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

Bolivia country study

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**Abstract:** During the 2000s Bolivia experienced moderate economic growth and improved all labour market indicators. The economy suffered a slowdown as a consequence of the international crisis of 2008, but Bolivia sustained positive growth rates during that episode. The unemployment rate fell between 2000 and 2012. The composition of employment by occupational groups, occupational positions, economic sectors, and educational levels improved, and the share of registered workers increased. All poverty and inequality indicators decreased substantially between 2000 and 2012. The only negative impact of the international crisis of 2008 was an interruption in the declining trend of unemployment.

**Keywords:** Bolivia, 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 individuals. 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 Bolivia 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 Bolivia 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 Encuesta Continua de Hogares (ECH) for the years 2000 and 2003–04 and the Encuesta de Hogares (EH) for the years 2001, 2002, and 2005 to 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 4,857 households and 20,815 persons in 2000 to 8,415 households and 31,935 persons in 2012 (Table 1). Despite the increase in the sample size, the Bolivian household surveys have always been representative of the total population of the country.

For this study, we processed the microdata from Bolivia 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, 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 persons over the economically active population. A person is unemployed if s/he is 15 years old or more and during the reference period (one month in the Bolivian 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:<sup>1</sup> 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. Bolivia has made use of the *Clasificación Boliviana de Ocupaciones* (CBO) whose main groups match the classification system endorsed by the authors. 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.<sup>2</sup> 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 levels 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 national lines for moderate and extreme poverty. We compute the poverty headcount ratio for each. We also calculate the share of working poor households (those with at least one member employed and a per capita family income below the moderate poverty line), and the poverty rate according to the international poverty lines of 4 dollars-a-day and 2.5 dollars-a-day. Income inequality is calculated using the Gini coefficient of per capita household income and labour earnings.

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

<sup>2</sup> Most other country studies distinguish between low-tech and high-tech industries. The Bolivian household surveys do not allow this differentiation and statistics are presented for the entire industry sector.

### 3 Empirical results

*Bolivia experienced moderate economic growth from 2000 to 2012. The economy suffered a slowdown as a consequence of the international crisis of 2008, but GDP and GDP per capita growth rates were nonetheless positive in 2009 (Figures 1 and 2).*

During the period 2000 to 2012, Bolivia experienced moderate economic growth by Latin American standards. GDP per capita increased by 30.5 per cent, while the average for the eighteen Latin American countries was 36.2 per cent during the same period. GDP (measured at PPP dollars of 2005) grew by 61.2 per cent, and GDP per employed person rose by 16.8 per cent. The annual growth rate of GDP per capita was 2.1 per cent, and it varied from a minimum of -0.4 per cent in 2001 to a maximum of 4.6 per cent in 2008 (Table 2). Most of the GDP growth took place in the second half of the period. At the beginning of the 2000s Bolivia experienced low economic growth. Between 2000 and 2002, economic activity was sluggish due to a real exchange rate appreciation and a series of negative shocks such as the intensified coca eradication, the devaluation in Brazil, and the crisis in Argentina (IMF 2006). GDP growth averaged 2.2 per cent a year and GDP per capita growth rate was only 0.2 per cent annually. Starting in 2003, economic activity recovered, led by hydrocarbon and mineral exports. There was an increase in both export volumes—the result of large investments in hydrocarbon and mining sectors—and commodities prices. The royalty rate paid on hydrocarbon production also increased due to the new Hydrocarbon Law of 2005, which led to a large increase in fiscal revenues. Moreover, Bolivia benefited from a significant reduction in its external public debt and the increase of remittances by Bolivian nationals who had migrated abroad (Cali and Jemio 2010).<sup>3</sup> The large accumulation of international reserves and significant fiscal surpluses contributed to turn Bolivia into a net external creditor (IMF 2010). The international crisis of 2008 led to an important reduction in export prices causing a drop in export incomes, fiscal revenues, and economic activity (Jemio and Nina 2010). However, the impact of the Great Recession on Bolivia was milder than in other Latin American countries. In fact, Bolivia was one of few countries in Latin America that sustained positive growth during the global crisis of 2008. GDP growth slowed from 6.2 per cent in 2008 to 3.4 per cent in 2009, and GDP per capita growth from 4.5 per cent to 1.7 per cent. Prudent fiscal policies during the boom allowed saving a sizable portion of the hydrocarbon revenue, improving the resilience of the economy to adverse external shocks (IMF 2014). The government implemented a moderately countercyclical policy to support domestic demand during the international crisis. Moreover, the financial system was barely affected due to its limited integration with international capital markets (IMF 2010). The reduction in commodity prices was only temporary, allowing the recovery of the growth rates. By 2011, GDP and GDP per capita growth rates surpassed their pre-crisis levels.

The share of the industry sector in the economy increased, while the shares of the service sector and agriculture diminished between 2000 and 2012. The share of the industry sector increased from 29.8 per cent in 2000 to 38.7 per cent in 2012 led by the increase in the international price of Bolivian exports, such as minerals and hydrocarbons (Table 2). The share of the service sector, the largest in the Bolivian economy, diminished during the period from 55.2 per cent in 2000 to 48.3 per cent in

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<sup>3</sup> Bolivia was part of the joint IMF/World Bank Heavily Indebted Poor Countries programme that provided 100 per cent debt relief in 2006.

2012, while the agricultural sector's share fell from 15.0 per cent in 2000 to 13.0 per cent in 2012. The international crisis of 2008 led to a slowdown in the growth rate of the industry sector through the fall in the price of Bolivian main export products. Between 2008 and 2009, the value added of the industry sector grew by 2.9 per cent, while it had grown by 10.6 per cent in 2008. Starting in 2010, the sector grew at increasing rates. The agricultural sector exhibited a negative growth rate in its value added in 2010, but recovered immediately. Finally, the service sector was not affected by the international crisis.

*The 2000–12 period witnessed a drop in the unemployment rate, which was not tightly correlated to GDP growth. The unemployment rate fell for all population groups over the period. The international crisis of 2008 led to an interruption of the overall downward trend in the unemployment rate (Figure 3).*

The unemployment rate (measured as the ratio of unemployment to labour force) decreased from 5.9 per cent in 2000 to 3.9 per cent in 2012. The decline in the unemployment rate was explained both by the entry of persons into the labour market (the number of persons in the labour force grew by 1,199,094 from 2000 to 2012) which mimicked the upward trend of the working age population (Table 2), and by the reduction in the number of unemployed people (reduction of 24,909 persons). The reduction in the unemployment rate was not monotonic over the period. The unemployment rate suffered an initial increase followed by a reduction between 2001 and 2003–04, while GDP was increasing, increased, and remained at the highest level of the period between 2005 and 2007 (around 6.8 per cent) when GDP was growing rapidly, and declined in the following years with a small interruption during the international crisis of 2008 (17,122 new unemployed people between 2008 and 2009). The increase in the unemployment rate between 2005 and 2007 was related to the export-based growth process of Bolivia, as the mining and hydrocarbon sectors—main export products of the country—are capital intensive (Muriel and Jemio 2010).

Between 2000 and 2012, the unemployment rate decreased for all population groups. The unemployment rate decreased from 9.8 per cent in 2000 to 5.9 per cent for young workers. The reduction was smaller for adult workers, from 4.5 per cent in 2000 to 3.4 per cent in 2012. The increase in the unemployment rate in the middle years of the period hit workers aged fifteen to twenty-four harder than adult workers. The youth unemployment rate grew by 3.1 percentage points between 2000 and 2007, when it reached its maximum value (12.9 per cent). The adult unemployment rate increased by 1.3 percentage points from 2000 to 2005 (the year of the largest adult unemployment rate: 5.7 per cent). The unemployment rate of men decreased from 4.5 per cent in 2000 to 2.9 per cent in 2012 while for women the reduction was larger, from 7.6 per cent in 2000 to 5.1 per cent in 2012. The increase in the unemployment rate around 2005–07 hit men more than women. Between 2000 and 2005 (when the unemployment rate of both gender groups reached their maximums), the unemployment rate increased by 1.4 percentage points for men and by 0.8 percentage points for women.

The unemployment rate remained essentially unchanged during the international crisis of 2008 (rise of 0.2 percentage points). Adult workers and men exhibited an increase in their unemployment rates of 0.8 and 0.6 percentage points respectively. Young workers enjoyed a reduction (drop of 1.4 percentage points), while the unemployment rate of women remained largely unchanged (reduction of 0.2 percentage points). The aggregate unemployment rate and that of adult workers and men recovered the downward trend immediately and by 2011 they were below the pre-crisis level.



*The composition of employment by occupational group improved between 2000 and 2012 as workers moved from elementary and agricultural, forestry and fishery occupations to better paying occupations like management and professional jobs. All demographic groups—young and adult workers, men and women—benefited from the improvement in the occupational composition of employment over the period. The international crisis of 2008 did not affect the improving trend (Figure 4).*

The share of the following occupations shrank between 2000 and 2012: agricultural occupations (drop of 9.6 percentage points); crafts and trades occupations (drop of 2.9 percentage points); and technical and associate professional occupations (drop of 1.7 percentage points). The share of the following occupations grew: professional (increase of 6.7 percentage points); services and sales workers (increase of 4.3 percentage points); and plant and machine operators (increase of 3.1 percentage points). The share of the other occupational groups remained largely unchanged. These changes in the occupational composition of employment can be interpreted as an improvement since low-earning occupations (agricultural, elementary, and services and sales occupations) reduced their share in total employment by 5.8 percentage points between 2000 and 2012, while high-earning occupations (management, armed forces, and professionals) gained share in total employment (increase of 7.0 percentage points). These changes resulted in a slight reduction in the share of mid-earning occupations (technicians and associated professionals, plant and machine operators, clerical, and craft and related trade jobs) in total employment (Tables 3 and 6).

Improvements in the occupational composition of employment between 2000 and 2012 were observed for young and adult workers, and for men and women. The decrease in the rate of working in low-earning occupations in total employment was larger among adults compared to young workers (drop of 6.8 percentage points for adults versus 1.8 for youth) as was the increase in the rate of working in high-earning occupations (8.4 and 1.7 percentage points respectively for adults and youth). When the analysis is broken down by gender, women experienced a larger reduction in the share of employment in low-earning occupations compared to men (6.8 and 4.9 percentage points respectively). The increase in the rate of working in high-earning occupations in total employment was also larger for women in comparison to men (8.6 and 5.7 percentage points respectively).

The international crisis of 2008 did not affect adversely the improvement in the composition of employment by occupational group. Between 2008 and 2009 the share of low-earning occupations fell in the aggregate and for all population groups, while the share of high-earning occupations increased overall and for young, adult workers, and women. For men, though, a reduction in the share of high-earning occupations resulted in an increase in the share of mid-earning occupations during the international crisis. That share reached and surpassed the pre-crisis level by 2011.

*The employment structure by occupational position improved from 2000 to 2012 as the share of wage/salaried employees and employers in total employment increased and the share of self-employed and unpaid workers decreased. The improving trend in the employment structure by occupational position was experienced by all population groups. The international crisis of 2008 did not affect adversely the improvement in the structure of employment by occupational position overall, for adult workers, men, and women, but led to a worsening for youth (Figure 5).*

The structure of employment by occupational position changed over the period. In 2000 the largest category was the self-employed (44.7 per cent of total employment) followed by wage/salaried employees (33.1 per cent) (Table 4). By 2012, the position of these categories reversed and the

largest was wage/salaried employees (40.7 per cent of total employment) followed by the self-employed (38.3 per cent). The share of unpaid workers decreased over the period from 20.1 per cent of employed persons in 2000 to 14.2 per cent in 2012, while the share of employers increased from 2.1 per cent in 2000 to 6.8 per cent in 2012. These changes in the structure of employment by occupational position can be interpreted as an improvement due to the fall in the share of low-earning categories (self-employment and unpaid workers) and the increase in the share of high-earning categories (wage/salaried employees and employers).

