The Labor Market Story Behind Latin America's Transformation

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Foreword

This semiannual report—a product of the Office of the Chief Economist for the Latin America and the Caribbean Region of the World Bank—examines in detail the most significant changes experienced by labor markets in Latin America and the Caribbean (LAC) countries between the 1990s and the 2000s. As is customary in this series, the report provides as well an overview of recent economic developments in the LAC region and discusses the prospects for the coming months.

The report was led by Augusto de la Torre, Regional Chief Economist, in close collaboration with Julian Messina, Senior Economist, and Samuel Pienknagura, Research Economist. Substantive inputs were provided by Laura Chioda, Tito Cordella, Tatiana Didier, and Jamele Rigolini. Manuel Fernández Sierra, Camila Galindo, Magali Pinat, Andrés Schneider, Tanya Taveras, and Cynthia Van Der Werf provided outstanding research assistance. We would also like to thank Paloma Anós Casero, Carlos Felipe Jaramillo, Sergio Jellinek, and Marcela Sánchez-Bender for their invaluable comments.

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Executive Summary

After a robust recovery following the global crisis, Latin American and the Caribbean (LAC) has entered into a phase of lower growth dynamics: economic activity in the region is expected to expand by about 3 percent in 2012, after having grown at 4 percent in 2011 and 6 percent in 2010. This deceleration is not specific to LAC but is part of a global slowdown. World growth is indeed declining sharply, from 4.5 percent in 2011 to about 2.3 percent in 2012. Notably, the slowdown in middle-income regions has taken place in a highly synchronized manner: growth rates in LAC, Eastern Europe and South East Asia have fallen by a very similar magnitude (about 3 percentage points) between 2010 and 2012. While this synchronization reflects exogenous (global) forces—the spillover to emerging markets of weaker activity in the world’s growth poles, particularly Europe and China—it also reflects endogenous (internal) dynamics, particularly the fact that many Middle Income Countries (MIC) had already reached in 2010–2011 the peak of their own business cycles.

This synchronicity notwithstanding, the 2012 growth forecasts for individual countries in LAC are significantly heterogeneous, reflecting complex interactions between external and country-specific factors. The sharpest growth deceleration is affecting Argentina, Brazil and Paraguay, whose economies are projected to expand well below the regional average of 3 percent. Of the countries projected to grow above the regional average, the ones that stand out are Mexico—where the post-global crisis recovery came with a lag but has gained momentum—as well as Bolivia, Colombia, Costa Rica, Ecuador, Chile, Dominican Republic, and Uruguay—whose growth rates, at around 4 percent, have surprised forecasters on the upside. Peru and Panama, for their part, continue to be the region’s top performers and are again expected to deliver Asia-like growth rates, of 6 and 8 percent, respectively.

For the near future, the main risks to LAC’s growth continue to come from the outside. But there has been a rebalancing of external risks in recent months in two main respects. First, the threat of an imminent disintegration of the European Monetary Union has dimmed. Second, growth prospects for China have weakened and become more uncertain, with the debate intensifying on whether the current deceleration in China is purely cyclical—and could hence be soon cured by domestic stimulus policies—or more structural in nature—reflecting the beginning of a transition towards a more consumption-oriented growth model. Downside risks to LAC, and in particular to its commodity exporters, would be larger under the latter interpretation, especially if such a transition moves along a rocky path.

Even in the midst of this slowdown, labor markets in LAC have continued to perform remarkably well. The unemployment rate for the region as a whole closed at nearly 6.5 percent in 2011, the lowest since the peak of 11 percent in 2002–2003. This is not an isolated fact, it is rather a reflection of deep changes in Latin American labor markets that took place in the 2000s and which have, in turn, been part of a broader set of fundamental transformations (including the decline in household income inequality, the consolidation of sounder macro-financial frameworks and associated restoration of counter-cyclical policy capacity, the stunning reduction in poverty, the swelling of the middle classes, and the intensified connections to China) that jointly constitute what we have in the past labeled the “new face” of LAC. This report documents and discusses the labor market dimensions of this new economic face, dimensions that have hitherto been insufficiently studied. In doing so, it also complements the more global and general messages of the recently launched 2012 World Bank Development Report on Jobs.

Fueled by robust economic growth, employment in LAC during the 2000s expanded vibrantly compared to the sluggish 1990s. The expansion was sufficiently strong to absorb the continued incorporation of women into the labor force even as informality shrank, and the ranks of the unemployed steadily declined. Specifically, more than 35 million

additional jobs were created while informality, one of the Latin American trademarks, fell in seven out of the nine countries where it can be measured consistently throughout the decade.

Strong employment creation during the 2000s was coupled with a sharp decline in the inequality of labor earnings, a second stylized fact that stands in sharp contrast with both international trends and the stagnation that characterized the region in the previous decade. For LAC as a whole, the Gini coefficient of labor income fell by four (4) points, a reduction of similar magnitude to the one registered by inequality in household income. This is not a coincidence, for the fundamental explanatory factor behind the decline in household income inequality was the reduction in wage inequality. The important implication here is that growth of output and employment played a greater role than social policy in the decline of income inequality during the 2000s. Social policy did improve in the region over the decade (particularly through the introduction of well-targeted conditional cash transfer programs) and contributed significantly to poverty reduction, but it remained insufficiently redistributive, and even regressive, overall.

The decline in labor earnings inequality in the region may be due to changes in the composition of the labor force or changes in the remuneration of skills. Two salient compositional changes pertain to education and female labor force participation. On the one hand, the average years of schooling of the working class rose by about three additional years and, on the other hand, the entrance of women into the workforce continued during the 2000s, although at a slower pace than in the previous three decades. While both factors constitute fundamental transformations, they cannot explain the mentioned decline in wage inequality. In fact, female labor force participation and average years of schooling rose steadily in the 1990s and 2000s, whereas wage inequality increased over the 1990s (except in Brazil) but was on a declining trend throughout in the 2000s.

The explanation of the fall in wage inequality, therefore, has to be found in the returns to skills. The fact that stands out in this regard is the decrease in the region's education premium. In particular, the differential between the wages of workers with tertiary and secondary education, on the one hand, and those with primary education or less, on the other, entered a downward trend in the 2000s, after having been on the rise in the 1990s.

The relative importance of supply and demand factors behind this decline in the returns to education is difficult to ascertain. However, demand factors cannot be discarded, again considering that the supply of education increased throughout the 1990s and 2000s. A demand factor that is specific to the region and that appears to have played an important role is the commodity bonanza. It has promoted the expansion of the non-tradable sectors relative to (non-commodity) tradable ones in the commodity exporting LAC countries. And, at least in present-day LAC, the non-tradable sectors (such as services and construction) tend to be on average less skill intensive than the (non-commodity) tradable ones (such as manufacturing). Hence, what appears as a fundamentally positive trend, the decline in household income and wage inequality, may hide a worrisome phenomenon, namely, the tendency in the region's commodity exporting countries to specialize in sectors that are relatively less intensive in skills. This of course highlights the importance for reforms oriented at raising productivity in all sectors, including the non-tradable ones.

There is also some evidence pointing to a supply factor that may have also played a role in the fall in wage inequality in LAC. Specifically, the average quality of tertiary education may not have kept up with the rapid increase in its coverage. This hypothesis seems corroborated by an observed widening of wage inequality among workers with tertiary education during the last decade. This does not necessarily imply declining incentives to invest in tertiary education. After all, and despite the mentioned equalizing trends, workers with tertiary education continue to earn substantially more than those with less education—even the bottom-paid college graduates earn much more than the average-paid workers with secondary education. The widening wage dispersion within university educated workers does point, however, to the need to put a policy premium on education quality.

Another set of momentous transformations in the labor field concern the changes in the patterns of cyclical labor market adjustments that occurred as LAC entered in the 2000s into an environment of low and stable inflation, finally breaking with its traditional history of home-grown macroeconomic instability. The dramatic decline of inflation in the region led to rising downward wage rigidities, which translated into lower fluctuations of earnings, especially during downturns. Perhaps more surprisingly, this declining variability in real wages was not matched by sharper swings in employment or unemployment, suggesting that LAC's labor markets gained in efficiency and entered into a phase of less volatility during the 2000s. Certainly the largely favorable external environment that characterized the decade for LAC may have played a role in attenuating fluctuations. But better policies, such as a more credible conduct of monetary policy, appear to have helped as well in dampening fluctuations in the labor market. By succeeding in coordinating inflation expectations, the introduction of inflation targeting regimes seems to have shifted the focus of the wage setting process away from the nominal exchange rate and the minimum wage and, instead, towards the inflation target announced by the central bank.

Introduction

Latin America and the Caribbean (LAC) taken as a whole began the 2000s with a great decade, one where macro-financial stability improved, growth was relatively high, poverty fell sharply, the middle classes swelled, and income inequality declined visibly albeit from still high levels. This remarkable economic and social progress, documented by previous reports in this series, reflects the fact that many LAC countries took advantage, through improved policies, of strong tail winds associated with an unusually friendly external environment. Tail winds were most favorable for the natural resource-abundant countries—they came in the form of a super-cycle of high commodity prices and the rising role of China as major buyer of LAC’s agricultural and mineral commodities. But there were other tail winds that blew more broadly throughout LAC, including the expanded availability of cheap consumer imports from China, abundant and steady remittances inflows, and a global savings glut that fueled capital flows to the region.

The major socioeconomic changes the region witnessed during the 2000s would not have been possible without a rapidly changing labor market. The decline in household income inequality during this period was intimately related to a reduction in labor earnings inequality, a process that took place in a context of rapid employment creation. The growth of employment was sufficiently strong to absorb a steady rise in female labor force participation while reducing unemployment. And in a break with the past, this generation of employment was accompanied with a reduction in informality. At the same time, the Latin American success in stabilizing inflation and improving other aspects of the macroeconomic environment favored the emergence of a labor market characterized by milder fluctuations, both in wages and employment. These are some of the topics we discuss in this report, which focuses on the major transformations that have occurred in labor markets in LAC between the 1990s and the 2000s.

By discussing some of the most salient changes in LAC labor markets this report complements a series of previous efforts to paint the “new face” of the region’s economy.¹ Moreover, the report also timely complements the more general and global messages of the recently-launched 2012 World Bank Development Report on Jobs.

But before delving into the labor issues that constitute the main subject matter of this report, and as is customary in this series, we briefly characterize the short-term growth prospects for the region and the global risks to which such prospects are exposed. The report is thus divided into two

¹ Other salient dimensions of the “new face” that shaped LAC in the 2000s include i) a much improved macro-financial immune system (see the October 2010 report in this series “*Globalized, Resilient, Dynamic: The New Face of LAC*”); ii) the growing connections between LAC and China (see the September 2011 report in this series “*LAC’s Long-Term Growth: Made in China?*”); (iii) the remarkable reduction in poverty (see the World Bank’s Regional Brief “*On the Edge of Uncertainty: Poverty Reduction in Latin America and the Caribbean during the Great Recession and Beyond*”); (iv) the decline in income inequality (see the World Bank’s Regional Brief “*A Break with History: Fifteen Years of Inequality Reduction in Latin America*”); and (v) the rise of the middle classes (see the forthcoming 2012 Regional Flagship report “*Economic Mobility and the Raise of the Middle Class in Latin America*”). Some aspects of the transformations in labor market are analyzed in the April 2010 report in this series (“*From Global Collapse to Recovery: Economic Adjustments and Growth Prospects for LAC*”) and in the 2011 LAC Regional Study “*The Fall of Wage Flexibility: Labor Markets and Business Cycles in Latin America and the Caribbean since the 1990s.*”

chapters. The first chapter, which is shorter, concerns the economic juncture and growth prospects. The second chapter, which is longer and more substantive, deals with selected labor issues from both the structural and cyclical viewpoints.

Chapter 1: *LAC's Economic Cycle and the Global Dynamics*

After a strong growth performance in the past years, LAC has entered a phase of lower growth dynamics. The most recent consensus forecasts put the region's growth at about 3 percent for 2012, compared to about 6 and 4 percent in 2010 and 2011, respectively (Figure 1.1, Panel A). This deceleration, however, is not specific to LAC. It takes place in the context of a global slowdown. With world trade on a downward trend since the first quarter of 2011, global growth is now projected at 2.25 percent for 2012, down from 4.5 percent in 2011 (Figure 1.1, Panels B and C). Middle-income countries (MICs), which led the global recovery in the aftermath of the 2008-2009 financial crisis, are now also part of the world-wide slowdown, and in a highly synchronized manner. In fact, a growth deceleration of very similar magnitude—about 3 percentage points between 2010 and 2012—is estimated for China as well as for the middle-income regions of Eastern Europe, South East Asia, and LAC, albeit from different 2010 peak growth rates (Figure 1.1, Panel A).²

This chapter discusses LAC's short-term growth performance and prospects in the context of the current global juncture. It first examines the main changes in the constellation of global risks that have taken place since our last report in this series (April 2012), focusing on the three main sources of external risks that are relevant to LAC, namely, Europe, the U.S., and China. The chapter then characterizes the short-term growth prospects in LAC in comparison to other emerging regions, namely Eastern Europe and South East Asia. Finally, it provides a brief flavor of the salient heterogeneities within the LAC region.

