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# Fewer Jobs or Smaller Paychecks? Aggregate Crisis Impacts in Selected Middle-Income Countries

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# ABSTRACT

## Fewer Jobs or Smaller Paychecks? Aggregate Crisis Impacts in Selected Middle-Income Countries

This paper reviews evidence from 44 middle income countries on how the recent financial crisis affected jobs and workers' income. In addition to providing a rare assessment of the magnitude of the impact across several middle-income countries, the paper describes how labor markets adjusted and how the adjustments varied for different types of countries. The main finding is that the crisis affected the quality of employment more than the number of jobs. Overall, the slow-down in earning growth was considerably higher than that in employment, and the decline in GDP was associated with a sharp decline in output per worker, particularly in the industrial sector. In several counties, hours per workers declined and hourly wages changed little. But both the magnitude and nature of the adjustments varied considerably across countries. For a given drop in GDP, earnings declined more in countries with larger manufacturing sectors, smaller export sectors, and more stringent labor market regulations. In addition, overall employment became more sensitive to GDP growth. These findings have implications that go beyond the recent financial crisis as they highlight (i) the limitations of focusing policies responses on maintaining jobs and providing alterative employment or replacement income for the unemployed and (ii) the critical role of fast-track data systems, capable of monitoring ongoing labor market adjustment during economic downturns, in supporting the design of effective policy responses.

JEL Classification: E24, E32, J21

Keywords: middle-income countries, labor markets, recession

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## Introduction

*While policy responses to economic downturns tend to focus on protecting employment, evidence from the developing world shows that employment reduction is not the only, or even the most significant, effect.* Although economic crises are difficult to predict, their recurrence is a salient feature of emerging market economies. Nevertheless, many developing countries continue to lack an effective policy infrastructure that can mitigate the impacts of economic downturns on employment opportunities. Moreover when this infrastructure exists it mostly focuses on either maintaining existing jobs, providing alterative employment, or replacing income for workers that lose formal sector jobs via unemployment benefits. However, job losses are only one of the possible ways in which labor markets adjust to economic downturns and the prevailing adjustment mechanism depends on the nature of the shock and on the characteristics of both the economy and the labor market. During past crises, workers in developing countries typically faced large declines in hourly wages or to employment reallocation across sectors rather than major reductions in employment. [2]

*The experiences of the global downturn of 2008-2009 highlights a common disconnect between labor market impact of crises and policy responses.* Identifying the labor market channels through which the economic downturn is transmitted is a precondition for effective targeting of policy interventions.[3] If first-round labor market adjustments are concentrated in specific jobs, sectors or geographic areas, targeted employment interventions to protect those most immediately affected may effectively mitigate crisis impacts payoffs. If, by contrast, most of the adjustment occurs through generalized wage declines, standard employment-focus policies are not the most effective instruments to mitigate the impact of a crisis. But lack of fast-track data to monitor changes in main labor market indicators in a timely manner often prevents effective targeting of policy responses. This is painfully highlighted by the disconnect—described is some detail in Robalino, et al (2011)—between the prevailing labor market adjustment experienced during the global downturn of 2008-2009 and the majority of policy responses implemented. Much of this disconnect was due to the lack of adequate information on the prevailing adjustment mechanism in the developing world. In general, most analysis of the magnitude and nature of labor market adjustments to the 2008 economic shock has been limited to OECD countries, and quantitative cross-country evidence on the impact of the great recession on labor market outcomes in developing countries has been scarce.[4]

*This paper summarizes evidence from 45 middle income countries on how the 2008 crisis affected labor markets.* There are four main findings. First, as in previous crises, adjustments occurred more through the quality of jobs than their quantity. For the average country in our sample, earnings growth slowed by 3 times as much as employment growth, and unemployment changed little. Second, for several countries, hourly wage growth did not collapse and the adjustment came mainly via large reductions in hours worked. Third, while labor market adjustments generally tracked GDP declines, there was considerable

[2] This was particularly true of the East Asian crisis in the late 1990's (Betcherman and Islam, 2001, Fallon and Lucas, 2002) but it is also true for Mexico's "tequila" crisis which resulted in a drop in real wages of 21% between 1994 and 1996 while aggregate employment increased slightly (McKenzie 2002).
[3] See for example Paci, et al (2011).
[4] The analysis of the present crisis in developing countries often focuses on changes in GDP (Calderon and Didier, 2009), Blanchard, Faruqee, and Das (2010). Other analyses that focus on labor markets are sometimes based on simulations using pre-crisis data (Global Econometric Trends, 2009 & 2010, World Economic Outlook 2010, Habib et al, 2010)

variation in outcomes across countries. For a given decline in GDP growth, countries with smaller manufacturing sectors, larger export sectors, and less costly redundancy regulations were better able to protect earnings. Finally, the responsiveness of employment growth to changes in GDP growth increased during the crisis, leading simple projections to understate the extent of employment loss during the crisis.