The employment structure by occupational position improved between 2000 and 2012 for all population groups (young and adult workers, men and women). From 2000 to 2012, low-earning categories (unpaid workers and self-employed) shrank in percentage terms for young and adult workers (11.3 and 13.2 percentage points respectively) while the percentages of youth and adults in high-earning categories (wage/salaried employees and employer) increased, indicating an improvement in their employment structure by occupational position over time. For both men and women, the employment composition over the period from 2000 to 2012 also improved: the share of low-earning categories in total employment decreased for both groups of workers (12.7 percentage points for men and 11.8 for women).

The international crisis of 2008 did not reverse the improvements that had been taking place for the employed labour force overall, and for adults, men, and women, but led to a worsening for young workers. The share of wage/salaried employees increased between 2008 and 2009 while the share of unpaid workers and self-employed fell. Only one occupational position indicator—the share of employers in total employment—moved in the worsening direction in 2009, but it immediately began to improve again. When we disaggregate, we find that the improving trend in the structure of employment by occupational position continued without pause in 2009 for adult workers, men, and women. For young workers, though, there was a break in the tendency described before. An increase in the share of self-employed workers and a decrease in the share of wage/salaried employees took place between 2008 and 2009 (increase of 5.0 percentage points and reduction of 2.6 percentage points respectively). In the context of a slowdown in the economic activity, young workers in Bolivia resorted to self-employment as a strategy to continue being employed. The share of self-employed workers was again declining by 2012.

*The employment composition by economic sector improved over the course of the period studied overall and for all population groups. The international crisis of 2008 did not interrupt the decreasing trend in the share of employment in low-earning sectors, but led to a reduction in the share of high-earning sectors in total employment and an increase in the share of employment in mid-earning sectors (Figure 6).*

The period from 2000 to 2012 witnessed a reduction (from 62.1 per cent to 55.5 per cent) in the share of workers in low-earning sectors (domestic workers, primary activities, and commerce). Workers employed in the mining and hydrocarbon subsectors are included in the primary activities sector in our classification. The increase in the employment share of the capital-intensive mining and hydrocarbon subsectors over the period in Bolivia was counteracted by the reduction in the employment share of the labour-intensive agricultural subsector. Interestingly, besides the reduction in the share of low-earning sectors in total employment over the period, these sectors accounted for more than half of the total employed population of the country by 2012. There was, during the same period, an increase (from 10.9 per cent to 16.4 per cent) in the share of high-earning sectors (public

administration, skilled services, and utilities and transportation) in the total. These changes resulted in a slight increase in the share of mid-earning sectors (industry, construction, education and health) in total employment (Tables 5 and 6).

The employment composition by economic sector improved between 2000 and 2012 for young and adult workers, men and women, as they moved from low-earning sectors to high-earning sectors. For young workers, the share in low-earning sectors dropped from 66.3 per cent in 2000 to 62.5 per cent in 2012. For adult workers, the share in low-earning sectors fell from 58.8 per cent in 2000 to 51.6 per cent in 2012. At the other end of the scale, the share of young and adult workers in high-earning sectors increased from 7.4 per cent in 2000 to 12.9 per cent in 2012 and from 12.7 per cent to 18.3 per cent respectively. For both genders, the share working in low-earning sectors fell: from 52.8 per cent in 2000 to 46.5 per cent in 2012 for men, and from 74.0 per cent to 67.0 per cent for women. The share of high-earning sectors in total employment grew from 16.0 per cent to 21.8 per cent for men and from 4.4 per cent to 9.4 per cent for women.

The international crisis of 2008 did not halt the downward trend in the share of low-earning sectors overall and for all population groups, but led to a reduction in the share of high-earning sectors in total employment that impacted mainly young workers and resulted in an increase in the share of mid-earning sectors in total employment. Between 2008 and 2009 the share of low-earning sectors continued with the downward trend and fell by 2.8 percentage points, while the share of high-earning sectors also suffered a reduction of 0.5 percentage points. Young workers experienced a fall in the share of high-earning sectors of 1.7 percentage points during the international crisis, while for adult workers that share remained almost unchanged. For men and women the decline in the share of high-earning sectors between 2008 and 2009 was 0.5 and 0.6 percentage points respectively. Adults and men surpassed their pre-crisis share of high-earning sectors in total employment by 2011, while for young workers and women that happened in 2012.

*The educational level of the Bolivian employed population improved steadily over the period for all population groups, and especially among young workers. The improving trend was not impacted adversely by the international crisis of 2008 (Figure 7).*

The share of employed workers with low educational levels (eight years of schooling or less) dropped from 60.1 per cent in 2000 to 43.2 per cent in 2012, while the share of workers with medium and high educational levels (nine to thirteen years of schooling and over thirteen years of schooling) grew from 26.6 per cent in 2000 to 35.1 per cent in 2012 and from 13.4 per cent to 21.8 per cent respectively.<sup>4</sup> 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

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<sup>4</sup> The most frequent value of years of education for employed workers in Bolivia was 5 between 2000 and 2002 (around 12.4 per cent of employed workers had five years of education) and 12 from 2003 to 2012 (around 16.5 per cent of employed workers had twelve years of education).

employment structure by educational level implied an increase in the share of workers that tend to have high levels of earnings and a decline in the share of workers with low earnings' levels.<sup>5</sup>

The educational level of the employed population improved between 2000 and 2012 for all groups and especially for young workers. For the youth population, the share of employed persons with low educational levels dropped by nearly half, from 54.6 per cent in 2000 to 28.5 per cent in 2012 (a drop of 26.1 percentage points). The share of employed youth with medium and high educational levels grew by 21.3 and 4.8 percentage points respectively. As expected, the reduction in the share of adult employed workers with low educational levels was smaller compared to young workers, only 17.0 percentage points over the period. There was, over the period, an increase in the share of adult employed persons with medium and high educational levels of 6.7 percentage points and 9.3 percentage points respectively. The improvement in the educational level of the employed population was larger for women compared to men. The reduction in the share of employed workers with low educational levels was 18.1 percentage points for women and 15.9 for men, while the share of workers with high levels of education climbed by 10.1 percentage points for women and 7.1 for men.

The pattern of improvement in the level of education of the employed population in Bolivia continued even during the international crisis of 2008, overall and for all population groups.

*The overall share of workers registered with the social security system increased between 2000 and 2012, though erratically. The improvement also took place among all population groups, especially adult workers and women. The international crisis of 2008 did not affect the upward trend of the registration rate (Figure 8).*

The social security system in Bolivia is composed of the short-term Mandatory Social Insurance (*Seguro Social Obligatorio*) and the Long-Term Social Insurance (*Seguro Social de Largo Plazo*). The short-term Mandatory Social Insurance covers health, life, and work contingencies. It provides medical services (attention for the affiliated members and their families), as well as in-kind and cash transfers. The Long-Term Social Insurance covers disability, old age, and death, and it is an individual capitalization system. The affiliation to this insurance is mandatory for all dependent workers and voluntary for independent workers. Besides the individual capitalization system, a non-contributory universal pension—*Bonosol*—was implemented in the 1990s for all Bolivians aged 65 or more. In 2008, the *Bonosol* was replaced by the *Renta Dignidad*, which covers all Bolivians aged 60 or more with reduced benefits for those receiving any other pension (Monterrey Arce 2013).

Social security records show an increase in the percentage of employed workers registered with the contributory scheme of the system between 2000 and 2012, from 12.3 per cent in 2000 (452,194 registered workers) to 18.1 per cent in 2012 (542,843 registered workers). The changes were erratic. From 2000 to 2002 the percentage of workers registered with the social security system decreased; it increased between 2002 and 2005 and fell again up to 2008. From 2009 onwards the share of

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<sup>5</sup> 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 on the wage gap by educational groups and the unemployment rate of each educational level. We introduce a discussion about the role of these factors in Bolivia in the paragraph on labour earnings.

employed workers registered with the social security system increased steadily. Thus, the employed population in Bolivia has been largely informal (unregistered)—just 14.5 per cent registered over the period. Among the reasons for workers not contributing to the individual capitalization system, the ignorance about how the system works and the lack of economic resources are the most important (Wanderley 2009).

The rate of registration with the social security system increased for all population groups (young and adult workers, men, and women). The share of registered workers increased from 3.8 per cent in 2000 to 7.5 per cent in 2012 for young workers and from 15.6 to 21.6 per cent for adults. The increase in the share of workers registered with the social security system over the period was larger for women compared to men. The percentage of workers registered increased from 10.1 to 16.3 per cent between 2000 and 2012 for women, while for men the increase was from 14.0 in 2000 to 19.4 per cent in 2012.

The overall percentage of workers registered with the social security system continued to grow during the international crisis of 2008. Disaggregating, the rate of registration also continued to increase for adult workers, men, and women. For young workers, though, the rate of registration slightly decreased in 2009. This fact is in accord with our previous evidence of increase in the share of self-employment—an employment category where the registration with social security is typically low—among young workers during the international crisis.<sup>6</sup> By 2011 it recovered the pre-crisis level and resumed the upward trend.

*Labour earnings increased between 2000 and 2012. Within the period, there was a reduction in the early years of the period, a steady increase from 2002 to 2006, a fall in 2007, and an upward trend in the following years. Workers were not affected negatively by the 2008 crisis. Labour earnings increased overall, for young and adult workers, and for men and women. The evidence of earning changes by employment categories over the period indicates that labour earnings increased for low-earning categories and tended to decrease for high-earning categories (Figure 9).*

Average monthly earnings, expressed in dollars at 2005 purchasing power parity (PPP), increased by 31.8 per cent, from US\$447 in 2000 to US\$589 in 2012 (Table 6). Labour earnings fell at the beginning of the period—between 2000 and 2001—and rose in most years after that. The upward trend was interrupted in 2007 when labour earnings fell by 10.1 per cent. In 2008 real earnings resumed their upward trend. Starting in 2006, the government implemented continuous increases in the minimum monthly earning. Real earnings increased even more than the growth in minimum wages and the percentage of workers earning less than one minimum monthly earning decreased, while the percentage of workers earning more than three times the minimum monthly earning increased (Canavire-Bacarreza and Rios-Avila 2015).

Disaggregating, we find that men and women, and young and adult workers all increased their labour earnings between 2000 and 2012. Labour earnings grew for men and women between 2000 and 2012 by 34.0 per cent and 29.9 per cent respectively. The trend in their labour earnings reflected the erratic overall time path, with reductions in 2000–01, gains from 2002 to 2006, a decrease in

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<sup>6</sup> The average registration rate of self-employed workers during the period 2000–12 was only 2.51 per cent, while it was 32.8 per cent for wage/salaried employees.

2007, and increases for both groups thereafter. Labour earnings growth over the period 2000–12 was larger for young workers compared to adult workers. The gain was 45.3 per cent for youth and 29.3 per cent for adults. Both age groups suffered an income reduction by the mid-2000s. For young workers the reduction took place from 2005 to 2007 (drop of 15.5 per cent), while for adults the reduction occurred in 2007 (drop of 10.0 per cent).