The Global Setting: Weak Growth, Large Downside Risks, Dimmed Tail Risks

Since our April 2012 Semiannual Report, the world economy, which was shaky to begin with, has shown signs of further weakness. Global growth for 2012 has been revised downwards from 2.44 percent to 2.25 percent, mainly reflecting a sequence of downward revisions to the 2012 forecasts for China since May of this year. In contrast, the 2012 growth forecast for the U.S. has remained stable over the past 12 months, and so did that for Europe, which was significantly reduced in the latter part of last year (Figure 1.1, Panel D).

This baseline forecast for global growth is subject to significant downside risks—i.e., chances are nontrivial that the world economy may expand less than currently projected. These downside risks are associated with the ongoing drama in Europe, the uncertainties regarding the fiscal process and associated pace of the recovery in the U.S., and the possibility of a prolonged slowdown in growth dynamics in China. In light of these risks, most analysts do not see significant room for a better-than-projected global growth. In other words, there is actually no high-growth scenario for the world (compared to the baseline), but there is a range of lower-than-baseline growth scenarios whose probabilities are, unfortunately, not small. The likelihood of a further deterioration of global growth, of course,

² Throughout this report, two middle-income regions are used as comparators for LAC: Eastern Europe and South East Asia. Eastern Europe is defined to include Croatia, Estonia, Hungary, Lithuania, Turkey, Slovak Republic, Poland, and Romania. South East Asia is defined to include Indonesia, Korean Republic, Malaysia, Philippines, and Thailand.

FIGURE 1.1. Global Slowdown

translates into increased downside risks to LAC's near-term growth prospects. For example, commodity exporters in the region are particularly sensitive to a potential materialization of slower economic activity in China and an associated softening of commodity prices. In addition, as was discussed in our April 2012 Report in this series, uncertainty in global prospects can trigger swings in sentiment in international financial markets that can result in heightened volatility in capital flows in particular and in financial markets more broadly for the region.

Although the scope for a lower-than-baseline global growth is wide, *the likelihood of a tail risk event in Europe*—i.e., a major cataclysm that forces the abandonment of the Euro as a single currency—*has dimmed*. This has been associated with increasingly clearer signals (although still shrouded with ambiguity) of commitment by the European Central Bank (ECB) to act forcibly as lender of last resort, including the willingness to provide (mainly indirectly through banks) copious liquidity to the

sovereign debt of Spain and Italy (Figure 1.2, Panel A).³ Although some of the mechanisms adopted have an expiration date, the ECB has signaled that, should the situation deteriorate, it would step in as needed to defend the integrity of the single currency arrangement. This policy posture was further boosted by the important decisions taken in September 2012, including the confirmation of the constitutionality of the soon-to-be launched European Stability Mechanism (ESM) as well as initial steps towards a Eurozone banking union. As a result, while international financial markets remain jittery, there has been an observable distension of stress and a decline in the degree of global risk aversion, as measured by the VIX, which have eased funding costs (relative to the interest rate paid by German bonds) for peripheral countries in Europe (Figure 1.2, Panel B and C).

FIGURE 1.2. European Central Bank's (ECB) Actions and Market Response

³ To be sure, as argued in our April 2012 report in this series, the fears of an imminent breakdown of the single currency started subsiding earlier, with the introduction and intense use by the ECB of Long-Term Repo Operations (LTROs) with banks. The LTROs gave indirect support to sovereign debt placements, as banks used sovereign debt as collateral to access the LTRO liquidity.

FIGURE 1.3. Flight to Quality Within the Euro Zone**PANEL A. Net Positions vis-à-vis the Eurosystem** **PANEL B. Current Account Balances**

Note: For Panel A, all series show the month-end values. Net positions represent the claims of the national central banks against the ECB. Sources: Institute of Empirical Economic Research (IEER), and OECD.

To be sure, the possibility of a tail risk event in Europe has not been fully dispelled. While the recent interventions have helped curb the threat of the disintegration of the monetary union, the underlying structural problems remain unsolved. These represent enormous challenges that require ambitious reforms—to restore fiscal viability, deepen and complete the union, and close the gap in productivity and competitiveness. Nonetheless, policy actions have continued to be postponed or marked by a tendency to move incrementally. In the absence of decisive and comprehensive structural reforms, and even if the single currency holds thanks to continued and bold LOLR actions, the specter of a lost economic decade for Europe that would drag down global growth still looms large. As long as policy announcements continue to be entangled in brinkmanship politics, the financial dynamics in the Euro Zone are likely to remain fragile and the threat of self-fulfilling runs alive. In fact, defensive behavior in markets has continued, as reflected for instance in volatile asset prices and a sustained flight to quality, with massive flows of capital going from the periphery of the Euro Zone to the core, particularly to Germany (Figure 1.3, Panel A and B). In these fragile circumstances, ambiguity in policy announcements and actions can backfire (see Box 1).

Box 1. Policy Tensions and Ambiguous Policy Responses to Financial Crises

If there is one lesson that can be distilled from the financial crises of the last two decades is that ambiguous policy responses usually do not help. Instead, when faced with a sudden re-pricing of financial assets (e.g., subprime loans or southern European government debt) that embeds a substantial risk premium, policymakers should (i) make up their mind if such risk premia reflect liquidity or solvency considerations, (ii) announce clearly what their views are, and (iii) act accordingly and decisively.

This of course does not imply that it is easy to identify the ultimate reasons for the re-pricing to neatly ‘screen’ (or sort out) the institutions/countries that are fundamentally solvent but suffer from a sudden liquidity shortage from those that are insolvent. Given uncertainty, the workable criteria to perform such a screening are subject to the tensions between Type I and Type II errors. If the criteria for screening are too strict, they risk pre-empting access to lender of last

resort (LOLR) funds to illiquid but solvent countries (a Type I error, assuming that the null hypothesis is that countries are solvent). If the criteria are too lax, they risk granting access to insolvent ones (a Type II error). This is a difficult trade-off for a lender of last resort but it is one that must be adequately tackled for the LOLR to successfully fend off self-fulfilling runs. A key lesson from crises management is that success in doing so is more likely where the criteria for screening—even if imperfect—is chosen ex-ante (rather than applied ex-post) and pursued consistently thereafter.

Indeed, the cures for solvency and liquidity crises are very different ones. The former requires a clear commitment to unlimited liquidity support; the second needs an orderly resolution process and no liquidity. A hybrid response defined along the way (i.e., ex-post) can backfire. This is because, on the one hand, providing liquidity support to insolvent institutions can itself increase the solvency problem (because of moral hazard/gambling for resolution considerations). On the other hand, providing only limited liquidity support to illiquid but solvent institutions/countries (or making liquidity support conditional on adjustment and reform because of moral hazard considerations) may further fuel and validate the run, making it self-fulfilling. To deal with this conundrum, the ex-ante screening of the solvent (under some ex-ante defined criteria) can help sustain a more effective course of action, one where the “solvent” are ring-fenced by giving them access to unlimited liquidity support while the “insolvent” are not given access to liquidity but subjected to an orderly restructuring and resolution program.

If economic theory and past experience argue forcefully against “constructive ambiguity” when dealing with systemic liquidity crisis, why is it so difficult to draw a line in the sand and design policies that are clear and effective? The fact that different agencies have to deal with liquidity and solvency problems may explain mixed messages. Also, ambiguity may just reflect political constraints and is a way to postpone difficult and politically hard to sell decisions. The problem with such wait and see approach, however, is that it increases the societal costs, both in terms of assets mispricing and ultimate resolution process.

Given our view that the probability of a tail risk event in Europe still coexists with large, externally-originated downside risks to LAC’s growth, in what follows of this subsection we consider the remaining sources of such risks, namely the U.S. and China.

Economic activity in the *United States* is of course a potential source of concerns for LAC. The U.S. has been on a very modest, yet sustained, recovery path since 2010, with timid improvements in consumer demand and industrial production. The U.S. has actually outperformed other advanced economies in recent months (Figure 1.4, Panel A and B). There have been improvements in corporate and financial balance sheets as well as the strengthening of consumer confidence. Nonetheless, the U.S. has struggled with the pains associated with the household deleveraging process, the relatively high unemployment rate, and the scarcity of sufficiently strong recovery signs in the housing market. Moreover, significant risks lie ahead, mainly as the fiscal front adds to the growth debilitating uncertainties as the resolution of the so-called “fiscal cliff” and the search for an appropriate balance between fiscal reform and fiscal stimulus stay on hold until after the presidential elections at end of this year. Market participants have remained confident thus far that, independent of election results, the incentives with respect to the various components of the “fiscal cliff” are

FIGURE 1.4. US Economy

such that the probability is reasonably high that political parties will reach a compromise. And while the compromise is not likely to be perfect, the worst case scenario (i.e., a major fiscal contraction that could push the U.S. economy into a double-dip recession) will likely be avoided. This consideration, together with the broadly shared conviction that the Fed will maintain as strong a monetary stimulus as needed, tilts the odds in favor of the U.S. providing some upside potential to global growth.

It is due to *China*, however, that the configuration of global risks has changed the most since our last report in this series. Recent statistics point to a significant slowdown of growth in China, from an annualized rate of 8.1 percent in the first quarter of 2012 to 7.6 percent in the second quarter of 2012. Consistently, the consensus forecast for 2012 growth in China has been revised from 8.4 percent in April of this year to 7.7 percent in September (Figure 1.1, Panel D).

The forces behind this slowdown, however, are unclear and have divided economic analysts into two views. The first view argues that the lower growth in China is predominantly a cyclical phenomenon, whereas the second view defends that it mainly reflects structural factors. Neither view, however, can fully discard the possibility of a hard landing. Under the first view, the slowdown is a consequence of a weaker world demand for Chinese exports that has not yet been compensated by policies to stimulate domestic demand. In fact, while Chinese exports have basically stopped growing this year (Figure 1.5, Panel A), domestic policy has been focused on controlling inflation over the past 18 months or so.⁴ Thus, the policy stance in China has magnified the cyclical downturn. Moreover, advocates of this view argue that the adoption of countercyclical policies has been delayed by the political transition within the Communist Party⁵, although restoring growth to its potential remains at the top of the list of policy priorities and once the political transition permits, China's government would shift to an expansionary macroeconomic policy stance.

⁴ The loose credit conditions associated with the 2008-2010 stimulus package led to a pickup in inflation in the first half of 2011, a process that was likely exacerbated by increases in international prices of foodstuffs and other key commodities. However, CPI inflation peaked around mid-2011 and has eased since then, reflecting a cycle of monetary policy tightening that began in October 2010 and that seems to have also mitigated the exuberance in real estate prices.

⁵ This is supported by the recent pledge by Premier Wen Jinbao to boost public policy and move towards an expansionary monetary policy cycle.

The second view, which is becoming increasingly popular, argues that the current deceleration is not merely cyclical but rather an early sign of an ongoing structural change. In this view, China's sustainable (non-inflationary) growth rate is bound to converge to a lower level as its current export-led growth model approaches exhaustion and the economy makes a transition towards greater reliance on domestic sources of growth. There is indeed evidence that China's economy is already evolving away from unskilled labor-intensive activities towards more skill- and technology-intensive ones. And while recent announcements indicate that policies will remain supportive of growth, the authorities are also signaling the intention to focus on domestic growth sources—particularly the services sector on the supply side and the role of consumption on the demand side. They have also signaled that domestic stimulus in the future will focus less on infrastructure investment (as was the case of the 2009-2010 policy response to the global crisis) and more on social policy (e.g., affordable housing and social safety nets). The rise of wages in some service industries (retail trade, finance) relative to manufacturing wages is yet another indication that the Chinese growth model is already mutating (Figure 1.5, Panel B). A similar suggestion stems from the fact that China's manufacturing wages are rising faster than those in other emerging economies (Figure 1.5, Panel C).

FIGURE 1.5. Chinese Economy

PANEL A. Chinese Exports

PANEL B. Wages in China by Sectors

PANEL C. Manufacturing Wages Across Regions

Notes: Central America comprises El Salvador and Guatemala. Sources: Bloomberg, Haver Analytics, and ILO.