## Data and methodology

*The paper uses data from published quarterly labor market statistics of 45 middle income countries.* 37 of these countries have information on both GDP growth and employment growth, while 31 have information on GDP growth and earnings growth. Most of the countries lie in Latin America or in the Europe and Central Asia region (ECA). We divide the remaining countries into two regions: East Asia and Sri Lanka, and the Middle East and Africa.[5] The main source of primary data sources on labor market and GDP are country statistics published by the relevant country statistical offices and provided, on a subscription basis, to the World Bank by three private data providers—Haver Analytics, CEIC, and EMED—that collect them daily. These data were supplemented by ILO's laborsta database.[6] Data on other country indicators--such as per capita GDP, and the size of the manufacturing and export sector--come from the World Development Indicators database.

*Data coverage and sources vary across countries and indicators.* GDP, employment, and unemployment statistics are available quarterly for almost all countries in the sample. [7] Many countries, however, do not report earnings and even fewer provide hours. Moreover, hours and earnings are sometimes reported as changes in indices rather than levels. Since data are often missing for particular quarters, the analysis is limited to year-on-year changes for comparable quarters. Tables A2 and A3 in the appendix list the types of surveys used to generate employment and earnings indicators. In three quarters of the countries analyzed, employment statistics were derived from labor force surveys, while in the remaining one fourth, employment levels were obtained from establishment surveys or administrative data. As a result, in a quarter of countries analyzed employment trends may refer only to formal employees. By contrast earnings data comes from establishment surveys in 70 percent of cases and the countries, and in these countries under-represents informal or self-employed workers. In a few countries, (Mexico, Colombia, and Turkey), earnings data from establishment surveys only cover the industrial or manufacturing sectors, and most countries in Eastern Europe only collect earnings data for non-agricultural workers. Finally employment and earnings data often do not cover the full country. At least 16% of countries – typically countries in Latin America, as well as China – only collect employment data in urban areas.

*Results should be interpreted with appropriate caution.* Much of the analysis focuses on the change in the *wage bill* as a convenient summary measure of the total magnitude of the labor market adjustment borne by workers. The wage bill is the product of employment and average monthly earnings. Given the nature of the data, changes in the wage bills often reflect changes in establishment earnings and total

[5] The five countries from the Middle East and Africa are Egypt, The West Bank, South Africa, Morocco and Mauritius.
[6] A detailed list of sources and comments on the data are available from the authors upon request.
[7] Usually, quarterly data is available. However, Peru and Indonesia only have half-yearly results.

employment. Many of these countries have large informal sectors and the cyclicality of earnings in formal and informal establishments may differ, adding additional uncertainty to our estimates of the precise role of earnings in the adjustment process may not be precise. It is areassuring, however, that data on earnings from seven middle income countries also tend to show moderate to large earnings adjustments (Cho and Newhouse, 2011)

*The analysis compares growth rates during the crisis year with averages over the prior two years.* Focusing on the change in the growth rate, rather than post-crisis declines, is important to accurately measure the effect of the crisis relative to pre-crisis trends.[8] Extending back two years allows a comparison with changes immediately preceding the crisis, while mitigating the influence of the rapid price increases in food and fuel in 2008. GDP growth in crisis-affected countries fell sharply in the fourth quarter of 2008. Therefore, the post-crisis period includes the four quarters from Q4 2008 to Q3 2009, while the pre-crisis period includes the eight quarters from Q1 2006 to Q3 2008.[9]

## The Extent and Nature of the Labor Market Adjustment

*The* **cost of the crisis to** *workers was considerable but delayed and gradual.* As shown in Figure 1 the average wage bill, which had been growing by nearly 10 percent over the pre-crisis years of 2007 and 2008, came to a near standstill in 2009, with the growth dropping to less that 1 percent. [10] The drop was only slightly less than the fall in GDP growth over this period (9.4 percentage points) but the decline in wage bill growth began later than that of GDP and continued longer. This is in line with findings from previous crisis that suggest long term impacts on workers may be deep and protracted.