Mean earnings rose between 2000 and 2012 in low-earning categories and tended to fall in high-earning categories. Among occupational groups, agricultural, forestry and fishery workers, workers in elementary occupations, and services and sales workers had an average increase in their labour earnings of 63.2 per cent over the period. Workers in management, armed forces, and professionals suffered an earning reduction of 26.8 per cent on average. When the working population is broken down by occupational positions, the self-employed had an increase in labour earnings of 72.9 per cent, while employers and paid employees increased slightly their labour earnings over the period by 1.7 and 1.2 per cent respectively. Domestic workers and workers from primary activities and commerce increased their labour earnings over the period by 41.1 per cent on average. On the contrary, workers in public administration, skilled services, and utilities and transportation suffered a loss of 12.0 per cent earnings over the period 2000–12. Finally, labour earnings of workers with high educational levels fell by 23.8 per cent, while workers with medium and low levels of education had an increase in their labour earnings of 36.6 and 73.1 per cent respectively.

The evidence of falling labour earnings for workers with high educational levels and labour earnings increases for workers with medium and low educational levels 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 employ workers with high and medium educational levels, such as management and professional occupations, public administration, skilled services, and utilities and transportation sectors, and a reduction in the share of occupations and sectors that employ workers with low educational levels, such as elementary and agricultural occupations, and domestic workers and primary activities sectors. This evidence indicates that the demand for workers with high and medium educational levels relative to those with low educational levels increased between 2000 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 Bolivian 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 levels, with a larger reduction for workers with medium levels of education (Table 9).

Even during the international crisis of 2008, labour earnings continued to grow overall and for all demographic groups. However, some employment categories were impacted adversely by the 2008 crisis. Among occupational groups, workers in the armed forces, agricultural, forestry and fishery

workers, professionals, management workers, and workers in elementary occupations were affected negatively by the international crisis of 2008. The largest percentage reductions were for workers in the armed forces, agricultural, forestry and fishery workers, and professional (drop in labour earnings of 23.7 per cent, 20.4 per cent, and 17.4 per cent between 2008 and 2009 respectively). Workers in agricultural, forestry and fishery, and elementary occupations surpassed the pre-crisis level of incomes in 2011. Workers in management did the same in 2012, while professionals and workers in the armed forces never recovered their pre-crisis levels of income. Among economic sectors, workers from skilled services, public administration, primary activities, domestic workers, and workers from education and health were affected negatively by the international crisis of 2008. The main losers were workers from the skilled services and public administration sectors (drop in labour earnings of 17.6 and 13.5 per cent between 2008 and 2009 respectively). Workers from primary activities, and education and health surpassed the pre-crisis level of earnings by 2011. Workers from skilled services did the same in 2012, while workers from public administration and domestic workers never recovered their pre-crisis levels of earnings. Among educational groups, workers with high educational levels were the only ones affected adversely by the international crisis of 2008. Their labour earnings decreased by 12.3 per cent between 2008 and 2009 and never recovered their pre-crisis level.

*Poverty indicators exhibited important reductions between 2000 and 2012 for all poverty lines used, with ups and downs over the period. The downward trend was not affected by the international crisis of 2008 (Figure 10).*

The moderate poverty rate (measured by the country's official poverty line) fell from 65.0 per cent in 2000 to 39.1 per cent in 2012 (drop of 945,498 in the number of moderately poor persons); the extreme poverty rate dropped from 42.2 per cent to 18.7 per cent (drop of 1,332,796 in the number of extremely poor persons); the percentage of working poor (defined as the proportion of persons in the population living in poor households where at least one member works) decreased from 56.2 per cent to 31.6 per cent over the same period. The analysis of trends based on the 2.5- and 4-dollars-a-day PPP international poverty lines shows the same trends. All of these indicators moved with ups and downs in the first half of the period analysed and decreased steadily from 2007 onwards in the case of the official poverty lines, and from 2005 onwards using the international poverty lines. The downward trends in the rates of poverty and working poor were not interrupted by the international crisis of 2008. In 2012 the moderate poverty rate and the percentage of working poor continued to decrease but at a slower pace, while the extreme poverty rate and the measures calculated using the international poverty lines showed a slight increase.

The erratic evolution of poverty indicators in the first half of the period studied has been attributed to high income inequality—high inequality slowed poverty reduction in good years and accelerated poverty in the bad years—and to the growth process based on hydrocarbons, a sector with a small share of total employment (Weisbrot and Sandoval 2007; Gray Molina and Yañez 2009). In the second half of the 2000s, labour incomes and incomes from government transfers during the international crisis explained the increase in household total income (Figure 11). The large availability of resources from hydrocarbon rents allowed the government to expand the social safety net through cash transfers programmes such as *Bono Juancito Pinto*, *Bono Juana Azurduy*, the non-contributory pension *Renta Dignidad*, as well as other social programmes, such as the under-nourishing programme *Desnutrición Cero*, and the literacy programme *Yo sí puedo*. However, Bolivian cash transfers programmes had a small impact on poverty reduction (Vera Cossio 2011; Yañez et al.

2011). Some of the reasons for this include that: the programmes are not targeted to the poor (they are universal), generating significant leakages to the non-poor (Paz Arauco et al. 2013); the transfers are too small—only 4.0 per cent of the average annual consumption of a Bolivian household—(McGuire 2013); and they are poorly complemented by effective public provision of health and education, and implemented by a state with low administrative capacity (McGuire 2013).

*Household per capita income and labour earning inequality decreased between 2000 and 2012 but moved erratically over the period. The reducing trend was not interrupted by the international crisis of 2008 (Figure 12).*

Household per capita income and labour earning inequality decreased while GDP increased over the period. The Gini coefficient of household per capita income fell from 0.619 in 2000 to 0.465 in 2012. This indicator moved erratically from 2000 to 2005 and then decreased steadily until 2011, when it stabilized at around 0.463. Throughout the period, the Gini coefficient of labour earnings among employed workers was slightly lower than that of household per capita income. Its evolution mirrored the movement of the Gini coefficient of household per capita income and fell from 0.594 in 2000 to 0.467 in 2012. The evolution of the Gini coefficient of labour earnings over the period is not surprising given the previous evidence of rising incomes for low-earning categories and decreasing incomes for high-earning categories. Consequently, the reduction in labour-earning inequality in Bolivia occurred at the expense of income losses for some categories.

Changes in household per capita income inequality in Bolivia in the first half of the 2000s have been explained mainly by factors associated with the labour market: 1) the level of education of the household head; 2) labour activity of the household (proportion of household members who are unemployed, proportion in each occupational position, and proportion in each occupational group); and to a lesser extent 3) demographic characteristics (Gray Molina and Yañez 2009). On the other hand, fiscal policy had a small effect on income inequality in the second half of the period studied. Between 2007 and 2009, social spending in Bolivia increased through a new wave of cash transfer programmes. However, none of the programmes were designed with a targeted mechanism to the poor since eligibility is not conditional on being poor. As a result, the inequality reduction in Bolivia is small once direct transfers and indirect taxes are accounted for (Lustig et al. 2011; Paz Arauco et al 2013). Changes in labour earnings inequality between 2000 and 2010 have been explained through the reduction in the education wage premium in the labour market (or ‘price effect’) and changes in the distribution of the stock of education (or ‘quantity effect’) (Azevedo et al. 2013). The reductions in the education wage premium between 2000 and 2007 were consistent with a robust increase in the relative supply of workers with high educational levels (those with complete or incomplete college education) and a concurrent fall in its relative demand (Gasparini et al. 2011). Institutional factors have also played a role in changes in labour earnings inequality. Canavire-Bacarreza and Rios-Avila (2015) analysed the evolution of labour income inequality in Bolivia from 2000 to 2012 and reported a faster earning growth in the lower quintiles of the earnings distribution compared to the highest quintiles. The authors associated this finding with the increases in the minimum monthly earning as well as anti-discriminatory policies. They also found that changes in demographic characteristics explain only a small portion of the observed inequality decline, while the fall in the returns to education and changes in the occupational structure of employment are the main contributors to the decline in earnings inequality over the period.



## 4 Conclusions

From 2000 to 2012, Bolivia experienced moderate economic growth by Latin American standards. The economy suffered a slowdown as a consequence of the international crisis of 2008, but Bolivia was one of the few countries in Latin America to have sustained positive growth during that episode.

All labour market indicators improved between 2000 and 2012, and that trend was, in general, not affected by the international crisis of 2008. The unemployment rate was always low and fell over the period. The composition of the employed population by occupational group improved between 2000 and 2012 as workers moved from elementary and agricultural, forestry and fishery occupations to better paying occupations, such as management and professional jobs. The employment structure by occupational position also improved through the reduction in the share of self-employed and unpaid workers in total employment and the increase in the share of wage/salaried employees and employers. Workers moved from low-earning economic sectors like domestic workers and primary activities to high-earning sectors such as public administration, skilled services, and utilities and transportation. The educational level of the Bolivian employed population improved steadily over the period, the overall share of workers registered with the social security system increased, and labour earnings grew between 2000 and 2012. Moreover, the moderate and extreme poverty rates and the rate of working poor households showed important reductions between 2000 and 2012, as did the Gini coefficient of per capita household income and labour earnings.

The international crisis of 2008 led to an interruption in the downward trend of the unemployment rate, but the pre-crisis trajectory was recovered immediately. The remaining labour market indicators were not affected by the crisis.

Young workers and women had worse labour market outcomes over the period compared to adults and men respectively, and while the effects of the international crisis were negligible in general, young workers suffered some adverse impacts. The unemployment rate was higher for young compared to adult workers, the shares of young employed workers in low-earning 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 young workers in low-earning occupational positions was below that share for adults. In addition to the generally inferior situation of young workers in the labour market, youth suffered an increase in the share of workers in low-earning positions and a decrease in the percentage of workers registered with the social security system during the international crisis. Disaggregating by gender, we found that men outperformed women in all labour market indicators over the period, and none of them suffered any adverse effect of the crisis.

In summary, notwithstanding the international crisis of 2008, Bolivian labour market conditions were in a better state in 2012 than they were at the start of the millennium.

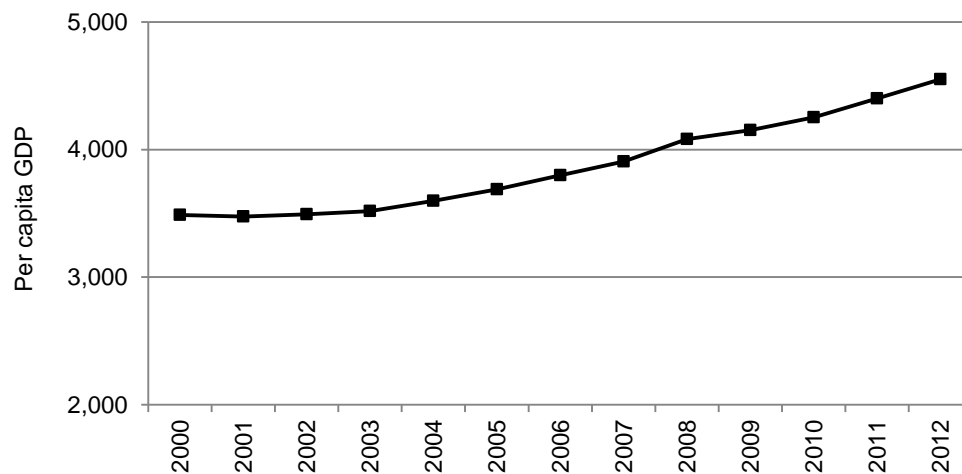
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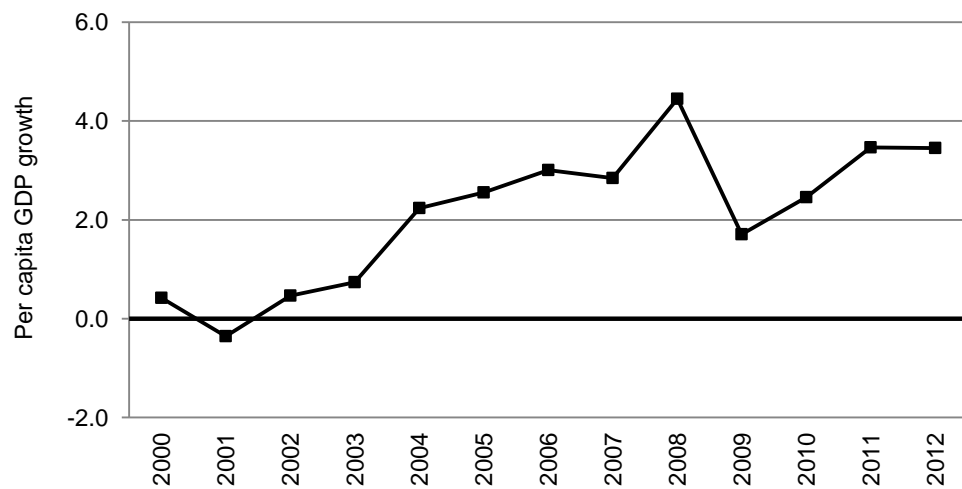
## Figures