Latin American Short-Term Growth Prospects in Comparison to Other MICs

The most recent consensus forecasts for these three MIC regions put their annual growth rates for 2012 within a relatively narrow range: about 3 percent for LAC, 4 percent for South East Asia, and 2 percent for Eastern Europe. And the current forecasts for 2013 envisage a further narrowing of the difference in their growth rates. This results from a projected growth acceleration of about 1 percentage point for LAC and Eastern Europe, to annual rates of about 4 and 3 percent, respectively, but of only 0.5 percentage points for South East Asia, to about 4.5 percent.

Most notably, a growth deceleration of similar magnitudes has taken place within the developing world. LAC's growth rate is estimated to fall by 3 percentage points from 6 percent in 2010 to around 3 percent in 2012. The fall in growth rates is of comparable magnitude for a number of other emerging economies: China (2.7 percentage points growth deceleration), the Eastern European MICs (2.9 percentage points), and the South East Asian MICs (2.6 percentage points) (Figure 1.6, Panel A).

FIGURE 1.6. Growth Deceleration Across MICs and LAC Exports

Such striking similarity in the absolute size of the growth deceleration across MICs arguably reflects global as well as country-specific factors. While these two types of drivers are difficult to disentangle, there is little doubt that global factors are playing an important role. These seem to have taken the form of adverse growth spillovers to MICs emanating from the slowdown in the world's growth poles, particularly Europe and China. In the case of LAC, this is clearly illustrated by the declining path of global demand for the region's exports (Figure 1.6, Panel B).

However, factors specific to the other (non-China) MIC regions also seem to be at work. In particular, there is evidence that, after a vigorous post-global crisis recovery, economic activity in these regions, including LAC, had reached, or perhaps even exceeded, its potential by 2010-2011 (Figure 1.6, Panel C). The growth deceleration that has been observed in the MIC world since then can be thus interpreted also as an endogenous phenomenon whereby economies approached the peak of their business cycles in a synchronized manner.

It is worth noting that for several countries in these three MIC regions, especially those that had been on the receiving end of significant short-term capital inflow surges (which include most of larger and financially globalized countries in LAC), the ongoing deceleration spells some relief. By helping ease inflation pressures, the growth deceleration is allowing central banks to relax (or stand much more ready to relax) monetary policy in a manner that is simultaneously compatible with the three key objectives—keeping inflation under control, stimulating domestic demand to keep growth closer to its potential, and dampening appreciation pressures on the local currency. In the case of LAC, in particular, as inflation has remained broadly stable, central banks have either kept monetary policy rates untouched or have already brought them down (Brazil and Colombia) (Figure 1.7, Panel A and B).

Heterogeneity in Short-Term Growth Prospects within LAC

The interaction between the recent global slowdown and domestic factors has affected LAC countries in different ways, generating significant within-region heterogeneity in growth prospects.

FIGURE 1.7. Changes in Inflation and Monetary Stance Across LAC

PANEL A. Changes in Inflation in Selected LAC Countries

PANEL B. Monetary Policy Rates in Well-Established Inflation Targeting Countries

Notes: For Argentina in Panel A, the total height of the bars represents the average inflation for the provinces of San Luis and Santa Fe. Sources: GEM and Bloomberg

One way of visualizing this heterogeneity is to compare the 2012 growth rates projected for individual countries with the regional average (of about 3 percent). There is a rather small number of countries expected to grow below the regional average. The majority of countries are in fact expected to grow above the regional average. This severely tilted distribution of growth rates within the region is a reflection of the fact that two countries with large weights in LAC's GDP, namely Argentina and Brazil, are projected to grow in 2012 by 2 percent or less (Figure 1.8, Panel A). Among the countries projected to grow above the regional average, notable cases include Mexico (where the recovery came with a lag compared to the other large countries in LAC but is now gaining momentum), as well as Bolivia, Colombia, Costa Rica, Ecuador, and Chile (whose growth rates—at around 4 percent—have surprised forecasters on the upside). Panama and Peru continue to be the top growth performers in the region in 2012, with Asia-like growth rates of 8 and 6 percent respectively.

In contrast to 2012, the current consensus forecasts for 2013 envisage a shift in the distribution of individual-country growth rates, with a larger number of countries growing above rather than below LAC's average of 3.7 percent. Countries projected to grow at rates below the region's average include Mexico, the Central American and Caribbean economies (such as El Salvador, Guatemala, Jamaica, Nicaragua, and Trinidad and Tobago), and some South American countries like Argentina, Ecuador, and Venezuela. This reconfiguration in the 2013 growth landscape is mainly driven by the significant increase in growth forecasts for Brazil. In effect, Brazil and Paraguay are envisaged to be the two most noticeable cases of growth acceleration in the region, with their growth rates increasing from less than 2 percent to about 4 percent and from -0.1 to 4 percent, respectively. Panama and Peru are, again, expected to continue to lead the pack in 2013, with growth rates of 7 and 6 percent, respectively (Figure 1.8, Panel B).

The heterogeneity across countries in the region is also clearly observable when we compare changes in the output gaps—i.e., changes in the distances between actual and potential levels of economic activity during the 2011-2012 period (Figure 1.8, Panel C). At one extreme are countries (Chile, Mexico, Nicaragua, and Venezuela) where economic activity seems to be still approaching potential output levels. At the other extreme are countries (Argentina, Brazil, Dominican Republic, Paraguay, and Uruguay) where economic activity is moving away from its potential level. Within this last set of countries, Argentina, Brazil, and Paraguay stand out—they were among the fastest growing economies in the region in 2010 but since then their growth rates have collapsed dramatically—by 7.5, 6, and more than 16 percentage points, respectively. In the middle are countries where economic activity has remained rather constant relative to its potential, such as Bolivia, Colombia, Costa Rica, Guatemala, Panama, and Peru.

A few, selected examples deserve further discussion. Chile, Colombia, Panama, and Peru have continued to beat expectations and outperform their peers, suggesting that their trend (potential) rate of growth may be rising. Their recent growth performance also suggests a surprising vigor in domestic demand, enough to largely offset the decline in world demand for their exports. Mexico is another example of recent economic success and improving prospects. After a sluggish recovery in the aftermath of the global financial crisis, it has taken advantage of the improvements in the U.S. economy to boost growth. This was facilitated by Mexico's competitive exchange rate and a fast rise in Chinese unit labor costs, both of which appear to have helped create space for Mexican goods to regain market share in the U.S. Moreover, given the troubles in European economies, the Mexican sovereign bonds have become an attractive alternative for investors seeking "safe" assets to hedge

FIGURE 1.8. Heterogeneity in Economic Activity Within LAC

Note: For Panel C, the output gap is computed using the HP filter with a smoothing parameter of 6.25 (Ravn and Uhlig, 2002), considering annual data from 1980 until 2012 (forecast). Sources: Consensus Forecast (September 2012), WEO (April 2012), and WDI.

their portfolios. Brazil stands out as a different case, one where the scope to propel growth through domestic consumption is narrowing (not least because of rising household indebtedness and an appreciated currency) and this is prompting the authorities to place increasing emphasis on policies that can stimulate investment and savings. Argentina is another country where the medium-term prospects have dimmed, as the model that has sustained remarkably high growth rates for approximately a decade presents signs of exhaustion and economic activity seems to be increasingly hampered by the proliferation and tightening of foreign exchange and import controls. Nevertheless, the rise in the prices of agricultural commodities, in which Argentina specializes, is expected to continue to provide some tail wind to growth in economic activity.

While the discussion so far has focused on the projections based on the baseline scenario for global growth, the intensification of economic linkages between China and the LAC region implies that a significant weight should be given to the downside risks associated with a slowdown in Chinese economic activity. China has played an increasingly important influence in the economic prospects for LAC, particularly South America, over the last decade. This influence has been exerted directly, through trade and FDI links, as well as indirectly, through international commodity prices and third-

market effects. The commodity price channel is of particular importance when considering downside risks for LAC. A protracted slowdown in China that puts significant downward pressure on commodity prices would have a major, albeit asymmetric impact across LAC countries. Terms of trade losses, which typically have been associated with low economic growth over the past decades, would of course be observed in countries that are large exporters of both agricultural and non-agricultural commodities (e.g., Argentina, Brazil, and Chile). Some other countries in the region (e.g., Ecuador, Jamaica, and Peru) that are net importers of cereals but relatively large exporters of minerals could also be net losers. The opposite effect would be observed for the typically small and rather numerous countries, mostly in Central America and the Caribbean, that are net importers of foodstuffs and mineral commodities.

Chapter 2: *The New Face of Latin American Labor Markets*

Introduction

Latin America witnessed tremendous social progress during the last decade. Inequality of (labor and non-labor) income fell substantially, by 5 Gini points on average for 15 LAC countries,⁶ and the robust growth that the region experienced was remarkably pro-poor, with more than 70 million Latin Americans lifted out of moderate poverty between 2003 and 2010. Latin America became also more globalized, strengthening trade links with China and the East Asian tigers, as well as more resilient, since the collapse of Lehmann Brothers and subsequent global crisis was felt in the region and left some scars, but the healing process was unprecedentedly fast. As expected, such new face of LAC was also felt in the main labor market aggregates. A few stylized facts that characterize the last 10 years of LAC economic history help illustrate this process:⁷

- The unemployment rate declined in 3.5 percentage points, falling steadily in most countries for which we have comparable data;
- The set of skills brought by Latin American workers to the labor market improved rapidly. As the proportion of the employed labor force with primary education or less lost weight dramatically, by more than 10 percentage points, the share of workers with secondary education increased the most, by 7 percentage points;
- Inequality in labor earnings declined rapidly, by about 4 Gini points;
- The services sector continued to employ an increasing number of workers: its relative share in total employment increased by 2 percentage points;
- In spite of going through the worst international crisis since the Great Depression, real wages did not fall significantly during 2008-2009. From peak to trough, and driven by reductions in Colombia, Ecuador and Mexico, the real wage fell on average by less than 1 percent, and it actually increased in Argentina, Brazil, Chile, Peru and Uruguay.

This second chapter focuses on two fundamental changes in LAC labor markets that have a bearing on the set of facts outlined above:

⁶ The Gini coefficient is a measure of statistical dispersion that ranges from zero to one. One “Gini point” corresponds to 0.01. When applied to the distribution of household income, a zero Gini coefficient indicates perfect equality of incomes and a Gini coefficient of one expresses maximal inequality in income.

⁷ Country coverage and exact years change depending on the indicator. In most cases the period covered is 2000-2010.

- The first section documents the progressive reduction in labor earnings inequality in the region during the last decade, and discusses some of the economic forces that may be behind it, namely, changes in the educational structure of the population, changes in the sectoral structure of employment, and the raise in the participation of female workers into the labor market.
- The second section reviews secular changes in the macroeconomic environment in which LAC labor markets operate and analyzes their consequences for labor market cyclical adjustments, including employment, unemployment, and wages. Particular attention is paid to the impact of the secular fall of inflation on wage rigidities, and the impact of the increase in trade openness—with reference to the case of Mexico during the 2009 downturn, on the speed of labor adjustments to external shocks.

Several conclusions emerge from the analysis:

- Changes in earnings inequality are the fundamental source of changes in the inequality of household income registered during the 2000s, suggesting that growth of output and employment played a greater role than social policy or, conversely, that social policy in LAC—while having had a major impact on poverty reduction—continues to be insufficiently redistributive.
- In most countries, the composition of labor force changed rapidly during the last two decades. The education levels of workers, in particular secondary attainment, increased steadily. Women kept up the rising trend in participation that started vigorously in the 1960s, albeit at a slower pace during the 2000s.
- These changes in the characteristics of the labor force, while impressive, do not appear to be a crucial factor in explaining the movements in labor income inequality. Instead, demand side forces appear to be playing a major role.
- The favorable terms of trade triggered by the commodity boom for the net commodity exporting countries in the region seem to have contributed to increase the relative demand for low-skilled workers, thereby playing a role in the decline in the returns to secondary and tertiary education.
- This decrease in returns to education, in turn, appears to have been an important driver behind the observed decline in labor income inequality, but not the only one, as returns to skills not directly measured through educational attainment fell as well.
- The secular reduction in inflation has introduced downward real rigidities in wages. However, the reduction in wage flexibility does not seem to have been accompanied by stronger fluctuations in unemployment or employment, in what appears to be a sign of increased efficiency in the labor market.
- The decline in informal employment during the 2000s appears also to be related to the rapid expansion of large firms in the region, a sign of the importance of growth and productivity enhancement for the formalization of the economy.

Section 1: Income and Wage Inequality in LAC

As noted in previous reports in this series, many LAC countries experienced during the 2000s a steady decline in income inequality, which stands in sharp contrast with rising inequality in virtually

everywhere else.⁸ The Gini coefficient of household income per capita distribution—one of the most commonly used measures of inequality—fell in twelve out of the fifteen countries reported in Figure 2.1. All of these declines were statistically significant and their magnitude was not trivial: the average decline between 2000 and 2010 for the twelve countries was 5 Gini points. In spite of this remarkable trend, there is of course a long way to bring inequality in the region to international standards. Uruguay, the less unequal country in LAC, has levels of inequality that are higher than Portugal, the most unequal country of the non-LAC OECD countries.

