	536.2	558.6	730.5	983.4	1086.0	802.3	247.2
2012	481.5	487.8	790.4	596.9	594.0	766.6	1025.8	1093.3	819.5	269.8

(c) By occupational group

	Management	Professionals	Technicians & associate professional	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Crafts & related trades	Plant & machine operators, and assemblers	Elementary	Armed forces
2002	1658.5	1500.1	723.8	488.7	344.4	408.5	421.4	368.1	188.3	977.7
2003	1520.6	1373.7	685.1	454.2	325.8	417.5	397.4	359.0	184.3	872.5
2004	1514.2	1336.2	699.4	455.8	321.4	426.1	410.2	358.5	188.9	881.0
2005	1543.5	1362.6	703.7	461.9	330.6	426.5	404.7	375.5	197.7	913.3
2006	1616.0	1410.4	743.0	481.0	347.8	444.8	429.4	388.8	210.0	980.4
2007	1637.3	1411.4	783.1	488.1	378.4	477.6	470.3	413.3	226.1	1020.0
2008	1601.7	1458.2	811.5	496.9	369.7	475.7	484.4	427.5	232.0	1106.6
2009	1685.6	1477.3	789.1	515.2	373.1	487.6	478.1	440.6	242.8	1179.7
2011	1775.8	1481.1	833.4	560.9	432.2	508.8	534.5	486.8	278.2	1233.5
2012	1807.0	1498.2	890.5	559.4	449.9	583.7	571.4	517.2	295.2	1285.8

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Table 7: Hourly wage in main occupation at PPP dollars of 2005, 2001–09 and 2011–12

(a) All employed workers, by gender, by age group, by occupational position, and educational level

	All	Gender		Age		Occupational position			Educational level		
		Men	Women	Youth	Adults	Employer	Wage/salaried employee	Self-employed	Low	Medium	High
2001	3.35	3.59	2.98	1.77	3.78	10.11	3.05	2.93	1.96	3.70	11.59
2002	3.30	3.51	2.96	1.75	3.71	9.71	3.02	2.88	1.92	3.53	11.08
2003	3.24	3.47	2.88	1.73	3.62	9.63	2.98	2.76	1.91	3.31	10.63
2004	3.19	3.43	2.82	1.71	3.56	9.85	2.92	2.73	1.91	3.30	9.87
2005	3.30	3.50	3.00	1.83	3.67	9.66	3.03	2.85	1.95	3.33	10.08
2006	3.52	3.75	3.18	1.90	3.90	10.45	3.19	3.06	2.12	3.37	10.37
2007	3.77	4.02	3.40	2.13	4.14	11.02	3.45	3.48	2.34	3.61	9.37
2008	3.67	3.93	3.29	2.04	4.01	10.29	3.36	3.24	2.24	3.40	9.45
2009	3.83	4.08	3.49	2.14	4.20	11.07	3.53	3.31	2.28	3.50	9.72
2011	4.87	5.26	4.30	2.84	5.27	13.00	4.61	4.41	3.04	4.46	10.99
2012	5.09	5.47	4.56	2.94	5.50	13.73	4.80	4.55	3.09	4.56	12.36

(b) By economic sector

	Primary activities	Low-tech Industry	High-tech Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2001	1.8	2.6	4.1	2.3	3.1	3.9	7.9	6.0	4.5	1.5
2002	1.8	2.3	4.0	2.4	2.9	3.8	5.8	5.7	4.6	1.3
2003	1.9	2.3	4.0	2.3	2.8	3.8	5.9	5.4	4.5	1.4
2004	2.1	2.2	3.7	2.2	2.8	4.2	5.1	5.7	4.3	1.3
2005	2.0	2.3	3.9	2.4	2.9	3.8	5.3	5.7	4.8	1.4
2006	2.4	2.5	4.0	2.5	3.1	3.9	5.6	6.3	4.8	1.5
2007	2.4	2.7	4.2	3.0	3.3	4.4	5.7	6.7	5.1	1.7
2008	2.5	2.6	4.2	2.7	3.1	4.1	5.6	6.8	5.0	1.6
2009	2.5	2.7	4.3	2.7	3.1	4.2	6.1	6.9	5.5	1.7
2011	3.4	3.2	5.5	4.0	4.0	6.0	7.7	8.3	6.2	2.3
2012	3.5	3.6	5.8	4.1	4.1	5.3	8.4	8.0	6.6	2.5

(c) By occupational group

	Management	Professionals	Technicians & associate professional	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Crafts & related trades	Plant & machine operators, and assemblers	Elementary	Armed forces
2002	9.4	9.9	5.0	3.1	2.1	2.4	2.4	2.1	1.3	5.8
2003	9.1	9.4	4.9	3.0	2.1	2.5	2.4	2.1	1.3	5.1
2004	9.4	9.0	4.8	3.0	2.0	2.6	2.4	2.2	1.3	5.0
2005	9.2	9.2	4.9	3.0	2.1	2.6	2.4	2.2	1.4	5.6
2006	9.4	9.5	5.1	3.1	2.3	2.9	2.5	2.3	1.6	5.7
2007	10.1	9.7	5.5	3.3	2.5	3.1	2.7	2.6	1.8	6.5
2008	9.5	9.8	5.5	3.2	2.3	3.1	2.8	2.5	1.7	6.5
2009	10.7	9.8	5.4	3.4	2.4	3.3	2.9	2.6	1.8	6.8
2011	11.8	11.3	7.0	4.7	3.1	4.4	3.8	3.6	2.4	9.8
2012	12.9	11.6	7.1	4.5	3.3	4.0	3.9	3.7	2.5	8.5

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Table 8: Share of persons in the labour force by educational levels:
population 15 years old or more, 2001–09 and 2011–12

	Low	Medium	High
2001	63.47	28.31	8.22
2002	61.41	30.02	8.57
2003	59.35	31.77	8.88
2004	57.87	33.05	9.08
2005	56.12	34.44	9.44
2006	53.99	35.82	10.18
2007	52.28	34.95	12.77
2008	50.08	37.25	12.67
2009	48.34	38.27	13.39
2011	45.97	39.03	15.00
2012	44.47	40.04	15.49

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Table 9: Unemployment rate by educational levels:
population 15 years old or more, 2001–09 and 2011–12

	Low	Medium	High
2001	8.84	11.81	4.19
2002	8.25	12.20	3.96
2003	8.75	12.90	4.50
2004	7.76	12.08	4.02
2005	8.12	12.43	4.55
2006	7.19	11.31	4.21
2007	6.72	11.27	4.80
2008	5.87	9.62	4.37
2009	7.16	10.97	4.57
2011	5.85	8.73	3.88
2012	5.31	7.96	3.76

Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).