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, 2000–09 and 2011–12

(a) All



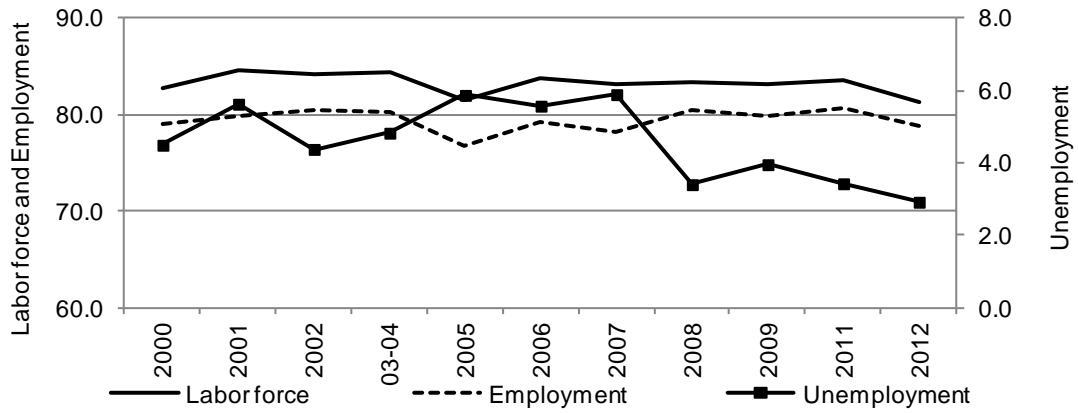
(b) Youth (15 to 24 years old)



(c) Adults (25 to 64 years old)



(d) Men

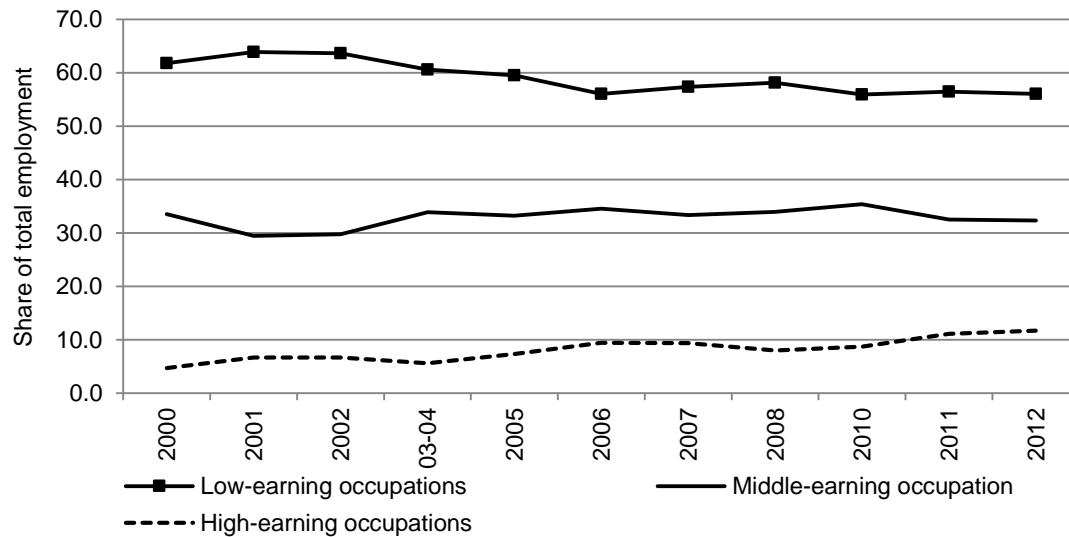


(e) Women



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

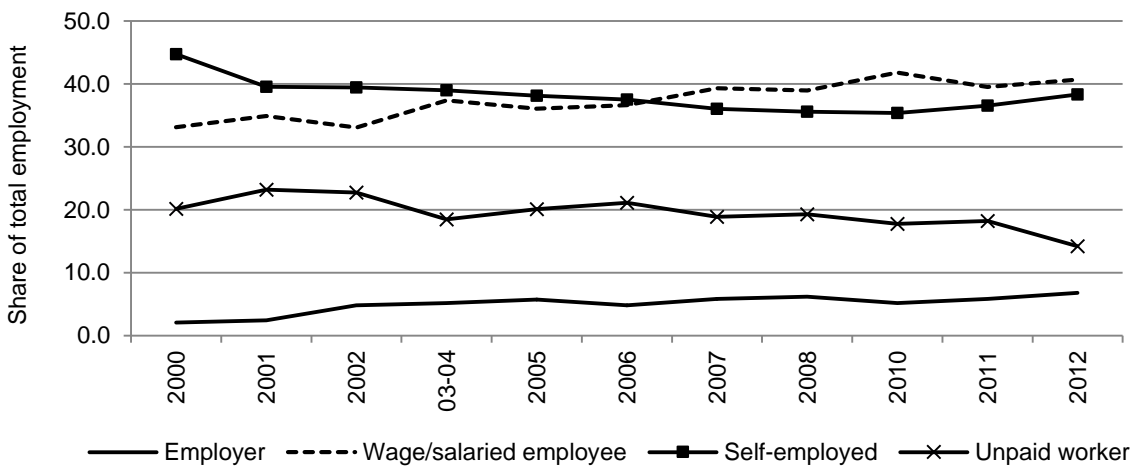
Figure 4: Share of employment by occupational group (categories grouped by earning levels): all employed workers, 15 years old or more, 2000–09 and 2011–12



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

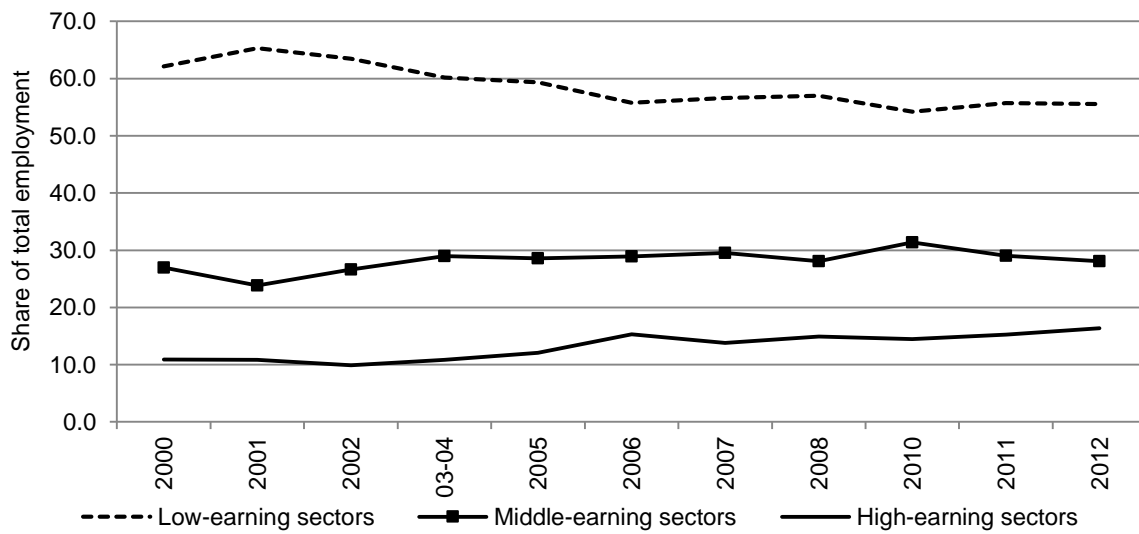
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 5: Share of employment by occupational position: all employed workers, 15 years old or more, 2000–09 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, 2000–09 and 2011–12



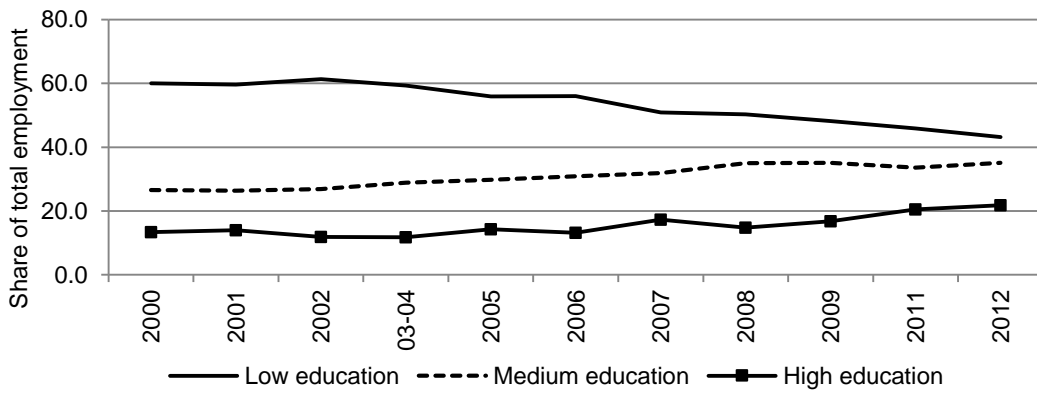
Note: Low-earning sectors: domestic workers, primary activities, commerce. Middle-earning sectors: industry, construction, education and health. High-earning sectors: public administration, skilled services, utilities and transportation.