There are several factors behind the decline in household income inequality.⁹ Non-labor income, associated with private and public transfers (mainly remittances from abroad and conditional cash transfers, respectively), played an important role in raising the income of the population at the bottom of the distribution relative to the mean. Conditional cash transfer programs, in particular, became the most decisive social assistance policy intervention ever seen in the region to alleviate extreme and moderate poverty. The creation and deepening of non-contributory pension systems helped alleviating poverty for the elderly. Other factors pushing up the relative income of the bottom of the distribution include the demographic transition (mainly reflecting falling fertility rates), and a faster expansion of education coverage among the less favored. This said, as we shall see below, it is undoubtedly the case that the main driver behind the reduction in overall household income inequality—including the narrowing of the distance between the income of the population at the higher end of the distribution and the median—was the *fall in the inequality of labor income*.

The decline of labor income (or wage) inequality during the 2000s is evidenced by the evolution of the Gini coefficient of labor earnings (Figure 2.2). This measure focuses on the individual salaries rather than on the overall income (including transfers) of households, and applies to all Latin-Americans older than 16 but younger than 65 that were working in 2000 and in 2010. In order to provide a more complete picture, we report two alternative measures of wage inequality, a restrictive

FIGURE 2.1. Changes in per Capita Household Income Inequality

Note: The average is for all the countries in the panel. Due to availability of data, change in Bolivia is between 2008 and 2000; in Brazil between 2009 and 2001; in Chile, Costa Rica and El Salvador are between 2009 and 2000; in Honduras is between 2009 and 2001; in Panama is between 2010 and 2001; and in Paraguay is between 2010 and 2001. Source: SEDLAC.

⁸ See López-Calva and Lustig (2010) for a description of inequality trends and a discussion of the main drivers of the steady fall in inequality in LAC.

⁹ For a detailed exposition see World Bank (2011b) and López-Calva and Lustig (2010).

FIGURE 2.2. Changes in the Monetary Labor Income Gini Coefficient

Note: The average is for all the countries in the panel. Due to availability of data, change in Bolivia is between 2008 and 2000; in Brazil between 2009 and 2001; in Chile, Costa Rica and El Salvador are between 2009 and 2000; in Honduras is between 2009 and 2001; in Panama is between 2010 and 2001; and in Paraguay is between 2010 and 2001. Source: SEDLAC.

one including only dependent employees and an extended measure that adds the self-employed and employers. Self employment is fairly important in Latin America, where informality in the labor market is high. However, a great difficulty in analyzing the labor income of self-employed and small employers is how to differentiate genuine returns to labor from returns to the capital they have invested in. For this reason, later on we conduct an in-depth analysis of the determinants of wage inequality only among dependent employees.

Inequality in labor earnings fell substantially between 2000 and 2010. On average, it declined by 4.2 Gini points (3.6 if we restrict the analysis to dependent employees), and fell in 12 or 13 countries (depending on the measure) out of the 15 countries for which data are available. Ecuador is where labor income inequality fell the most, by 11 Gini points if only dependent employees are considered and by 8 Gini points when the self-employed are added. At the other extreme is Costa Rica, with the largest increase in the two measures of labor earnings inequality.

Importantly, the overall trends in inequality in LAC over the 2000s are generally the same regardless of whether we use the Gini of household income (which includes non-labor income) or of labor earnings. This intimate relationship is evidenced in Figure 2.3, which uses our most inclusive measure of earnings inequality, but results are very similar with the restrictive measure that excludes the self employed. Interestingly, most countries tend to display higher household income per capita inequality and earnings inequality (Figure 2.3, Panel A), a fact that speaks for itself regarding the limited capacity of re-distributive systems in LAC. Two countries, Peru and Uruguay, consistently differentiate from the norm by showing less inequality in household income than in earnings. Hence, it is not surprising that once country means in inequality are factored out, the relationship between both inequality measures becomes very tight, close to a 45° line (Figure 2.3, Panel B).

Consider now the evolution of labor earnings in more detail in four large Latin American countries (Argentina, Brazil, Chile and Mexico) for which sufficiently long data series are available. Rather than focusing on the Gini, we now focus on the dispersion between the highest and the lowest wages. We use as a summary measure of dispersion the ratio of the 90th to the 10th percentile in the wage distribution. This measure has the advantage of being less sensitive to miss-reporting of wages at the very top and bottom of the distribution. Since we are interested in how labor markets operate

FIGURE 2.3. Household Income Inequality and Individual Earnings Inequality

Notes: Each dot represents a Gini coefficient in a given country-year, covering the period 1990-2010. Country coverage includes Argentina, Bolivia, Brazil, Colombia, Chile, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama, Paraguay, Peru, and Uruguay.
Sources: LCRCE from SEDLAC.

and considering the difficulty of separating returns to labor and capital among the self-employed, we concentrate on dependent employees.

The declining trends in labor income inequality are consistent with those in the dispersion measure outlined above, but substantial heterogeneity across LAC countries emerges. Figure 2.4 presents the trends of the 90/10 percentile ratio in Argentina, Brazil, Chile, Mexico and the U.S. for males and females. There is a strikingly different temporal pattern than the one that would be expected if the U.S. was used, as it often is, as a point of reference. Concentrating first on men, we can clearly see that in three of the four countries, a strong reduction of wage dispersion started already in the mid or late 1990s: around 1996 in Chile, 1998 in Mexico and at least as back as 1992 in Brazil. In Argentina, instead, the decline started only in 2002, after the collapse of convertibility plan. These trends are in sharp contrast with those observed in the U.S., where labor income inequality increased steadily during the last two decades, a fact often interpreted to be the result of a process of technical change that is biased towards skilled labor, although still subject to a heated debate in the academic literature (Autor, Katz and Kearney, 2008). However, and in spite of the fast reduction in wage dispersion observed during the last decade or so in the region, the level of wage inequality in the four mentioned LAC countries is still much higher today that it is in the U.S.

Female wage dispersion, with the exception of Argentina, followed a similar trend to that of men, albeit reductions have in general been weaker. The reduction in wage dispersion among Brazilian women is as exceptional as it is for men—of the order of 70 log points. In 1992, the best paid women in Brazil earned a wage that was 2.6 times the wage earned by women at the (lower) 10th percentile. By 2010, such difference had declined to 1.8. While the declines in female wage dispersion are less impressive in Mexico and Chile, they are still sizeable. The contrasting case is Argentina, where female workers followed the opposite path of men, increasing steadily from a 90/10 percentile ratio of 1.5 in 1995 to reach a peak at 1.9 in 2006.

The factors that may explain the evolution of earnings inequality can be grouped into three broad categories. The first comprises labor supply forces, including changes in the demographic

FIGURE 2.4. Female and Male Earnings Inequality

Notes: "Log 90/10 wage ratio" means the rate between the 90% highest percentile wage over the 10% lower percentile wage in log. In the case of Mexico data is available every two years. Sources: LCRCE from SEDLAC in the case of LAC and Autor, Katz and Kearney (2008) for the US.

composition of the labor force or changes in the education levels and skills that new entrants bring into the labor market.¹⁰

The second category comprises labor demand forces. Some of these are associated with skilled-biased technical change. An often cited factor in the demand for labor is given by changes in technology. The introduction of computers into the workspace, for instance, can render some skills obsolete (mainly the skills associated with repetitive and routine-like tasks that can be computerized) while at the same time can boost the demand for skills that are complementary with the new technologies. This may accelerate the demand for workers who can carry out abstract and complex tasks. There are, however, other labor demand forces at play. One that is very relevant for LAC is given by the changes in the sectoral structure of the economy possibly driven by Dutch disease-type effects associated with the commodity price bonanza, whereby productive resources tend to be shifted away from non-commodity tradables and towards non-tradables. To the extent that different sectors have different demands for skills, sectoral changes can affect the evolution of wage inequality.

The third category comprises institutional factors, such as changes in the minimum wage legislation or social security contributions, which act directly on the prices paid in the labor market and may have important distributional effects on labor incomes.

As regards supply-side factors, in this report we put emphasis on the role played by changes in the education of the younger cohorts entering into the LAC labor market and the increasing engagement of women in market activities. Regarding the demand side, we examine the role played by changes in terms of trade associated with the commodity price boom of the 2000s, a process in which the region is still immersed. The analysis does not examine other forces that may also be at play. In particular, we do not examine the links between the reduction in unemployment over the decade (or the strong and fast cyclical labor market recovery after the global crisis), on the one hand, and the demand for less skilled workers, on the other.

In the next three subsections of this chapter we review the main trends in education, female labor force participation, and the sectoral allocation of employment, contrasting when possible the changes between the 1990s and the 2000s. In the final subsection we attempt to combine these three factors and assess the relative contribution of each of them to the declining trends in wage inequality.

More and More Egalitarian Education but the Premium Remains on Quality

Human capital is the most important attribute behind wage determination. During the last two decades Latin America has gone through a major transformation in the educational attainment (measured by years of schooling) of its labor force, a process that is still ongoing. In parallel to the steady increase in the supply of more educated workers, the inequality in educational attainment between the rich and the poor population has fallen. The complex linkages between these phenomena and the decline in earnings inequality of the 2000s are discussed later on in this report.

¹⁰ In the U.S., supply side changes are found to have played an important role in the dynamics of wage inequality during the past decades (Katz and Murphy, 1992).

For the time being, this section examines various dimensions of the steady and remarkable rise in years of schooling among workers in LAC over the past decades.

At least since the 1990s, almost all countries in LAC greatly expanded the proportion of their labor force with above-primary education (Figure 2.5). The unweighted average share of the working age population that completed secondary education in the 15 countries for which data are available rose from 21 to 29 percent between 1990 and 2010. This rise is all the more remarkable if we consider the weighted (by population) average—it rose from 18 to 30 percent in the same period. The large difference between the weighted and unweighted measure is mainly due to the spectacular performance of Brazil, the largest country in the region, where the share of the working age population with complete secondary education more than doubled, going from 13 percent in 1990 to 31 percent in 2009. The expansion of education was equally important at the tertiary level. The weighted average share of workers with completed college education almost doubled, rising 6 to 11 percent over the period (from 6 to 9 percent if we consider the unweighted average).

In addition to Brazil, El Salvador also stands out in the upgrade of educational attainment of the labor force. Both countries more than doubled the ranks of working age individuals with completed secondary and tertiary education. Naturally, countries that started with a larger share of the population attending and finishing high school experienced the faster expansion of tertiary education. This is the case of Argentina, Chile, the Dominican Republic and Uruguay, where the share of college graduates doubled. A third group of countries (Bolivia, Colombia, Costa Rica, Honduras, Panama, Paraguay and Peru) registered improvements in educational attainment that are significant, but more modest.

These broad patterns hide substantial differences in the *temporal evolution* of educational attainment of the labor force across LAC countries during the 1990s and the 2000s (Figure 2.5). Some countries (Colombia, Costa Rica, and Paraguay) only achieved gains in years of schooling during the 2000s, after a decade of stagnation or (in the case of Paraguay) after a severe deterioration of educational attainment. Others (Brazil and Ecuador) experienced a rapid expansion of secondary education in the 1990s followed by a more intense expansion of tertiary education in the 2000s. But in contrast

FIGURE 2.5. Educational Attainment in LAC

with the gains observed in inequality, which were mostly concentrated during the 2000s, several countries in LAC (notably Uruguay and El Salvador) expanded education more rapidly in the 1990s than in the last decade.

The educational upgrade was fairly general and benefited young individuals from all socioeconomic backgrounds. A simple Gini coefficient of education distribution suggests a clear reduction in educational inequality in both decades, with declines of similar magnitude, around 2 Gini points, in each decade (see the weighted averages presented in Figure 2.6, Panel A). The greatest improvements are observed in Mexico, with a reduction of 4 Gini points in the 1990s and 3.5 points in the 2000s. When interpreting these data, however, account should be taken of the fact that as the level of education a person can attain is finite, the inequality of education is mechanically bound to decline as countries develop and educational levels concomitantly rise.

Notably, educational attainment intensified among the poor in most countries during the 2000s, a feature that stands in sharp contrast with the evolution observed during the 1990s.¹¹ To show this, we use a summary measure of educational inequality conditional on income: the difference of educational attainment between those at the highest decile and those at the lowest decile of the income distribution. According to this measure, the 1990s were characterized by an *increase* in the inequality of educational attainment, with the average difference in years of education between those at the top and those at the bottom rising by 0.6 years (Figure 2.6, Panel B). The worst performers during the 1990s were Mexico, the Dominican Republic and Honduras, experiencing an increase in the gap of educational attainment between the two extremes of the income distribution by around 2 years.