[8] . A simple example makes this clear. China was far more affected by the financial crisis in 2009 than Morocco. But a simple comparison of post-crisis rates of growth would have given the false impression that Morocco suffered more. This is because Morocco's GDP grew only half as fast China's, even after the crisis, and employment growth in the two countries was nearly the same. However, in the pre-crisis period the Chinese economy had been growing more rapidly, so GDP growth slowed by 6 percentage points more in China than it did in Morocco. Employment growth also slowed by 3.5 percentage points more.

[9] Using eight quarters of pre-crisis data rather than four may mitigate the impact of the food and fuel crisis of 2007.

[10] The sample used to construct Figure 1 consists of the 24 countries that reported GDP growth, employment growth and real earnings growth in each quarter

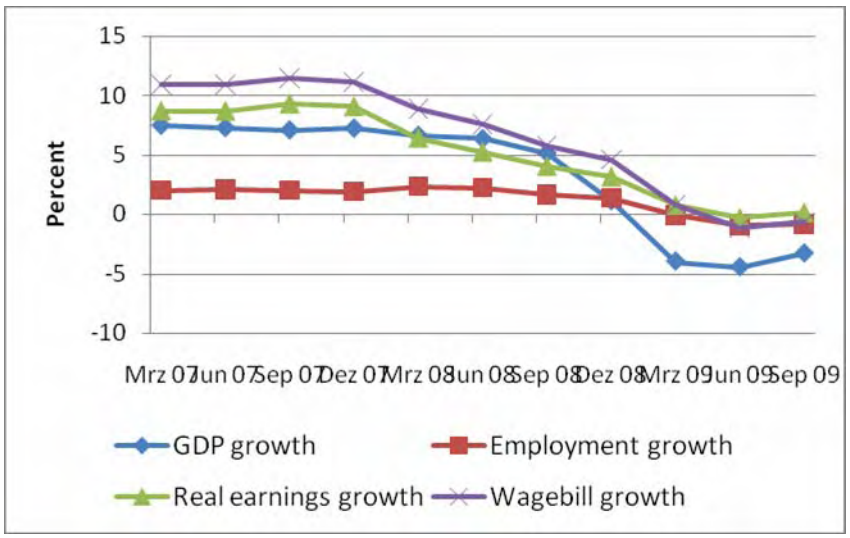



**Figure 1: The employment adjustment was delayed and gradual**

*Reduced growth of earnings was the main culprit for the slowdown in the wage bill.* [11] Real earnings growth began to decline in the first quarter of 2008, as increases in food and fuel prices led to accelerating inflation. The sharp decline in GDP growth in the fourth quarter of 2008 was mirrored by a relatively large decline in nominal earnings growth: nearly three quarters of the 8.7 percentage point slowdown in the wage bill, among countries for which data is available, came from the reduction in earnings growth**,** which fell 6.5 percentage points. This is largely consistent with the evidence from past crises, as pointed out in the introduction (For more details see footnote 1). The simultaneous drop in inflation of 2.8 percentage points, due to easing demand for commodities, prevented an even steeper drop in the wage bill and led to a small **increase in th***e* rate of real wage growth of 0.7 percentage points (Figure 2).

[11] Table 1 in the appendix shows that these conclusions hold when examining pre and post-crisis average growth in a slightly larger sample of 28 countries that report quarterly, semi-annual, or annual data.