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

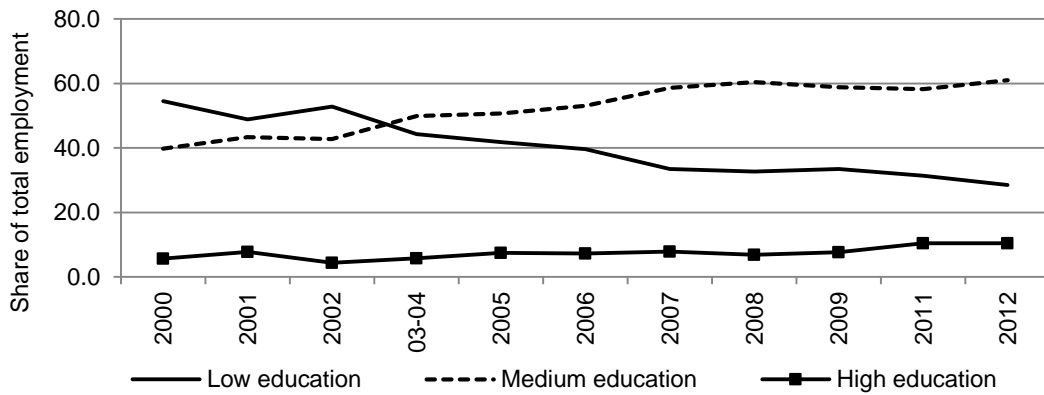


Figure 7: Share of employment by educational level: employed workers, 15 years old or more, 2000–09 and 2011–12

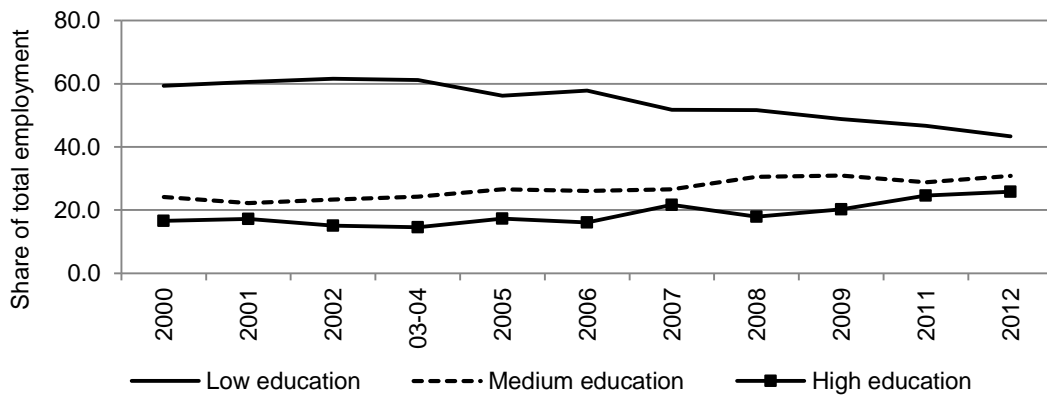
(a) All employed workers



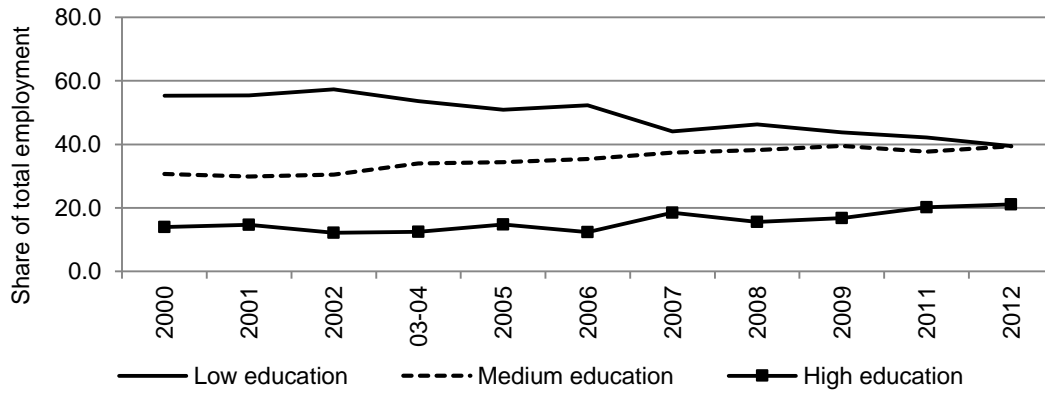
(b) Youth (15 to 24 years old)



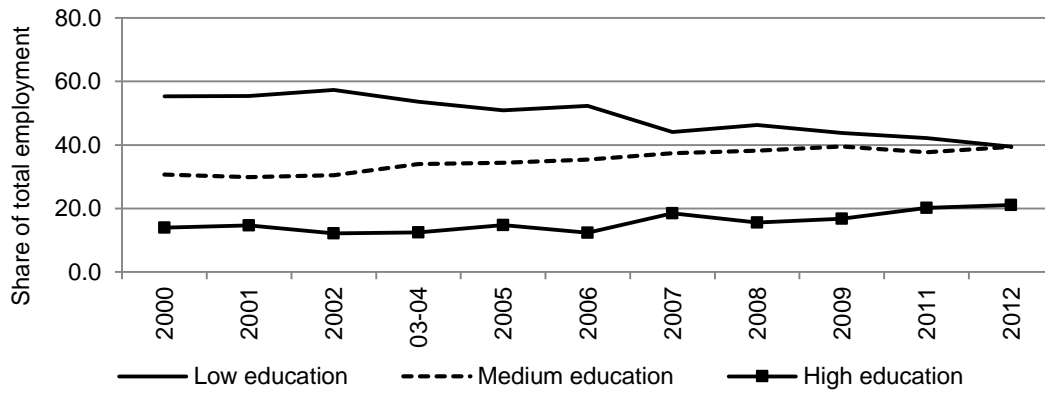
(c) Adults (25 to 64 years old)



(d) Men



(e) Women

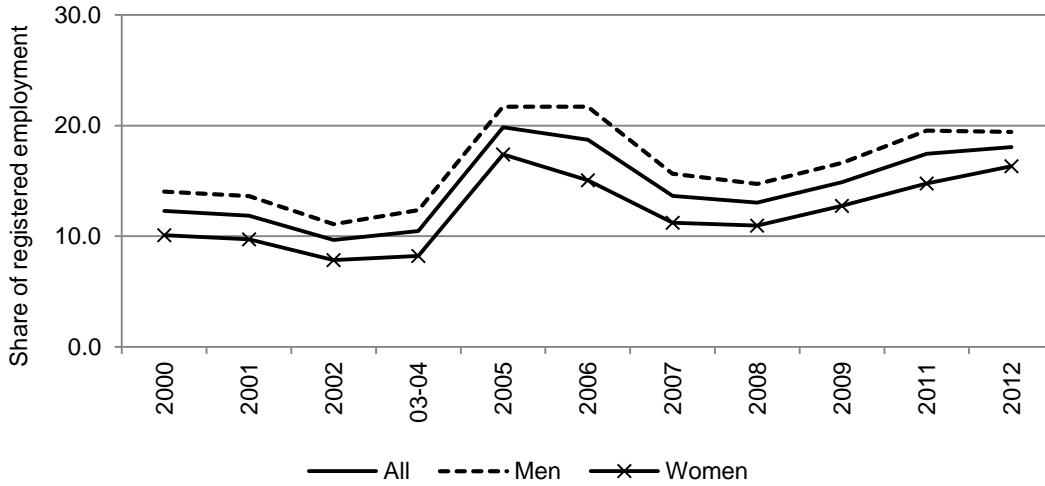


Note: Low: eight years of schooling or less. Medium: from nine to thirteen years of schooling. High: Over thirteen years of schooling.

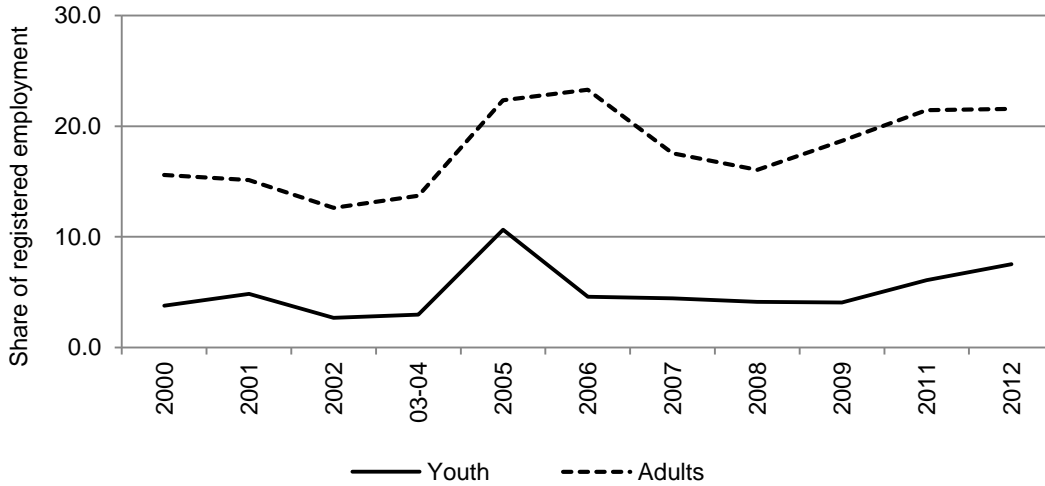
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 8: Share of employment registered with the national social security system: employed workers, 15 years old or more, 2000–09 and 2011–12

(a) Overall and by gender



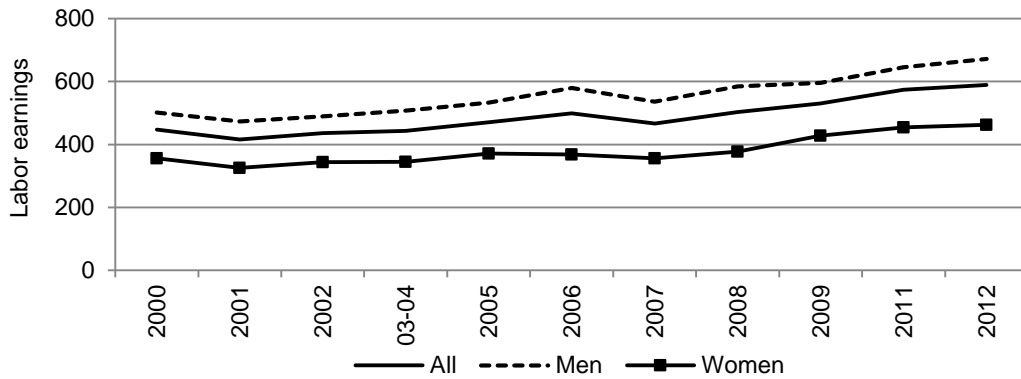
(b) By age group



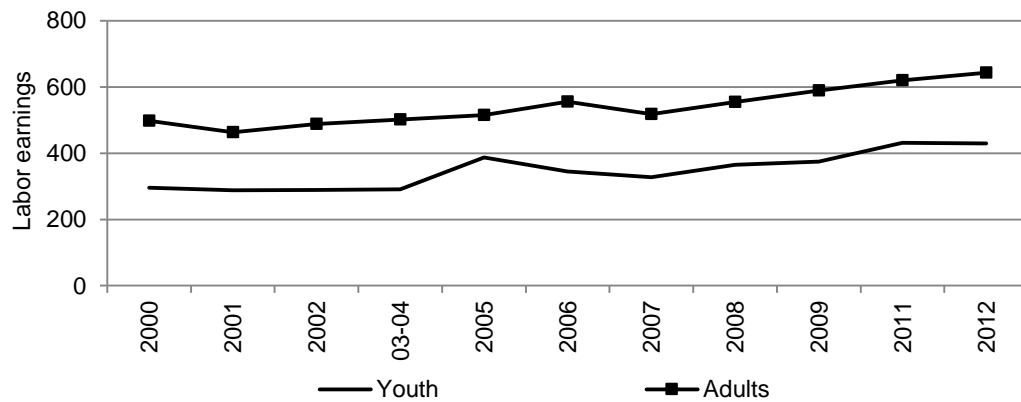
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