This trend was reversed during the 2000s, a decade during which those at the bottom of the income distribution caught up visibly with those at the top. On average, the decline in the educational gap between the two extremes of the income distribution was 0.7 years, enough to revert the unequalizing trend of the previous decade. In spite of this average pattern, five countries (Colombia, Costa Rica, Panama, Peru and Uruguay) continued to experience an increase in the inequality in educational attainment during the 2000s. At the other extreme, Argentina, Chile and Mexico displayed the greatest reductions in the educational gap, bringing those at the bottom at least one year of education closer to those at the top.

Notwithstanding these advances, the educational attainment of Latin Americans still lags behind that in other regions in the world, with the exception of Africa, something we already highlighted in our September 2011 semi-annual report *“Latin American and the Caribbean’s Long Term Growth: Made in China?”*. Latin America is slowly catching up with Europe and Central Asia, but the gap in educational attainment has widened with respect to the South East Asian MICs. The latter had more than one year of educational attainment advantage over the LAC average by the end of the 2000s.

While gains in educational attainment constitute an undeniable achievement, improvements in the quality of education remain as the fundamental challenge for LAC. One way to benchmark the quality of education is by comparing the results in standardized cognitive development tests such as those administered by the Program for International Student Assessment (PISA). The PISA tests are

¹¹ See Cruces, García-Domenech and Gasparini (2012) for an in-depth discussion of the evolution of educational attainment during the last two decades in LAC.

FIGURE 2.6. Inequality in Educational Attainment: The 2000s vs. 1990s

PANEL A. Change in the Gini Coefficient of Education

PANEL B. Change in the Difference in Years of Education Between Top and Bottom Incomes

Note: The average is for all the countries in the panel. Due to availability of data, change in Bolivia is between 2008 and 2000; in Brazil between 2009 and 2001; in Chile, Costa Rica and El Salvador are between 2009 and 2000; in Honduras is between 2009 and 2001; in Panama is between 2010 and 2001; and in Paraguay is between 2010 and 2001. Source: SEDLAC.

carried out among 15 year old students in 65 countries, including 9 countries in LAC. Certainly, the tight correlation between GDP per capita and test scores suggests that achievements of LAC students matching those of the most developed countries are not to be expected (Figure 2.7, Panel A). However, most LAC countries in the PISA study underperform relative to what is expected given their level of economic development (measured by GDP per capita). This is clearly the case in Argentina, Peru, Panama and Trinidad and Tobago. And the situation is even more worrisome if one considers that, with the exception of Mexico, the socioeconomic background of the children determines substantially their performance in cognitive tests, more so than in other countries of similar level of development (Figure 2.7, Panel B).¹²

Female Education and Labor Force Participation

In almost every country in the world, developed and developing, the propensity of women to participate in the labor market is lower than that of men. These differences are rooted in social

¹² For a detailed discussion of the importance of the socio-economic background in the determination of educational achievement and other indicators of student performance see our forthcoming 2012 Flagship Report *"Economic Mobility and the Raise of the Middle Class in LAC."*

FIGURE 2.7. Educational Achievements

PANEL A. Cognitive Test Scores and GDP per Capita

PANEL B. The Importance of Parental Background in Cognitive Test Scores

Notes: For Panel B, the bars represent the effect of one standard deviation change in the Index of Socio-Economic Status (SES) on reading test scores. Other variables included in the regression as controls include gender of the pupil, urban/rural dummy, and immigration status (first- or second-generation). Standard errors are clustered at the school level and all reported effects are significant at the 5% level. Sources: Ferreira et al. (forthcoming), PISA 2009 and WDI.

norms and cultural factors but also depend on economic incentives. Education plays a crucial role in this regard in LAC, as it does elsewhere. As LAC women get more educated and close the educational gap with men (and even surpass the educational attainment of men in many countries among the younger generations), two important forces enter into play: i) the opportunity cost of not working increases hand in hand with the raising wage women may obtain in the market; ii) social norms shift, both regarding traditional gender roles, but also regarding women's perception of work as a career. The two factors are likely to play important roles in affecting female labor force participation.¹³

In LAC, the fast convergence of female labor force participation with respect to men started in the late 1970s and mid 1980s, continued steadily during the 1990s, and slowed down somewhat during the 2000s (Figure 2.8, Panel A). By 2010, 65 percent of women aged 25-65 in LAC participate in the labor force, although important differences across LAC countries are apparent (Figure 2.8, Panel C). The slowdown in the convergence with men during the 2000s is consistent with the typical S-shaped evolution of female labor force participation in developed economies including the U.S. (Fernández, 2010), where the participation of women in the labor market has stabilized at some level around 60 percent.

In contrast to men whose participation rate is close to 1, the participation of women in the labor

¹³ For a comprehensive analysis of the trends and issues in female labor force participation in LAC see the recent regional study "Work and Family: Latin America and the Caribbean in Search of a New Balance", Chioda (2011). Among other things, that study discusses the complex and often nonlinear links between the level of education and economic development, on the one hand, and female labor force participation, on the other. It uses cross-country data to show that female labor force participation tends to be high at low per capita income levels (where working is a necessity), tends to fall as per capita income rises towards middle-income levels, and then tends to rise again as per capita income increases towards the higher levels (where working is more of a choice, entangled in a difficult quest for balance between work, family, values, and aspirations).

FIGURE 2.8. Labor Force Participation in LAC

PANEL A. Labor Force Participation in LAC

PANEL B. Marriage and the Participation GAP across LAC

PANEL C. Difference Male/Female in Labor Force Participation

PANEL D. Female Marital Status Among LAC Countries

Notes: For Panel C, due to lack of information, the year 1990 is substituted by 1994 for Ecuador, 1992 for Mexico, 1991 for Panama and 1992 for Venezuela; the year 2000 is substituted by 2001 for Brazil and Panama; and the year 2010 is substituted by 2006 for Venezuela and 2009 for Brazil, Chile, and Ecuador. Source: LCRCE from SEDLAC.

market in LAC depends heavily on the level of education attained and on complex interactions with the marital status and the decision to have children or not. Perhaps surprisingly, in many LAC countries marriage appears to be a factor even more important than having children for the decision to participate in the labor market or not (Chioda, 2011). Even during the past 2 decades, married women in LAC participate much less in the labor market than single women, although differences have been narrowing (Figure 2.8, Panel B).¹⁴

The educational gap between women and men has been falling dramatically over the last four decades. Gender differences in the share of the population with completed primary education dissipated already in the 1980s, while the differences in secondary educational attainment between men and women virtually disappeared by the early 1990s. The last twenty years instead have been decades of convergence in tertiary education (though the onset of the trend took place in previous

¹⁴ Due to data availability, the LAC average during the first years of the sample includes a smaller number of countries. Hence, the evolution of LAC averages should be interpreted with caution.

decades). At the beginning of the 1990s, the ratio of females to males with completed tertiary education was 0.8, but by the end of the period the gap almost closed for the region as a whole. Such convergence represents one of the dimensions of the very intense process of human capital accumulation in LAC during the last two decades—it brought the average years of education (for males and females) in the region from 5 to close to 8. Just as occurs in the case of men, the educational attainment of women in LAC has been slowly catching up with that in the OECD, although the gap in average years of education (of about 3 years in 2010) is still quite significant.

Not only female labor market participation has expanded with advances in educational attainment in LAC, but also the propensity to participate has increased for all educational groups (Figure 2.9). This trend may be a sign of changing social norms. Over the last two decades, the largest jump in the female propensity to participate took place in the 1990s, despite the fact that it was a decade of relatively slow growth, and was especially prevalent among the less educated. On average, the participation rate among workers who never attended school increased by 6 percentage points, and among those who had primary studies by 17 percentage points. This contrasts with the changes in participation among females with tertiary education, which was already very high in the early 1990s—around 74 percent—and thus increased less (by only 7 percentage points during the last 20 years). While the 2000s displayed faster (economic) growth, the increases in female labor force participation for a given education level were milder than in the 1990s.

The two forces described above, (i) a higher propensity to participate across educational groups and (ii) the general upgrade of female educational attainment, have contributed to shape LAC women's pattern of entry into the labor market. Detailed decompositions show that the first effect had a larger impact during the 1990s. During the 2000s, instead, the rise in education played a dominant role.¹⁵

Participation offers a partial view into women's economic position in the labor market. Differences

FIGURE 2.9. Female Labor Force Participation by Educational Level

Source: LCRCE from SEDLAC.

¹⁵ These results were obtained by adapting standard Oaxaca-Blinder decompositions, which allow disentangling the aggregate trends into a component that is associated with changes in the propensity to participate within educational groups and changes in the shares of educational qualifications among the working age female population.

in pay between men and women are at least equally important to understand women's position in the socioeconomic structure of a society. Once gender differences in educational attainment and experience have been factored out, there is still a wage gap against women of slightly more than 24 percent on average across the region (Figure 2.10).¹⁶ The gender wage gap declined in the 2000s with respect to the second half of the 1990s, albeit very slowly, from 25 to 24 percent (weighted averages) or from 23 to 21 percent (unweighted averages). To what extent such gaps reflect discrimination is, however, difficult to ascertain. Some of the gap may be explained by voluntary choices of (especially higher income) married women that are willing to trade lower earnings for greater flexibility as part of the search for balance between family and career.¹⁷ The segments of the labor markets recording the most significant reduction in the gap are those of workers at the bottom of the earnings distribution, with kids at home, self-employed, part-time and in rural areas (Ñopo, 2012). In any case, the slow change in the average hides substantial cross-country heterogeneity. While significant reductions of the gender wage gap registered in Bolivia, Brazil, Paraguay, Argentina and Honduras, an opposite trend was registered in Ecuador and more importantly in Peru, where the gender gap in wages increased by more than 13 percentage points.

In sum, and going back to our main inquiry, the steady increase in female labor force participation may have contributed to the reduction in the inequality of household per capita income—by raising the income of the poor households relative to mean income (World Bank, 2012). However, it is unlikely a fundamental explanation of the declining trend in wage inequality observed during the

FIGURE 2.10. Gender Wage Gaps

Note: The average is for all the countries in the panel. Due to availability of data the information in the graphs is from all available years between 1995 - 1999 and 2000-2010 for Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama, Paraguay, Peru, and Uruguay. The sample includes all full time workers (i.e., working more than 35 hours a week) aged 16-65. Gender wage gaps are obtained from a female dummy in a country by country regression that includes as additional controls 4 categories of education (tertiary completed, secondary completed, high-school dropouts and primary or less), age dummies in intervals of five years, a full set of interactions between age and education categories and time effects. The effects reported in the graph are the absolute value of the estimated female coefficient, which is always negative and statistically significant at the 5% level. Source: LCRCE from SEDLAC.

¹⁶ The sample included in the analysis includes all full time workers (i.e., working more than 35 hours a week) aged 16-65. Gender wage gaps are obtained from a female dummy in a regression that includes as additional controls 4 categories of education (tertiary completed, secondary completed, high-school dropouts and primary or less), age dummies in intervals of five years and a full set of interactions between age and education categories. An important caveat to bear in mind when interpreting the results is that the analyses do not attempt to control for selection effects associated with changes in the female participation in the labor market.

¹⁷ This dimension is amply discussed in Chioda (2011).

2000s. This is simply because while wage inequality increased in the 1990s to start declining in the 2000s, the trend in female labor force participation remained positive and relatively constant throughout both decades, slowing down somewhat in the late one.

Terms of Trade and Sectoral Structure: Is the Dutch-Disease Back?

This section tackles a possibly relevant demand force behind the decline in labor income inequality registered during the 2000s. The guiding hypothesis is that the commodity price bonanza may have induced—via the real appreciation of the currency—a shift in resources, including labor, away from non-commodity tradable sectors and towards non-tradable sectors. To the extent that the latter sectors have a lower relative demand for skills, these shifts could help explain the decline in returns to education that is documented and discussed in the next subsection. Falling returns to education, in turn, seem to be a key part of the story of the decline in wage inequality. In this way, what is normally considered to be a positive development—the decreasing inequality in labor earnings—may hide a worrisome trend, namely, a tendency towards specialization in low-skill, low-productivity non-tradable sectors. In this subsection, we document the possible links between terms of trade gains, real exchange rate appreciation, and changes in sectoral structure in LAC during the 2000s.

Present day Latin America tends to have a larger share of workers employed in the service sectors than what would be expected given its level of economic development. In 2009, about 65 percent of the Latin-American labor force was employed in the service sector. In general, the share of service-sector employment increases as economies develop, at the expense of agricultural activities first and, at more mature stages of development, at the expense of manufacturing activities. LAC countries, however, tend to present a service employment share that is above what would be predicted by their GDP per capita (Figure 2.11, Panel A).