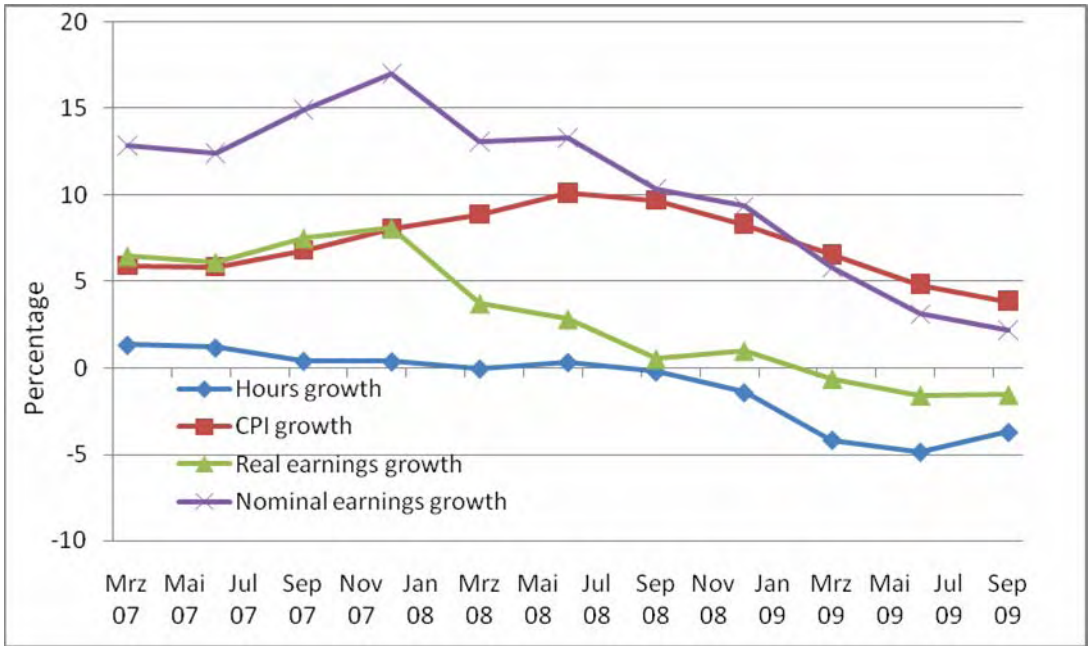



**Figure 2: For 8 countries - Hours pulled down earnings, while prices mitigated the impact**

*Hours fell considerably in several countries.* The slowdown in hours tracks closely the reduction in earnings growth (See Figure 2).[12] On average, in the 14 countries for which data are available, growth in hours worked fell by a striking 7 percentage points but the drop was highly concentrated in only half of these countries (Figure 3). The decline in hours worked not only accounted for the entire decline in earnings but also allowed for a slight increase in real hourly wages (0.7 percentage points) (Figure 4). However, the extent to which the reduction in hours was an active policy response rather than simply an adjustment mechanism is unclear. For example, an ILO survey of 54 countries (10 LICs, 10 lower middle income, 17 upper middle income and 17 HICs) shows that reductions in hours worked was a common response to the downturn in countries as different as China, Vietnam, the Philippines, Indonesia, Mexico, Argentina, Colombia and Jordan (ILO, 2009).

[12]Figure 2, however, underestimates the extent of the fall in hours, because it only reflects the 8 countries that report hours quarterly