Figure 9: Monthly labour earnings at PPP dollars of 2005, 2000–09 and 2011–12

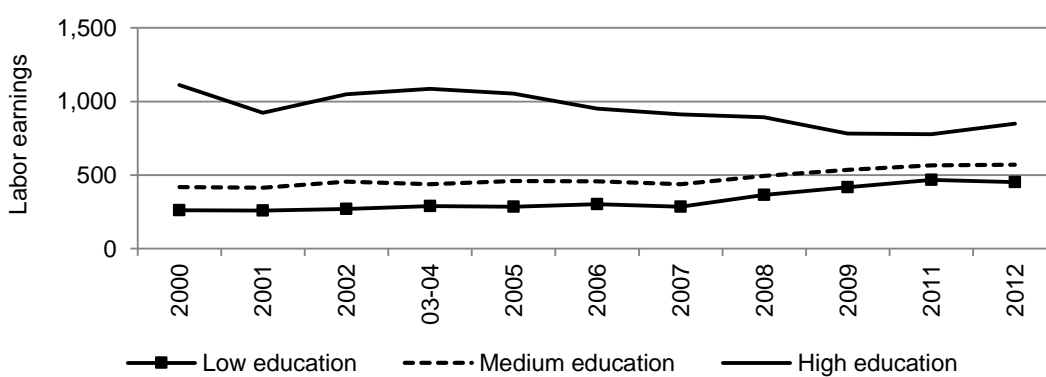
(a) Overall and by gender



(b) By age



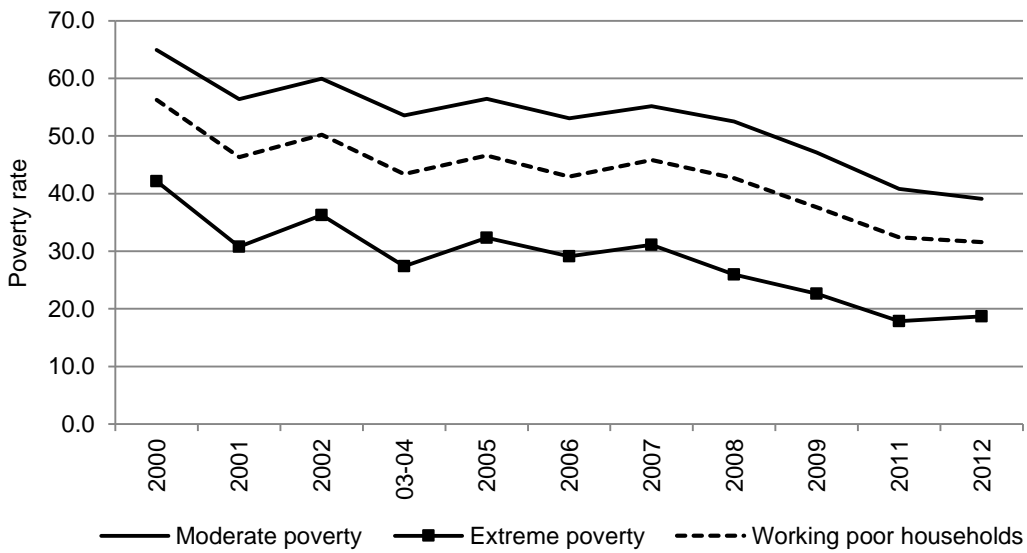
(c) By educational level



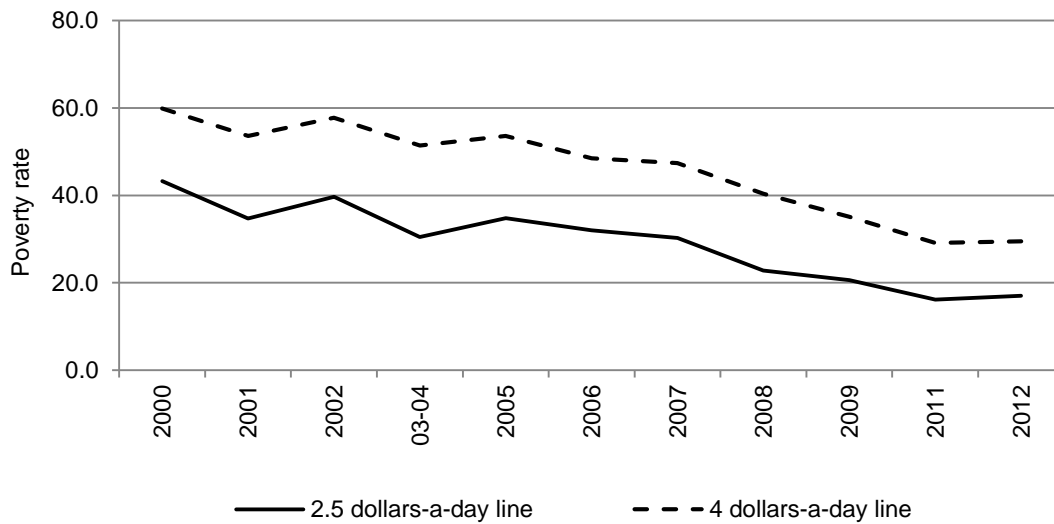
Source: Authors' calculations from SEDLAC (CEDLAS and the World Bank 2014).

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

(a) Official lines

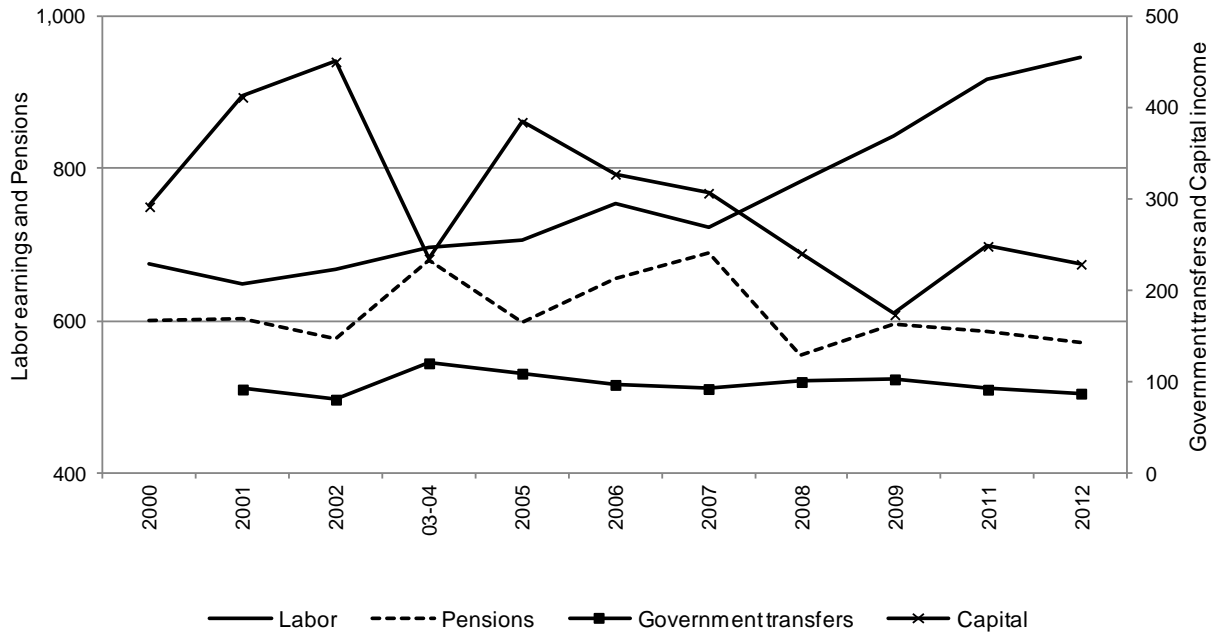


(b) International lines



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

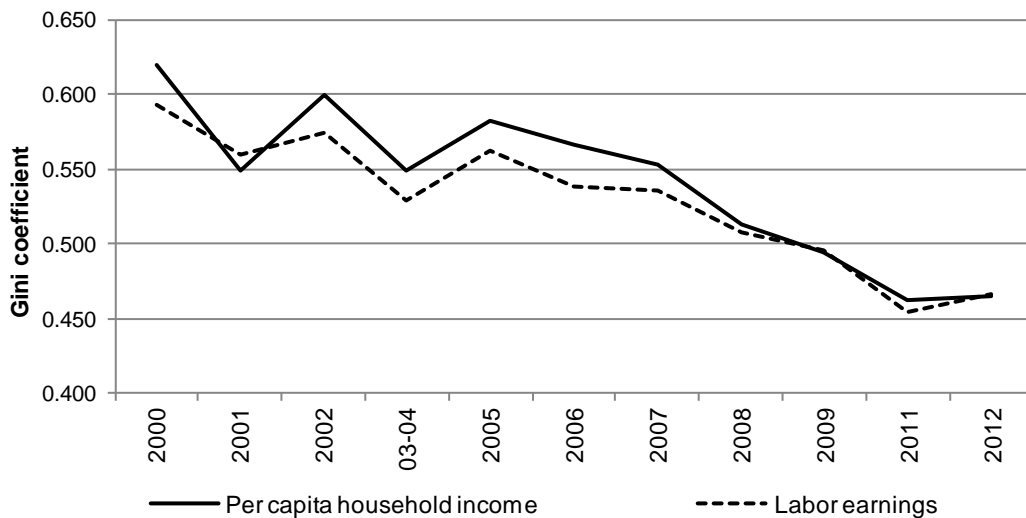
Figure 11: Sources of monthly household total income at PPP dollars of 2005, 2000–09 and 2011–12



Note: A very small number of observations reported incomes from government transfers in 2000. We present the statistic from 2001 onwards.

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

Figure 12: Gini coefficient of household per capita income and labour earnings, 2000–09 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
2000	4,857	20,815
2001	5,845	25,166
2002	5,746	24,933
2003-2004	9,149	38,500
2005	4,086	16,895
2006	4,098	16,510
2007	4,148	16,804
2008	3,940	15,030
2009	4,034	15,665
2011	8,851	33,821
2012	8,415	31,935

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 <sup>1,2</sup>	29,632	30,131	30,880	31,717	33,041	34,502	36,157	37,807	40,131	41,479	43,190	45,425	47,776
GDP per capita <sup>1</sup>	3,488	3,476	3,492	3,518	3,596	3,688	3,799	3,907	4,081	4,151	4,252	4,400	4,552
GDP per person employed <sup>1</sup>	10,751	10,784	11,076	10,485	10,651	10,845	11,067	11,253	11,633	11,715	11,892	12,228	12,560
GDP growth	2.51	1.68	2.49	2.71	4.17	4.42	4.80	4.56	6.15	3.36	4.13	5.17	5.18
GDP per capita growth	0.42	-0.35	0.47	0.74	2.24	2.56	3.01	2.85	4.45	1.71	2.45	3.46	3.45
Exports of goods and services <sup>1,2</sup>	2,091	2,266	2,395	2,687	3,133	3,395	3,779	3,896	3,981	3,553	3,903	4,132	4,622
Agriculture, value added (% of GDP)	15.01	15.22	14.90	15.42	15.37	14.38	13.88	12.88	13.47	13.83	12.85	12.53	12.95
Industry, value added (% of GDP)	29.79	29.18	29.30	29.39	30.97	32.03	35.08	36.39	38.36	36.24	37.29	38.95	38.72
Services, value added (% of GDP)	55.20	55.61	55.81	55.19	53.65	53.59	51.04	50.73	48.17	49.93	49.86	48.52	48.33
Agriculture, value added <sup>1,2</sup>	947	980	984	1,070	1,073	1,126	1,174	1,168	1,199	1,243	1,228	1,266	1,319
Industry, value added <sup>1,2</sup>	2,135	2,139	2,197	2,216	2,356	2,508	2,682	2,870	3,174	3,266	3,391	3,558	3,743
Services, etc., value added <sup>1,2</sup>	3,771	3,846	3,920	4,000	4,117	4,198	4,330	4,505	4,670	4,899	5,145	5,367	5,578
Total population <sup>2</sup>	8.50	8.67	8.84	9.02	9.19	9.35	9.52	9.68	9.83	9.99	10.16	10.32	10.50
Working age population (15-64) <sup>2</sup>	4.76	4.87	4.99	5.11	5.23	5.36	5.48	5.62	5.75	5.88	6.02	6.16	6.29