There are many factors that may be behind the relative specialization of LAC countries in services. The importance of tourism services in many of the small Caribbean States is clearly one. Yet another explanatory factor, one that is of particular relevance for LAC during the 2000s, is the so called Dutch disease—that is, the process of production specialization in non-tradable sectors induced by the appreciation of the real exchange rate that typically results from a major natural resource discovery or from large and persistent terms of trade gains.¹⁸

Terms of trade have risen and the real exchange rate has appreciated noticeably during the 2000s for the commodity exporting countries in LAC. Panel B of Figure 2.11 shows a tight relationship between the terms of trade and the commodity balance for 15 LAC countries. In the absence of active policy intervention (including efforts to save a significant share of the income stemming from the commodity export bonanza to park such saving abroad), the real effective exchange rate would tend to appreciate in tandem with the gains in the terms of trade. Among the fifteen LAC countries studied, we find that commodity exporters saw on average their real exchange rates appreciate, but

¹⁸ The term "Dutch disease" was coined in connection to de-industrialization process that took place in the Netherlands during the 1960s following the large discoveries of natural gas deposits in the North Sea. The wealth generated by the extraction and exports of this natural resource caused the Dutch guilder to strengthen considerably, favoring the expansion of imports and making (non-oil) manufacturing exports less competitive in the world market. By raising the local-currency price of non-tradable goods and services relative to non-oil tradable goods and services, the natural gas boom induced a shift of demand and production towards the former. The share of non-tradable sectors, particularly services and construction, in the economy thus expanded disproportionately.

FIGURE 2.11. Commodity Boom and Sector Allocation. Revisiting the “Dutch-Disease”

PANEL A. Service Employment Share and GDP per capita in 2009

PANEL B. Terms of Trade

PANEL C. Real Effective Exchange Rate

PANEL D. Employment Share in Manufacturing

PANEL E. Employment Share in Services

PANEL F. Employment Share in Construction

Note: Panels D, E and F represent the partial correlation of each of the employment shares and the commodity trade balance after controlling for GDP per capita in US\$ dollars and the population size of each country. Sources: Spatafora and Tytell (2009), ILO, IFS, and WDI.

in some cases not as much as movements in terms of trade would have predicted (Figure 2.11, Panel C).

Finally, there is some indication that the appreciation of the real exchange rate brought about by the commodity boom has favored the expansion of employment in the services and construction sectors relative to manufacturing jobs. Panel D of Figure 2.11 shows that, controlling for GDP per capita and population size, there is a negative association across countries between the accumulated commodity trade balance and the share of employment in manufacturing. Instead, the positive (although not very strong) association between the commodity trade balance and employment in services and construction is shown in Panels E and F of the same figure.

In Summary, What's Behind the Recent Evolution of Wage Inequality?

Let us start with a quick recollection of the main stylized fact regarding labor earnings inequality. According to long data series available for Argentina, Brazil, Chile and Mexico, the general pattern that emerges is that wage inequality for both men and women in LAC was on the increase during the 1990s. However, in the late-1990s or early-2000s, it reached an inflexion point and entered a declining trend that spanned the last decade. The exception is Brazil, which displays a steady decline since the early 1990s. This constitutes a remarkable fact that stands in sharp contrast with developments elsewhere, where wage inequality has been on an increasing trend.

Now, the stylized fact of a declining trend in wage inequality in LAC during the 2000s can be explained either by movements in the relevant quantities (e.g., education and experience) that favor an equalization of income, or by an equalizing movement in the price for skills (resulting, for instance, from a decline in the returns to education), or both.

Prima facie, the equalizing movement of educational attainment observed in several LAC countries during the 2000s suggests that education may be part of the story. As Panel B of Figure 2.6 above shows, while there was a fairly generalized increase in most LAC countries in the gap in educational attainment among top and bottom income groups during the 1990s, the trend was reversed during the 2000s, with the majority of LAC countries in the sample experiencing a faster increase of educational attainment at the bottom of the income distribution. However, there is a counterbalancing effect on inequality associated with education. In all economies the variance of wages increases with the level of educational attainment. Hence, the relatively steady increase in the average level of education in most LAC countries documented in Figure 2.5 would tend to widen the inequality of earnings. Empirical tests (see below) suggest that these two forces are probably cancelling each other out, and changes in the composition of the labor force (including education) are not a very significant explanatory factor of that period's clear decline in labor income inequality. The emphasis of the inquiry, thus, has to be on the changes in prices—i.e., changes in the returns to education, skills, and experience. In what follows of this subsection, we therefore focus on the evolution of returns to education and its possible drivers.

The relevant stylized fact in this latter connection is that, indeed, the returns to education (especially to secondary education), which had been generally rising in the region during the 1990s, experienced an inflection point and entered a declining trend in the 2000s. The latter must reflect, in turn, that

the demand for higher levels of education did not rise as fast as their supply.¹⁹ That demand factors played a crucial role is an unavoidable conclusion in the case of LAC, considering that while the supply of education increased along a positive trend throughout the 1990s and 2000s, there is a kink in the trend of returns to education—they were on an increasing trend in the 1990s and reverted to a decreasing trend in the 2000s (see below).

It is clear that the rapid expansion of secondary education in the region was not met by an equal expansion of demand, resulting in a reduction in the returns to secondary education during the 2000s (Figure 2.12). Interestingly, the inflection point for the trends in the returns to secondary education broadly coincide with the changes in female and male inequality reported earlier. The results are especially marked in Mexico, where the reduction in the returns to secondary education is of about 40 log points. Argentina is a partial exception to this common pattern, with the differences in the average returns to secondary education and to below-secondary education remaining fairly stable throughout the period for females, and declining very slowly starting in 2002 for males.

FIGURE 2.12. Returns to Education

¹⁹ Ideally, increases in supply of education should be disaggregated into quantity and quality. Due to data and time limitations, this report does not consider the effects on the returns to education of a possible decay in the quality of the supply of education—an important aspect that deserves further research.

The evolution of the returns to tertiary education (that is, the evolution of the wages of workers with completed tertiary education) is harder to evaluate, and largely depends on the comparison group chosen. When compared to the average returns to completed secondary education, returns to tertiary education increase for females in all countries. In the case of males, by contrast, these returns increase over time in Brazil (up to a sudden drop during the 2008 crisis) but decline slowly or remain stable in Argentina, Chile and Mexico. However, when the wages of employees with tertiary education are compared to that of workers with primary education or less, the situation mimics almost perfectly the evolution of the returns to secondary education, with increases in the tertiary education premium during the 1990s and decreases during the 2000s, that is, following the direction of the evolution of labor income inequality.

Interestingly, the decline in the premium of secondary and tertiary education (over the wage paid to workers with completed primary or less than primary education) during the 2000s suggests an accelerated increase in the average pay of workers at the bottom of the skill distribution. This is probably related to the rapid rise in average years of education and consequent fall in the relative supply of workers at the bottom, but may also be connected to demand factors. As we saw in the preceding section, the boom in commodity prices and subsequent sharp gains in terms of trade among commodity exporter countries has favored the growth of employment in service industries and construction, sectors that are likely less intensive in skilled workers. Hence, it is plausible to think in commodity exporting countries of a shift in demand favoring jobs that are relatively intensive in low skills.

Gasparini et al. (2011) explore such hypothesis by linking the returns to education to changes in terms of trade in 16 countries in LAC. Their results are reproduced here. They show that changes in terms of trade are associated with a reduction of the skill premium, either measured through the wage differences of workers with some tertiary education vs. less educated workers (Figure 2.13, Panel A) or through wage differentials between workers who obtained a secondary education degree

FIGURE 2.13. Skill Premium and TOT. 1990-2009

PANEL A. Wage Premium Between Skill and Unskilled Workers

PANEL B. Wage Premium Between High School and Dropouts

Note: The scatter plots represent a pooling of countries from the LAC region including: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Uruguay, and Venezuela. Source: LCRCE from Gasparini et al. (2011).

vs. high-school dropouts and less educated workers (Figure 2.13, Panel B). However, these are simple correlations purged from country effects in wage premiums. When other factors are taken into account, including common shocks that hit LAC economies during the last two decades, changes in the relative supplies of workers, the unemployment rates of different groups of the population, and an index of the evolution of the minimum wage, the statistical relationship between terms of trade and the skill premium remains highly significant in the case of tertiary education vs. the rest of workers, but is not significant when we consider the gap between secondary education and high school dropouts or below (Gasparini et al. 2011).

In any case, it is hard to discard that Dutch disease effects, by shifting labor towards arguably less skill intensive sectors, may have played a role in the decline in returns to education and, hence, in the decline in labor income inequality. In effect, Figure 2.14 shows that the association between terms of trade and the wage premium is particularly strong (and consistent across the two wage gap measures) in the cases of the commodity exporters, including Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay and Venezuela. In contrast, the relationship between changes in the terms of trade and the skill premium is not present in the case of commodity importers, such as Honduras, Nicaragua, Panama, Paraguay and El Salvador.

Beyond the significant changes in the returns to education, did changes in the returns to other characteristics of workers also help explain the evolution of wage inequality in LAC? Answering this question requires disentangling between changes in the composition of the labor force and changes in the returns to those characteristics that workers bring to the market. As noted before, changes along the former dimension have been substantial in LAC during the last two decades—women continued the path that started in the 1950 by increasingly participating in the labor market and the average level of education of workers increased substantially.

An ongoing study prepared for this report by Fernandez-Sierra and Messina (2012) isolated the contribution of changes in demographic characteristics from that of changes in the returns to these characteristics for Argentina, Brazil, Chile and Mexico. Specifically, the changes in wage inequality can be decomposed into three components: changes in observable characteristics of the employed labor force (holding the returns constant), changes in the wage structure (holding the composition of the labor force constant), and a residual element.²⁰ The analysis considers separately the early period of rising wage inequality in every country except Brazil, and the second period characterized by falling inequality in the four countries. The main findings suggest that changes in the characteristics of the labor force may have rather exerted an un-equalizing influence, albeit small. Changes in the wage structure, by contrast (and even considering the 1990s), appear to have had a pivotal role in explaining the evolution of wage inequality throughout the last two decades. However, there are important differences in the relative importance of each of these factors across sub-periods.

During the 1990s, the evolution of characteristics *and* the changes in the wage structure helped explain the rising wage inequality in Chile and Mexico, with the changes in the composition of

²⁰ The analysis follows Firpo, Fortin, and Lemieux (2009) and offers the parallel to the standard Oaxaca-Blinder decomposition for the mean of a distribution, but using a recentered influence function (RIF) regression approach, which allows extending the analysis to any point in the distribution including the percentiles 90 and 10 which are the subject of our main measure of inequality. It should be noted that these decompositions are intrinsically partial equilibrium analyses. The underlying assumption is that changes in the quantities, e.g., the level of education, do not affect the prices of those attributes.

FIGURE 2.14. Skill Premium (Tertiary vs. Secondary) and TOT. 1990-2010

Notes: Commodity net exporters (importers) are defined as those countries that on average displayed a positive (negative) trade balance in commodities during the 2000s. Source: Gasparini et al. (2011).

education and labor market experience outweighing the importance of changes in wage structure (Figure 2.15) for the case of males, while for females their relative roles were fairly similar. This pattern contrasts with the case of Argentina, another country where wage inequality increased sharply up to 2002, but where changes in the composition of the labor force had a very small

FIGURE 2.15. The evolution of Wage Inequality: Labor Composition vs. Returns

explanatory role. In this country, the increase in wage inequality up to 2002 can be entirely attributed to changes in the wage structure.

For 2000s, by contrast, the generalized decline in wage inequality can be entirely attributed to changes in the wage structure. As a matter of fact, changes in the composition of the labor force during the last decade possibly kept on pushing for a widening of the wage distribution. Indeed, the analysis suggests that if changes in the composition of the labor force had been kept constant inequality would have fallen even more, especially in the case of Mexico. These results hold for both men and women and the decompositions show very little differences across genders. The sole exception to this general pattern is observed for females in Argentina, where the raising inequality after 2002 can be partially explained by changes in the wage structure, but the residual (unexplained) component in the decomposition plays an important role.

Given that changes in the wage structure played the dominant role in the region's reduction of wage inequality during the 2000s, the question that remains to be answered is: what are the forces behind these changes? Of course, the decline in returns to education documented earlier was arguably a fundamental driver of the changes in the wage structure. In particular, the returns to investments in

secondary education have declined and so has the difference in returns between tertiary and primary education, both facts suggesting either a sluggish demand for university and high school graduates, or a strong growth in the demand for the most basic occupations, or a combination of the two. Beyond changes in the returns to education and experience, however, other (unobservable) characteristics of workers appear also to have played an important role in the changes of the wage structure.