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, 2000–09 and 2011–12

(a) All employed workers

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Craft & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2000	1.36	3.15	7.09	3.43	15.85	34.82	17.82	5.19	11.09	0.19
2001	1.02	5.57	4.25	3.62	15.92	29.53	15.96	5.60	18.45	0.08
2002	1.52	5.04	4.09	2.70	15.74	37.26	17.73	5.23	10.61	0.07
2003-04	1.30	4.20	5.00	2.65	17.63	30.67	20.72	5.48	12.27	0.08
2005	1.61	5.61	5.92	3.35	15.88	33.56	17.44	6.50	10.03	0.11
2006	2.85	6.51	5.05	2.30	11.09	37.14	18.98	8.22	7.80	0.07
2007	2.01	7.21	6.19	3.66	15.32	31.07	16.85	6.62	10.94	0.14
2008	0.81	7.03	6.08	3.22	18.43	29.76	17.74	6.87	9.91	0.15
2009	0.96	7.62	7.52	3.73	17.59	27.61	17.62	6.51	10.71	0.12
2011	2.17	8.76	5.18	3.30	18.63	25.51	16.08	7.94	12.28	0.14
2012	1.65	9.87	5.41	3.76	20.14	25.19	14.93	8.24	10.68	0.13

(b) Youth (15 to 24 years old)

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Craft & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2000	0.06	0.91	4.53	3.50	13.67	37.83	21.20	3.29	15.02	0.00
2001	1.51	3.77	4.01	17.71	24.99	16.34	3.44	28.23	0.00	0.00
2002	0.20	0.88	3.23	3.05	17.02	42.24	15.82	3.64	13.91	0.00
2003-04	0.27	0.57	4.77	2.93	18.46	30.73	21.74	3.96	16.54	0.04
2005	0.99	1.09	6.04	3.64	16.86	34.79	18.57	3.48	14.41	0.14
2006	2.07	2.90	4.01	2.02	11.15	40.53	20.99	7.60	8.68	0.03
2007	0.33	0.99	5.55	4.12	13.84	36.27	19.95	4.85	14.11	0.00
2008	0.04	1.15	6.77	4.40	18.02	30.89	19.02	4.50	15.23	0.00
2009	0.13	1.71	6.51	4.27	18.15	25.80	21.11	3.71	18.61	0.00
2011	0.89	1.74	4.91	3.93	18.65	28.05	17.75	5.08	19.02	0.00
2012	0.21	2.36	5.80	5.46	19.05	28.04	15.91	5.51	17.59	0.07

## (c) Adults (25 to 64 years old)

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Craft & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2000	1.78	4.05	8.36	3.67	16.52	31.55	17.44	6.07	10.30	0.27
2001	1.39	7.42	4.75	3.70	15.61	28.19	16.50	6.74	15.58	0.12
2002	2.06	6.71	4.62	2.74	15.54	32.89	19.20	6.08	10.06	0.10
2003-04	1.68	5.70	5.40	2.76	17.67	27.56	21.25	6.44	11.43	0.10
2005	1.86	7.38	6.34	3.52	16.03	29.65	18.02	7.86	9.24	0.11
2006	3.25	8.08	5.69	2.56	11.06	33.20	19.14	9.04	7.88	0.08
2007	2.69	9.69	6.82	3.87	15.70	26.11	16.63	7.73	10.57	0.19
2008	1.07	9.12	6.24	3.11	18.74	26.52	17.91	8.12	8.97	0.20
2009	1.21	9.81	8.37	3.87	17.62	25.14	17.37	7.68	8.77	0.16
2011	2.65	11.27	5.55	3.34	18.60	24.23	16.00	9.04	9.12	0.19
2012	2.01	12.31	5.73	3.64	20.47	21.71	15.17	9.43	9.36	0.16

## (d) Men

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Craft & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2000	1.51	3.51	7.49	2.66	8.21	35.39	25.19	9.11	6.59	0.34
2001	1.53	5.18	5.46	2.69	7.71	33.03	22.23	10.09	11.94	0.15
2002	2.17	4.50	4.90	2.21	7.82	38.52	22.73	9.08	7.94	0.13
2003-04	1.65	3.77	6.29	2.10	9.04	29.88	28.70	9.72	8.71	0.15
2005	1.98	5.90	6.39	2.25	8.42	31.82	23.96	11.62	7.48	0.19
2006	2.87	6.00	5.30	2.31	8.83	36.64	20.94	9.72	7.30	0.09
2007	2.60	7.12	7.39	3.08	8.68	27.98	23.95	11.96	6.98	0.25
2008	0.97	6.64	6.54	2.27	10.12	29.04	24.45	12.40	7.31	0.27
2009	1.13	6.41	8.54	3.07	9.35	27.12	24.58	11.63	7.97	0.21
2011	2.50	7.47	6.27	2.49	9.71	24.28	21.80	13.92	11.31	0.24
2012	2.01	8.81	5.82	3.02	10.72	24.73	20.34	14.47	9.84	0.24

(e) Women

	Management	Professionals	Technicians & associate professionals	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Craft & related trades workers	Plant & machine operators, and assemblers	Elementary	Armed forces
2000	1.18	2.69	6.58	4.41	25.60	34.10	8.41	0.19	16.84	0.00
2001	0.39	6.05	2.78	4.74	25.85	25.30	8.38	0.17	26.34	0.00
2002	0.68	5.75	3.04	3.33	26.02	35.63	11.23	0.24	14.08	0.00
2003-04	0.88	4.72	3.45	3.31	27.96	31.62	11.12	0.40	16.54	0.00
2005	1.15	5.25	5.34	4.70	25.10	35.71	9.37	0.18	13.20	0.00
2006	2.82	7.15	4.72	2.29	13.97	37.79	16.49	6.32	8.42	0.03
2007	1.29	7.31	4.73	4.36	23.40	34.83	8.22	0.13	15.74	0.00
2008	0.63	7.50	5.53	4.38	28.55	30.63	9.57	0.13	13.08	0.00
2009	0.75	9.13	6.26	4.56	27.78	28.23	9.02	0.18	14.09	0.00
2011	1.76	10.40	3.81	4.33	29.95	27.07	8.82	0.34	13.53	0.00
2012	1.19	11.23	4.89	4.70	32.20	25.79	7.99	0.27	11.76	0.00

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, 2000–09 and 2011–12

(a) All employed workers

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2000	2.06	33.10	44.74	20.11
2001	2.41	34.89	39.52	23.18
2002	4.79	33.04	39.43	22.74
2003-04	5.16	37.39	38.99	18.45
2005	5.70	36.06	38.13	20.11
2006	4.81	36.61	37.48	21.10
2007	5.82	39.28	36.04	18.85
2008	6.18	38.96	35.58	19.29
2009	5.13	41.78	35.36	17.73
2011	5.79	39.50	36.53	18.19
2012	6.79	40.67	38.34	14.20

(b) Youth (15 to 24 years old)

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2000	0.71	39.46	19.43	40.40
2001	0.46	40.74	13.78	45.02
2002	1.63	38.09	15.51	44.78
2003-04	1.46	47.49	15.93	35.12
2005	1.21	44.21	15.05	39.52
2006	2.10	42.90	12.83	42.18
2007	2.02	45.51	14.22	38.24
2008	1.20	49.42	10.23	39.14
2009	1.81	46.86	15.42	35.92
2011	1.85	46.23	14.87	37.05
2012	2.35	49.09	16.99	31.57

(c) Adults (25 to 64 years old)

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2000	2.48	33.36	50.21	13.95
2001	3.15	35.13	46.46	15.26
2002	5.70	33.48	45.44	15.37
2003-04	6.29	36.69	44.42	12.60
2005	6.87	36.72	41.91	14.50
2006	5.75	37.33	42.31	14.61
2007	6.91	40.92	39.39	12.78
2008	7.33	38.90	40.15	13.62
2009	5.95	42.97	38.45	12.63
2011	6.72	40.29	40.25	12.74
2012	7.69	41.31	41.24	9.76

(d) Men

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2000	2.82	37.70	49.19	10.28
2001	3.11	40.66	42.90	13.32
2002	6.78	38.24	41.87	13.12
2003-04	7.70	45.39	37.34	9.57
2005	7.80	42.67	39.39	10.14
2006	6.86	41.04	41.08	11.02
2007	7.77	45.67	37.19	9.38
2008	8.65	44.43	37.00	9.93
2009	6.99	47.82	36.85	8.34
2011	7.96	44.73	38.87	8.44
2012	8.97	44.27	39.27	7.48

(e) Women

	Employer	Wage/salaried employee	Self-employed	Unpaid worker
2000	1.08	27.22	39.04	32.66
2001	1.55	27.91	35.43	35.11
2002	2.20	26.31	36.28	35.22
2003-04	2.11	27.77	40.99	29.13
2005	3.11	27.89	36.57	32.43
2006	2.27	31.13	33.04	33.56
2007	3.45	31.52	34.64	30.38
2008	3.18	32.31	33.85	30.66
2009	2.83	34.31	33.51	29.34
2011	3.04	32.86	33.55	30.56
2012	3.99	36.05	37.14	22.81

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, 2000–09 and 2011–12

(a) All

	Primary activities	Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2000	38.32	10.51	7.00	19.89	5.10	3.44	2.37	9.46	3.91
2001	42.92	9.62	5.32	18.78	5.36	3.52	1.97	8.90	3.61
2002	40.58	11.74	5.77	19.58	5.09	2.68	2.12	9.13	3.30
2003-04	34.61	11.76	7.28	22.29	5.64	2.81	2.41	9.93	3.27
2005	37.02	11.39	6.86	19.74	6.77	2.98	2.31	10.32	2.59
2006	40.26	11.28	7.98	14.02	8.13	3.99	3.19	9.68	1.46
2007	34.76	11.43	7.12	18.25	6.55	3.77	3.51	11.01	3.61
2008	32.50	11.32	7.09	22.14	7.78	3.56	3.57	9.69	2.36
2009	31.19	11.70	7.71	20.42	7.22	4.20	3.04	11.93	2.58
2011	31.91	10.84	7.94	21.74	7.61	3.27	4.39	10.25	2.06
2012	30.02	10.23	7.67	22.88	8.20	3.66	4.50	10.20	2.64

(b) Youth (15 to 24 years old)

	Primary activities	Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2000	41.48	13.02	7.72	17.52	3.94	2.13	1.36	5.58	7.25
2001	44.94	10.49	4.63	20.38	3.36	2.80	0.97	6.14	6.29
2002	46.26	10.75	4.88	19.21	4.93	1.99	0.75	5.46	5.78
2003-04	34.84	13.04	7.68	22.41	5.07	2.61	1.22	6.46	6.65
2005	39.50	13.68	5.86	18.97	5.27	3.19	1.32	6.21	6.01
2006	44.10	11.13	8.95	13.17	7.65	3.86	2.17	6.94	2.03
2007	40.69	12.08	9.38	15.73	5.25	2.99	1.69	6.17	6.01
2008	35.75	11.70	7.31	22.68	8.33	1.67	2.46	6.07	4.03
2009	31.80	14.28	8.74	23.10	6.64	2.24	1.89	7.31	4.00
2011	34.96	12.33	10.20	24.47	6.70	1.99	2.64	4.20	2.50
2012	34.50	11.85	8.22	24.17	7.08	2.49	3.36	4.46	3.86

(c) Adults (25 to 64 years old)