In effect, keeping composition of the labor force and the returns to education and experience fixed, residual wage inequality follows a very similar path to the observed wage inequality documented before (Figure 2.16).²¹ In the case of males (Figure 2.16, Panel A) the evolution is very similar for Argentina, Brazil and Chile—it falls steadily in Brazil starting in 1992, declines after 1996 in Chile, and starts to decline in 2004 in Argentina. In the case of females (Figure 2.16, Panel B) there are some differences across countries, and the picture of the evolution of residual wage inequality is not as close to the trends observed in overall female wage inequality. The overall conclusion one can draw is that, at least for men, the parallel trends in residual and observed wage inequality suggest that the evolution of returns to education, while being a very important part of the story of the reduction wage inequality in the 2000s, it is not the whole story.

We finish this section with a discussion of the evolution of earnings inequality within education groups in an attempt to shed further light on the determinants of the trends in residual wage inequality. The comparison between three educational groups (workers with completed tertiary education, with completed high school education, and workers with primary education or less) is in line with international evidence and shows that the dispersion in wages tends to increase with educational attainment also in LAC, although the differences across educational groups are not as

FIGURE 2.16. The Evolution of Residual Wage Inequality

²¹ Figure 2.17 shows the evolution of residual wage inequality. This measure is obtained by extracting the residuals from very flexible Mincer regressions that are run separately across years, countries and gender. In each of these regressions the dependent variable is the log hourly wage and explanatory variables are four schooling completion categories corresponding to primary or less, less than high school, high school graduate and university graduate, a vector of ten potential experience categories ranging from 0 to 40 years in 5-year increments, and a complete set of interaction terms among the schooling and experience variables. After each regression is run, the ratio of the percentile 90 to percentile 10 in the distribution of the residuals is obtained.

marked as in high income countries (Figure 2.17). The most interesting finding concerns the change in earnings inequality within the group of workers with tertiary education. Specifically, while overall wage inequality declined during the 2000s in the four countries, wage inequality among workers with tertiary education stabilized in Mexico and Chile, it rose in Brazil (it rose at a mild rate in the case of females but at a fast pace in the case of males) and fell steadily starting in 2002 in Argentina. These differing trends of wage inequality within the group of workers with tertiary education deserve further study. On the one hand, they could be a reflection of increasing polarization in wage structure across certain types of skills. This is a trend that has been clearly observed in the U.S., where technological change is thought to have boosted the relative importance of abstract tasks that are typically associated with the cognitive skills of educated professionals and managers (Autor, Levy, and Murnane, 2003). Across educational groups, moreover, technical change is considered to have raised the demand for high skill workers more than for workers who are “medium educated”. Interestingly, however, since many of the interpersonal skills used in low skilled services (e.g., taxi drivers, all sort of personal services) are non-routine and thus hard to computerize, technical change may have left the demand for low skills relatively intact.

FIGURE 2.17. Wage Inequality by Education and Gender Groups

In the case of LAC, the mentioned U.S.-based interpretation is consistent with the raising skill premium of tertiary education with respect to secondary schooling that we have documented here. It is perhaps harder to square it with the sharp fall of the returns to tertiary education against primary or less, but such trend may reflect the impact of the commodity boom in the 2000s, which may have provided an additional boost to services intensive in low skill labor. An alternative or perhaps complementary hypothesis for the rising inequality in pay among university graduates is that the rapid expansion of tertiary education may have brought about higher dispersion in the quality of skills produced by different universities and colleges. New universities with less than optimal curriculum and resources are proliferating in the region to cope with increasing demand. The labor market might react to increasing heterogeneity in the bundle of skills provided by different university diplomas by increasing differentiation in the form of higher variance of wages.

In summary, the decline in the returns to schooling, in particular the returns to secondary education stand out as a major explanatory factor of the decline in earnings inequality observed during the 2000s. Such a fall in the returns suggests a sluggish demand for skilled labor, which in turn may be related to several factors. The boom in commodity prices appears to be one of such factors because, in net commodity exporter countries, it has promoted the relative growth of non-tradable sectors, which on average are less skill intensive (at least in present day LAC). Other demand forces may also be at play, since the returns to skills other than those derived from education fell steadily during this period. Finally, there is some evidence that a supply factor is at work. Specifically, the quality of tertiary education may not have kept up with the rapid increase in coverage. This may explain the widening of wage inequality among university educated workers.

Section 2: Changes in Labor Market Adjustment in LAC during the Last Two Decades

Few changes in the macroeconomic performance of LAC countries since the early 1990s are more dramatic than the reduction in inflation rates and, to a lesser extent, the rise of international trade. The median inflation rate declined from 33 percent in 1985-1990 to 6 percent in 2005-2010. The ratio of trade (exports plus imports of goods) to GDP rose from 46 to almost 64 percent during the same period. These represent profound changes in the macro context in which labor markets operate and are likely to have far reaching consequences.

Indeed, trade integration and price stabilization can be thought of as having mixed and at times conflicting effects on labor market fluctuations. Inflation stabilization helps enhance economic efficiency, as agents are more able to draw accurate inferences about relative prices in the economy, making fewer mistakes in their investment and employment decisions. However, low inflation can also trigger both nominal and real wage rigidities, possibly raising the size of quantity adjustments (number of jobs, hours worked, etc.) in labor markets to cope with recessions.²² Greater trade integration, for its part, although bringing benefits in the form of increased efficiency, can become

²² As was convincingly put forward by the Nobel laureate Milton Friedman in his speech to the Swedish academy, the level of inflation is intimately related to its volatility: “a high inflation rate is not likely to be steady during the transition decades. Rather, the higher the rate, the more variable it is likely to be” (Friedman, 1977). Hence, low inflation is typically accompanied by less frequent fluctuations in the rate of price changes, a feature that facilitates the formation of expectations about future inflation. This in turn helps workers to resist wage raises that fall below the inflation rate, and may result in the appearance of downward rigidity in real, rather than nominal wages.

an additional source of labor market fluctuations, with the trade channel transmitting external shocks to local job conditions. Let us first consider the issues surrounding the evolution of wage rigidity as inflation falls over the last two decades.

The End of Downward Real Wage Flexibility?

Have real wages become more downward rigid as inflation declined? A first look at the emergence of downward wage rigidities in LAC can be obtained by studying changes in average wages by sector.²³ Holden and Messina (2012) calculate the frequency of wage cuts prevented by rigidity in several regions of the world by comparing actual wage cuts in each country-year with the wage cuts that would prevail in a frictionless (i.e. absent from rigidity) wage setting environment. Their main results are reproduced here.²⁴

The results indicate that downward nominal wage rigidity barely changed from the 1990s to 2000s but real wage rigidity rose visibly during the last decade. Specifically, the frequency of prevented nominal wage cuts in LAC remained close to 15 percent over the two decades, higher than in the OECD but somewhat lower than in the ECA and Africa-MENA regions (Figure 2.18, Panel A). The frequency of prevented real wage cuts (FPRWCs), however, almost tripled from 5 percent in the 1990s to 15 percent in the 2000s (Figure 2.18, Panel B). Real wage rigidity also increased from the 1990s to the 2000s in the Asia Pacific region but fell in the OECD, ECA and Africa-MENA.

The results for LAC suggest that, in spite of a higher degree of wage indexation during the 1990s, the actual protection of wages from inflation was lower than in the 2000s. Indeed, in high inflation

FIGURE 2.18. Downward Wage Rigidity Around the Globe

²³ Looking at changes in wages within sectors has the advantage of providing coverage for a wide range of countries, 86 in total including 15 LAC economies. The number of sectors included to construct the frequency of wage cuts varies across countries, with a maximum of 43 and a minimum of 10 observations in a country-year cell. However, changes in average wages in a sector between two consecutive years are a mixture of genuine wage changes and changes in the composition of the labor force employed in the sector. This aspect should be kept in mind when evaluating the results.

²⁴ The authors calculate two measures of downward rigidity: nominal and real. Nominal wage rigidity is higher if the frequency of nominal wage changes below 0 prevented by rigidity increases. Real wage rigidity is higher if the frequency of nominal wage increases below the rate of inflation prevented by frictions increase.

environments, inflation spikes or surprises are more the norm than the exception, rendering wage indexation clauses imperfect and partial at best. By contrast, inflation was lower in LAC during the 2000s, and was hence more predictable. This facilitated the emergence of downward real wage rigidity in the region.

Beyond these broad patterns, a more nuanced picture emerges when we study in detail the evolution of wage setting of individual countries. This is illustrated by the case of Brazil, as this country went from hyperinflation, to exchange-rate based disinflation under the Real Plan (introduced in 1994), into single-digit stable inflation in the 2000s, under the inflation targeting regime introduced in 1999. The salient features of such transition and its implication for nominal and real wage formation are described in Box 2.1.

Box 2.1. Inflation Targeting and Wage Indexation. The Brazilian Case

After the introduction of the Real Plan, a plan to fight inflation via an exchange rate anchor, inflation fell rapidly in Brazil, from 4 digit levels in 1994 to 66 percent in 1995 and 16 percent in 1996, stabilizing thereafter in one-digit figures throughout the 2000s. Moreover, a new monetary policy regime was introduced in 1999, as the Central Bank started establishing specific inflation targets. What was the response of Brazilian wage-setters to such profound changes in the conduct of monetary policy? Messina and Sanz de Galdeano (2011) estimate that wage indexation was the typical response of wage setters to the high and rapidly changing inflation environment. On average during the period 1995-2002, wage negotiations for some 43 percent of the workers in the formal sector in Brazil were governed by a downward *real* wage rigidity regime—i.e., workers were covered by wage contracts featuring some form of implicit or explicit indexation clause, while only 10 percent of the formal workforce belonged to a downward *nominal* wage rigidity regime, whereby wages were not allowed to decline in nominal terms (Figure B2.1, Panel A). Interestingly, the secular decline of inflation did not affect the share of workers subject to each of the two rigidity regimes.

While the dominant wage rigidity regime in Brazil was one of wage indexation, in the immediate years after the hyperinflation wage setters indexed their wages to a price index that was different than the expected rate of inflation. The price reference for wage negotiations was instead the change in the minimum wage (Figure B2.1, Panel B). Our interpretation of these findings is that workers focused on a price index that was easily available and observable, the change in the minimum wage, against a highly unpredictable rate of inflation. Naturally, the government progressively adjusted the minimum wage to changes in past inflation, protecting workers, at least partially, from large losses in purchasing power.

The break with this pattern of wage indexation based on the changes in the minimum wage needed an additional credibility push, and this came into place in 1999 with the introduction of inflation targeting by the Central Bank of Brazil. A key role of inflation targeting is to anchor inflation expectations, and this is precisely what we observe happening in the labor market. After 1999 the extent of indexation remains similar to the previous years, but the anchor or focal point of indexation changes. Workers progressively moved away from the minimum wage to start negotiating wage increases according to a now credible expected rate of inflation.

FIGURE B2.1. Nominal and Real Rigidity in Brazil

PANEL A. Downward Wage Rigidity Regimes and Disinflation

PANEL B. The Focal Point of Wage Indexation

Notes: DRWR stands for Downward Real Wage Rigidity and DNWR for Downward Nominal Wage Rigidity. Source: Messina and Sanz de Galdeano (2011).

The resulting changes in the nature of wage adjustment can be seen by comparing the reaction of real wages under the most recent global crisis of 2008-2009 with the great economic crisis of the 1990s. Figure 2.19 illustrates this for four LAC countries: Argentina, Brazil Colombia and Mexico, contrasting the wage adjustments that took place during distant recessions with those observed during the recent global downturn. The left panels show the wage adjustments that followed the Tequila crisis in Mexico, the end of convertibility plan in Argentina, and the contagion after the Asian crisis in Brazil and Colombia. With the exception of Colombia, the graphs clearly illustrate the rapid fall of real wages that was associated with the exchange rate depreciations of the previous crisis. They contrast sharply with the adjustment of real wages during the great recession of 2008-2009, as illustrated in the right hand panels of Figure 2.20. First, the inflation rate was virtually unaffected by the global crisis, even as exchange rates depreciated significantly, reflecting a virtual absence of a pass-through effect. Consequently, in spite of a sharp reduction in growth rates during the 2009 downturn, real wages suffered only a mild deceleration in Brazil, Colombia and Mexico, and even continued growing in Argentina.²⁵

Both the emergence of downward real wage rigidities in the region and the contrasting patterns of wage adjustment during the recent global recession (as compared to the great crises of the 1990s) are suggestive of a reduction in the responsiveness of real wages to fluctuations in output during the 2000s. To explore the associated issues, we look at the evolving patterns of wage cyclicality and complement the analysis with the examination of the cyclicality of employment.²⁶ This enables us to answer the following question: are variations in the cyclical patterns of employment and wages connected?

It is well known that labor legislation in LAC is fairly rigid on paper, even for OECD standards (Heckman and Pages, 2004). The firing and hiring of formal workers is particularly difficult due to

²⁵ The real wage growth in Argentina is subject to the caveat that the official CPI inflation rate is likely underestimated.

²⁶ In order to investigate time varying patterns in the adjustment of real wages to fluctuations in GDP, we need long series of high frequency, i.e. quarterly, data. Unfortunately, these data are not common in LAC and are available only for a handful of countries. See Gambetti and Messina (2012) for details on the construction of the data sets.

FIGURE 2.19. Wages and Prices during the Great Recessions of the 2000s and the 1990s

PANEL A. Argentina

PANEL B. Brazil

PANEL C. Colombia

PANEL D. Mexico

Sources: The dashed lines represent recessions obtained through the BP dating algorithm. Notes: The real wage is the hourly wage of employees deflated by the CPI deflator. Source: LCRCE from SEDLAC.

strong employment protection. However, low enforceability of the law (Kaplan and Sadka, 2007) and a large informal sector cast doubts on the effectiveness of such legislation. Moreover, as Bertola and Rogerson (2007) suggested, the protection of labor granted on paper becomes ineffective if wages are allowed to fluctuate significantly.

For starters, and in spite of ill-designed labor market institutions, the 1980s and 1990s appear to have been characterized by a very flexible labor market. The relevant evidence in this regard is presented in Figure 2.20, where each row shows a country and each column an estimated pair-wise measure of co-movement: wages and output (column 1) and employment and output (column 2). Up to 1995 the cyclical behavior of wages is on average 0.30 in Brazil, 0.67 in Colombia, and 0.32 in Mexico. These numbers are at the upper bound of the cyclical behavior of aggregate wages found in most OECD countries (Messina, Strozzi and Turunen, 2009) and suggest a great deal of wage flexibility in these countries during the 1990s. Importantly, the strong fluctuations in the price of labor were accompanied by large cyclical fluctuations in employment—of 0.6 in the case of Brazil and around 0.7 in the cases of Colombia and Mexico.

As time went by and inflation declined, a downward shift in the patterns of wage adjustments is observed in the region. Such signs are stronger in Colombia and Brazil, but are also visible in the case of Mexico.²⁷ Interestingly, in the case of Brazil, the decline in the cyclical behavior of wages already took place during the mid-1990s, coinciding with the Real stabilization plan (introduced in 1994). By contrast, wages appear to be relatively a-cyclical in Chile, with no clear pattern over the period for which data are available (1993-2010).

With more stable real wages in the region, one could expect larger adjustments in employment during cyclical economic fluctuations. However, there is not necessarily a one to one correspondence between the cyclical behavior of real wages and that of employment. The different paths in Brazil, Mexico and Colombia illustrate this with clarity (Figure 2.20). This apparent lack of association may be explained by the fact that firms can compensate their inability to adjust wages in the face of economic fluctuations by resorting to more frequent adjustments of other labor costs (e.g. hours worked, fringe benefits).²⁸ It is important to highlight, however, that to the extent that the reduction in inflation observed in LAC brings about efficiency gains, firms may be able to plan human resource strategies more efficiently, which may result in less needs to adjust on the hiring and firing margins. Hence, fewer fluctuations in employment *and* wages may well be observed. Indeed, the standard deviation of employment *and* wages fell during the 2000s in Brazil, Colombia and Mexico, hand in hand with a downward trend in the cyclical fluctuations in economic activity (Gambetti and Messina, 2012).

²⁷ In the case of Colombia, we can accept at the 95% level that the correlation between real wages and output in the beginning of the sample period is larger than the correlation of the same variables at the end of the sample period. In Brazil the evidence of a fall in the cyclical behavior of wages is somewhat weaker, and can only be accepted at the 86% level. The corresponding probability in Mexico is 60%. However, this is probably just a reflection the considerable level of uncertainty in the estimation, which is largely driven by the short span of data available. See Gambetti and Messina (2012) for a detailed discussion.

²⁸ This point has been recently put forward in the context of downward wage rigidities in Europe by Babecki et al (2012). They show how different margins of labor cost adjustment within firms (including among others changes in fringe benefits, shift assignments and promotion strategies) act as substitutes for wage flexibility and help achieve flexibility in overall labor costs.

FIGURE 2.20. The Cyclical Behavior of Wages and Employment

Notes: Data are from the manufacturing sector. *Y* stands for Industrial Production, *E* for Employment, and *W* for Real Wages (CPI Deflated). Source: Gambetti and Messina (2012).

The cyclical behavior of aggregate employment has historically concealed important differences in two dimensions. First, differences in the cyclical behavior of different forms of employment: self employment, dependent formal employment, and dependent informal employment. Consistent with the U.S. and other developed countries, the share of formal employment has historically tended to be pro-cyclical in LAC. That is, during most business cycles in the 1980s and 1990s, formal employment fell during recessions while informal employment rose (Bosch and Maloney, 2010). Second are the different patterns in hiring versus firing during recessions. As the case of Mexico suggests, it was the freezing of hiring during recessions rather than a rapid pace of firings that explains the reductions of *formal* employment during cyclical downturns. Consequently, the counter-cyclical behavior of informal employment during recessions has not reflected principally a flow to informality of fired formal workers, but mainly the increasing inflow from unemployed workers that cannot find jobs in the formal sector (Lederman et al. 2011).

Compared to these typical historical cyclical patterns of informal and formal employment, the 2008-2009 recession stands as an important exception—it registered very mild increases of informality or even continued reductions in some countries. Part of the explanation of this different behavior has to do with the nature of the external shock, which was perceived as temporary and did not lead to a financial crisis at home (as was more typically the case in the past). Moreover, the 2009 recession took place in a different context of informality trends. While the 1990s were characterized by increasing informality (Perry et al., 2007), the vigorous growth of the 2000s was associated with a steady reduction in the share of informal employment in the majority of countries for which data is available, with the notable exception of Mexico (Figure 2.21, Panel A).

The expansion of large formal firms during the 2000s was associated with the recent decline in informality in LAC. In this connection, Bosch and Maloney (2011) show that, in Mexico, most transitions from informal to formal employment reflect a movement of workers that leave small informal firms to be hired as formal employees by large corporations. The 2000s appear to extend this empirical regularity of Mexico to a larger number of LAC countries. As Panel B of Figure 2.21 shows, informality fell more markedly in countries where the share of workers employed in larger firms expanded the most.²⁹

Having reviewed employment and wages, we turn now to the cyclical adjustment of *unemployment*. The clear stylized fact is that the response of unemployment to the 2009 recession in LAC was relatively mild, while the creation of employment during the recovery was exceptionally strong (Figure 2.22, Panel A). The limited unemployment response during the recent downturn can be rooted in several factors. For starters, there was the different nature of the crisis. It originated outside the region, did not lead to a financial crisis at home, and may have been perceived by LAC firms as a temporary phenomenon. All of this may have facilitated adjustments focused on number of hours worked rather than on costly firing. In addition, there was the strength of external demand

FIGURE 2.21. Informality in LAC

PANEL A. Informality and Self-Employment as Share of Employed Population

PANEL B. Informality and the Growth of Large Firms

Notes: Due to availability of data Bolivia informality variation is from 2008 and 2000; Brazil is from 2009 and 2001; Chile, Costa Rica and El Salvador are from 2009 and 2000; Honduras is from 2009 and 2001; Panama is from 2010 and 2001; Paraguay is from 2010 and 2001. For Panel B, large firm is defined by a firm of more than 20 employees. Due to availability of data large firms are enterprises with more than 10 employees in Brazil, Honduras and Uruguay; more than 25 employees in Argentina and more than 50 employees in Chile. Sources: LCRCE from SEDLAC.

²⁹ Informality is defined as not having access to social security through the job.

driven by China and the rapid recovery in commodity prices, both of which helped containing the output collapse and boosted the strength of the recovery. It may be, however, that the slow unemployment increase in the 2009 recession could also have reflected a genuine reduction of the amplitude of labor market fluctuations in the region. To investigate this hypothesis, we revisit Okun's law—the relationship between changes in the unemployment rate and changes in output—in Argentina, Brazil, Colombia, Mexico and Peru, the five countries with sufficiently long quarterly data, and compare two complete cycles, one in the 1990s and another in the 2000s.³⁰

The results are fairly conclusive. In Argentina, Brazil and Colombia the sensitivity of unemployment to the ups and downs of economic activity during the late 1990s was fairly strong, both compared to other developing countries and in comparison with high-income economies (Figure 2.22, Panel B). In the most recent cycle, by contrast, the unemployment responses to output were somewhat weaker in the five countries. The greatest change is displayed by Colombia. The response of unemployment to an accumulated change in GDP of 1 percent was of 2.8 percentage points during the 1990s, compared to only 0.4 percentage points during the 2000s. Note however that we are measuring cycles from through to through (hence stopping in 2009q1 in most LAC countries) and data limitations allow us to compare only two cycles. The vigorous response of unemployment during the recovery in 2010 and 2011 (Figure 2.22, Panel A) may be an indication of stronger cyclicity of unemployment in the years to come.

FIGURE 2.22. Unemployment and Output over the Business Cycle

³⁰ We estimate a dynamic version of the Okun's law, in which we allow for changes in output of up to four lags to have an impact on the contemporaneous change in unemployment. In the text we report the long term impact of output, i.e., the sum of the four coefficients of changes in output, on changes in the level of unemployment.

We have seen in this subsection that the dramatic decline of inflation in the region led to rising downward wage rigidities, which translated into lower fluctuations of earnings, especially during downturns. Perhaps more surprisingly, declining variability in earnings was not matched by sharper swings in employment or unemployment, suggesting that LAC labor markets entered into a phase of less volatility. Certainly the favorable external environment that characterized the decade may have played a role in attenuating fluctuations. One example of the exceptionality of the 2000s and the importance of growth during this period is the decline in informality experienced in most countries. But changes in policy, such as a more credible conduct of monetary policy, may have helped dampening fluctuations in the labor market too. The introduction of inflation targeting regimes in many countries of the region certainly helped workers coordinating their inflation expectations, as we saw in the example of Brazil, and as such become less subject to inflation surprises and sudden losses of purchasing power.

Trade Integration and Cyclical Employment Adjustments

In this final subsection we turn briefly to the link between the greater trade integration that now LAC features and cyclical employment fluctuations. While gains from trade stemming from increased integration and specialization are hard to dispute, it is also the case that trade openness increases the exposure and perhaps also the vulnerability to external trade shocks. As we have argued in previous reports in this series (e.g., *Latin America and the Caribbean's Long-Term Growth: Made in China?*), this vulnerability is likely to be higher the more concentrated the trade partners of a country are and the less diversified the export basket is. Hence, countries in Central America and the Caribbean, with highly concentrated exports to the United States, were naturally more exposed to the global crisis triggered by the fall of Lehman Brothers in late-2008.

A major collapse in world demand for exports was a key feature of the recent global crisis. Global trade in merchandise is estimated to have dropped by more than 20 percent in 2009, relative to the previous year—the largest drop in trade by a factor of four since World War II. The impact of the trade collapse was especially acute in Mexico, since it was highly correlated with the decline in U.S. economic activity, the most important trade partner for Mexico. As a result, Mexico's trade with the U.S. fell by nearly 45 percent during the last quarter of 2008.

How did that external shock propagated through the labor market in the Northern States of Mexico? Well, it created major waves. In effect, data from Mexico's social security records used by Kaplan, Lederman and Robertson (2011) show that formal employment in the trade-intensive Northern states fell by about 9 percent between September 2008 and March 2009. Importantly, this massive reduction in employment was accompanied by virtually no downward real wage adjustments among those workers who kept their jobs, a feature that is consistent with the emergence of the downward wage rigidities documented earlier.³¹

The Mexican adjustment in Northern states during the crisis also shows that labor market responses to shocks originated in tradable sectors spread rapidly throughout the rest of the economy when trade integration is substantial. Panel A of Figure 2.23 shows the evolution of employment in tradable industries in Northern Mexico during 2008-2009 on a quarterly basis, and the evolution of

³¹ Real log wages of workers who remained employed with the same firm fell on average by 0.001 log points between the end of September 2008 and the end of December 2008 and by 0.012 log points between December 2008 and March 2009.

the value of Mexican exports to the U.S. The over-time correlation between these two variables is clearly high. Perhaps most surprising is the fact that employment in non-traded industries was highly correlated with exports for most of the period, and even more than employment in traded industries (Figure 2.23, Panel B). This clearly suggests complex yet strong general equilibrium links between the traded and non-traded sectors, which makes employment in the latter also vulnerable to a major trade shock. The shock wave was thus transmitted from the traded to the non-traded industries possibly through inter-industry employment spillovers as well as through the fall in aggregate demand that resulted from the initial contraction of employment in the non-tradable sectors.

FIGURE 2.23. Employment and Exports to the United States

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