	Primary activities	Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2000	35.06	10.18	7.03	20.65	5.78	4.10	2.85	11.23	3.11
2001	39.59	9.66	5.82	18.65	6.47	4.06	2.49	10.35	2.90
2002	36.09	12.69	6.38	20.03	5.45	3.07	2.70	10.90	2.70
2003-04	31.69	11.79	7.51	22.75	6.24	3.08	2.97	11.59	2.38
2005	33.00	11.22	7.57	20.57	7.76	3.12	2.77	12.19	1.80
2006	36.36	11.56	8.23	14.47	8.88	4.24	3.75	11.12	1.38
2007	29.88	11.57	7.01	19.15	7.44	4.30	4.41	13.00	3.23
2008	28.82	11.39	7.50	22.33	8.24	4.18	4.20	11.23	2.10
2009	28.05	11.46	7.81	19.94	7.80	5.09	3.63	13.92	2.30
2011	28.89	10.69	7.73	21.10	8.20	3.78	5.19	12.36	2.07
2012	26.34	10.12	7.96	22.73	8.95	4.22	5.12	12.08	2.49

(d) Men

	Primary activities	Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2000	40.34	11.57	12.04	12.07	8.23	4.52	3.23	7.62	0.39
2001	45.27	10.28	9.41	11.71	8.59	4.43	2.86	7.17	0.28
2002	43.79	12.82	9.69	11.65	8.32	3.06	2.88	7.15	0.64
2003-04	36.47	12.77	12.85	13.61	9.50	3.35	3.28	7.93	0.24
2005	37.32	13.04	11.43	12.62	10.98	3.19	2.88	8.39	0.14
2006	40.66	11.04	9.46	12.48	9.30	4.33	3.37	8.57	0.79
2007	33.96	13.39	12.73	11.78	10.59	4.60	4.52	8.19	0.23
2008	33.17	12.43	12.38	14.14	11.97	3.94	4.07	7.41	0.50
2009	31.33	13.21	13.43	12.99	11.34	4.29	3.93	9.04	0.45
2011	32.88	11.81	13.63	13.71	12.05	3.32	5.12	7.31	0.17
2012	31.94	10.96	13.15	14.38	12.96	3.71	5.17	7.56	0.17

(e) Women

	Primary activities	Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2000	35.75	9.16	0.56	29.89	1.10	2.06	1.28	11.80	8.40
2001	40.08	8.82	0.37	27.34	1.46	2.41	0.90	10.99	7.63
2002	36.42	10.35	0.67	29.88	0.89	2.20	1.13	11.71	6.76
2003-04	32.38	10.54	0.58	32.74	0.98	2.16	1.37	12.34	6.92
2005	36.66	9.36	1.22	28.52	1.58	2.73	1.62	12.71	5.61
2006	39.75	11.59	6.10	15.99	6.64	3.55	2.97	11.09	2.31
2007	35.73	9.03	0.30	26.12	1.63	2.74	2.28	14.44	7.73
2008	31.69	9.96	0.66	31.85	2.69	3.10	2.97	12.46	4.62
2009	31.03	9.83	0.63	29.62	2.12	4.11	1.94	15.51	5.21
2011	30.69	9.62	0.77	31.87	2.00	3.20	3.46	13.95	4.45
2012	27.58	9.30	0.72	33.66	2.15	3.61	3.64	13.54	5.78

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



Table 6: Monthly labour earnings at PPP dollars of 2005, 2000–09 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
2000	447.3	501.7	356.1	295.7	497.5	981.9	645.4	261.7	260.9	418.2	1113.3
2001	415.4	473.3	325.1	288.3	463.6	806.4	560.9	269.5	258.7	414.6	923.6
2002	435.7	489.5	344.2	289.0	488.3	710.1	568.0	294.2	269.1	455.3	1048.8
2003-04	443.6	507.5	345.3	291.0	502.0	865.7	535.2	300.3	288.8	438.6	1087.2
2005	471.0	532.8	371.4	386.9	514.8	1127.6	557.6	297.2	284.2	460.7	1054.6
2006	498.9	579.8	367.9	344.6	555.3	872.5	642.4	307.4	301.8	458.7	951.7
2007	466.1	536.2	355.6	327.1	518.6	998.1	551.5	289.0	285.7	438.7	913.2
2008	503.6	584.7	376.8	364.7	554.9	882.6	572.3	371.7	364.9	495.3	892.5
2009	530.9	595.5	428.1	374.5	589.5	1151.2	587.7	381.9	417.2	536.6	782.8
2011	573.8	646.1	454.5	432.0	620.3	980.1	622.6	467.6	466.8	566.2	778.0
2012	589.3	672.3	462.7	429.5	643.0	993.4	656.2	452.4	451.7	571.1	848.8

(b) By economic sector

	Primary activities	Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2000	281.3	402.8	507.2	378.8	715.3	1113.2	843.7	529.4	255.9
2001	250.8	368.6	466.9	370.0	610.0	985.7	1108.7	539.6	256.0
2002	238.2	368.6	438.2	436.3	647.1	1037.8	1009.2	606.1	292.8
2003-04	318.3	405.0	450.4	392.2	627.7	759.9	870.2	594.7	274.3
2005	267.5	493.0	495.7	466.7	645.1	639.6	981.1	609.9	253.4
2006	320.9	452.3	422.4	469.0	616.7	823.2	736.4	731.0	311.8
2007	302.3	430.4	522.5	426.9	579.1	734.8	822.8	594.6	258.6
2008	336.5	449.6	596.4	437.7	659.1	786.5	832.8	622.6	386.9
2009	302.8	564.3	653.8	556.5	668.3	648.2	720.1	597.7	352.8
2011	470.3	533.6	687.9	557.9	697.9	706.1	687.2	623.1	347.8
2012	457.3	593.2	697.1	530.2	728.1	839.1	732.1	686.6	309.4

(c) By occupational group

	Management	Professionals	Technicians & associate professional	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Craft & related trades	Plant & machine operators, and assemblers	Elementary	Armed forces
2000	2275.3	1712.6	618.3	639.9	366.1	156.6	371.9	569.7	284.3	1037.4
2001	1940.3	975.6	748.5	668.3	349.7	168.9	349.3	555.2	290.5	1041.6
2002	2051.6	1094.3	669.6	559.9	430.2	180.1	351.3	571.2	274.5	1380.5
2003-04	2231.8	1190.1	692.5	565.7	378.8	223.8	382.7	552.6	284.0	1335.7
2005	2224.1	1071.0	651.3	547.3	421.6	205.8	417.4	568.4	286.7	1137.1
2006	1550.4	1072.8	824.1	532.2	473.3	225.7	366.4	555.5	331.8	922.7
2007	1388.8	1091.5	595.8	566.4	357.9	227.8	391.6	581.4	265.7	1556.6
2008	1552.9	1018.1	575.3	521.3	425.4	303.3	456.3	697.6	376.8	1476.0
2009	1485.7	840.9	644.5	604.7	544.2	241.5	552.8	720.0	373.0	1126.3
2011	1222.6	826.6	645.3	560.8	524.8	378.8	575.8	760.9	399.0	1073.3
2012	1495.0	889.3	715.9	606.2	510.8	310.0	613.1	811.7	432.1	1059.2

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

Table 7: Hourly wage in main occupation at PPP dollars of 2005, 2000–09 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
2000	2.74	2.87	2.52	1.89	3.03	5.34	3.86	1.68	1.47	2.57	7.17
2001	2.64	2.82	2.36	1.94	2.89	4.27	3.26	1.98	1.70	2.51	5.85
2002	2.68	2.75	2.55	1.92	2.93	3.80	3.30	1.99	1.59	2.67	6.86
2003-04	2.83	3.03	2.51	1.99	3.15	4.79	3.25	2.14	1.76	2.73	7.41
2005	2.89	3.04	2.65	2.58	3.11	6.17	3.34	1.98	1.62	2.80	6.86
2006	3.29	3.66	2.68	3.18	3.47	6.21	3.88	2.29	1.73	2.63	7.93
2007	2.72	2.91	2.41	1.97	3.00	5.40	3.23	1.69	1.57	2.46	5.64
2008	2.95	3.19	2.57	2.30	3.21	4.40	3.30	2.32	2.09	2.77	5.62
2009	3.13	3.24	2.95	2.52	3.38	5.35	3.59	2.25	2.23	2.96	5.46
2011	3.38	3.52	3.14	2.71	3.58	5.63	3.73	2.66	2.57	3.15	5.15
2012	3.45	3.60	3.23	2.65	3.71	5.12	3.95	2.65	2.53	3.16	5.44

(b) By economic sector

	Primary activities	Industry	Construction	Commerce	Utilities & transportation	Skilled services	Public administration	Education & Health	Domestic workers
2000	1.7	2.5	2.6	2.0	3.6	6.5	4.7	4.8	1.6
2001	1.5	2.3	2.5	2.6	3.2	6.1	5.8	4.3	1.5
2002	1.4	2.2	2.2	2.7	3.2	6.0	5.3	5.2	1.6
2003-04	1.8	2.5	2.4	2.5	3.4	5.8	4.7	5.1	1.5
2005	1.7	2.9	2.6	2.7	3.3	4.1	5.4	4.8	1.3
2006	2.1	2.7	2.5	2.9	3.4	8.3	4.2	5.4	2.1
2007	1.6	2.3	2.5	2.5	2.8	4.3	4.4	4.7	1.5
2008	2.1	2.7	3.0	2.4	3.1	4.3	4.0	5.0	2.2
2009	1.6	2.8	3.3	3.1	3.1	4.3	3.9	5.2	2.0
2011	2.6	2.9	3.5	3.1	3.5	4.4	3.9	5.0	2.1
2012	2.5	3.3	3.5	3.1	3.6	4.9	4.2	5.3	2.0

(c) By occupational group

	Management	Professionals	Technicians & associate professional	Clerical	Service & sales workers	Agricultural, forestry & fishery workers	Craft & related trades	Plant & machine operators, & assemblers	Elementary	Armed forces
2000	11.9	10.1	5.6	3.7	2.0	0.9	2.2	2.8	1.8	8.6
2001	10.8	6.6	4.9	4.0	2.6	1.0	2.2	2.6	1.8	6.2
2002	9.9	8.0	4.9	3.2	2.6	1.1	2.0	2.7	1.7	7.3
2003-04	11.8	9.1	5.8	3.8	2.2	1.3	2.2	2.7	2.1	7.5
2005	12.9	7.2	4.7	3.1	2.3	1.4	2.4	2.8	2.1	6.3
2006	11.2	7.6	7.9	3.1	2.7	1.3	2.2	3.1	2.0	6.0
2007	8.5	7.0	4.0	3.1	2.1	1.2	2.1	2.8	1.7	8.5
2008	8.5	6.8	3.8	2.9	2.3	1.9	2.6	3.1	2.2	8.5
2009	8.2	6.5	4.5	3.4	3.1	1.3	2.8	3.2	2.4	5.7
2011	6.9	6.2	4.3	3.2	3.0	2.1	3.1	3.7	2.3	5.9
2012	7.9	6.5	4.7	3.4	3.0	1.7	3.2	4.0	2.5	5.8

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, 2000–09 and 2011–12

	Low	Medium	High
2000	59.07	27.47	13.46
2001	58.59	27.25	14.15
2002	60.45	27.42	12.13
2003-04	58.12	29.86	12.02
2005	54.72	30.60	14.68
2006	54.40	31.67	13.93
2007	49.12	32.60	18.28
2008	49.90	35.11	14.99
2009	47.43	35.45	17.12
2011	45.28	34.00	20.72
2012	43.12	35.01	21.88

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

Table 9: Unemployment rate by educational levels: population 15 years old or more, 2000–09 and 2011–12

	Low	Medium	High
2000	4.97	8.16	5.46
2001	5.37	8.69	7.00
2002	5.10	6.62	7.22
2003-04	4.34	8.26	6.86
2005	5.58	8.83	8.91
2006	4.68	7.68	11.07
2007	4.62	8.03	10.86
2008	3.92	5.03	5.94
2009	4.02	5.09	6.14
2011	3.82	4.31	4.33
2012	3.79	3.76	4.40

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