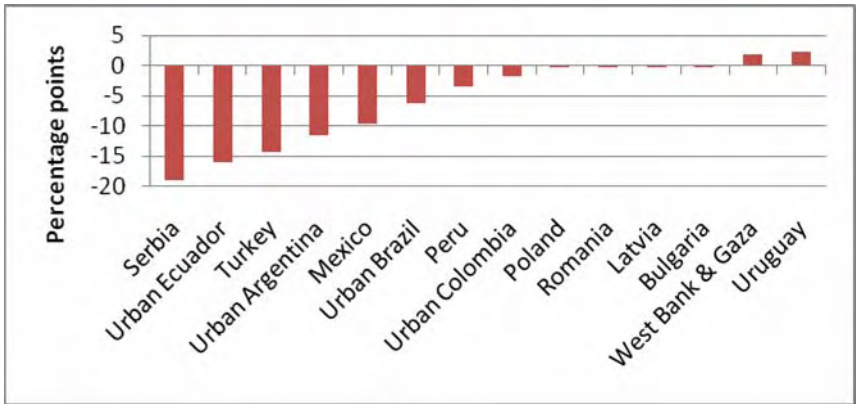



**Figure 3: Change in the growth of hours worked**

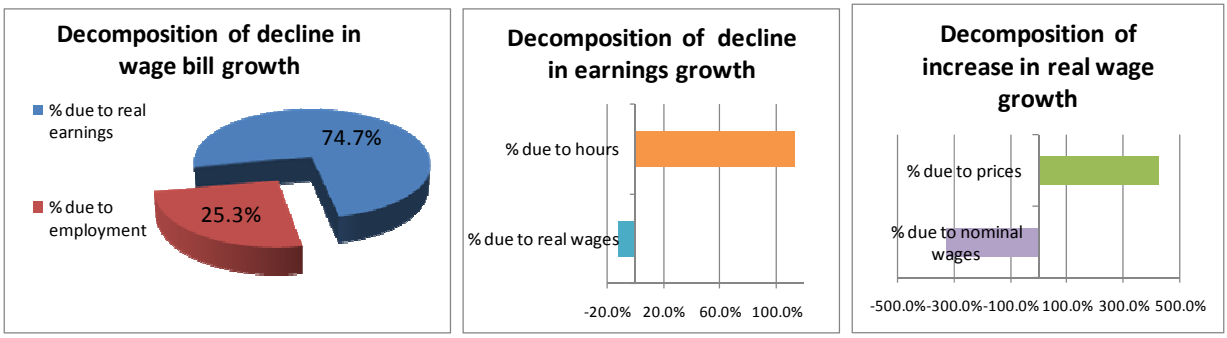



**Figure 4 : Decomposing the change in the growth of wage bill, earnings and wage rates**

*Because of the relatively minor impact of the downturn on employment, output per worker grew more slowly than in previous years.* Among the 33 countries for which the relevant data is available GDP growth fell by 7.9 percentage points. Of that drop, just over 6 percentage points were due to a decline in growth in per adult GDP while slower employment growth rate contributed only 1.7 percentage points and activity rates added very little (only 0.1 percentage points) (Figure 5). [13] This is consistent with the patterns for employment and hours discussed above; while employment growth slowed little, the growth rate of the number of hours worked dropped steeply, meaning that each worker spent less time producing output.

[13] In line with our findings, some high income countries, like the US, had sharp rises in productivity – something that the US had not seen in past crises.

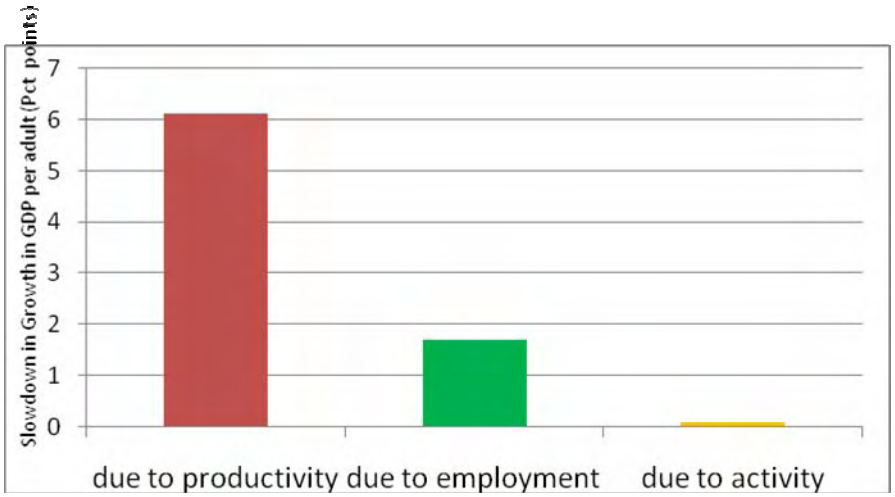



**Figure 5: Decomposing the slowdown in the growth of GDP per adult**

*But employment shifts out of more productive sectors also played an important role.* Small aggregate employment changes masked significant shifts out of industry and into the agricultural and service sectors.[14] The fall in industrial employment is not surprising, since manufacturing exports suffered during the crisis in many countries and entry barriers are lower for family businesses in retail trade and agriculture, facilitating employment shifts into these sectors.[15] Even within the service and industrial sectors, however, the high productivity industrial and service sectors suffered most. Figure 6 below shows changes in employment growth across different sectors for a subsample of nine countries with available level of disaggregation.[16] Employment growth in agriculture and low-productivity service sector fell slightly (less than 1 percentage point) while growth in high-productivity services fell 2.5 percentage points. Evidence from a larger sample of countries on more aggregate sectors suggests similar patterns.

*Both activity and unemployment rates, however, were largely unaffected***.** Contrary to evidence from previous crises, on average labor force participation rates remained almost unchanged (from 54.0 percent to 54.3 percent) suggesting that added and discouraged workers effects may have balanced out. Unemployment rates also hardly changed (from 9.9 percent to 10.3 percent), In other words, while very mild added worker effects may have increased participation, a smaller share of those in the labor force were employed.[17]

[14] In the sample of 15 that report sectoral employment, agricultural employment growth increased by 1.5 % points, service sector growth by 0.2 % points and industrial employment growth fell by 3.3% points

[15] Past crises estimates suggest a similar story: during the 1997 Asian crisis, some 30-40% of displaced urban workers are estimated to have moved to agricultural jobs (Manning 2000). Evidence indicates that worker reallocation and the quality of new jobs created are procyclical, rather than countercyclical (Bowlus 1993). The returns to labor in these small-scale sectors are low, but displaced workers often lack better options during downturns (Mead and Liedholm 1998).

[16] High productivity services include: Transport and communications, real estate and financial services, and personal services. The remaining sectors, including public administration, real estate, education, hotel, retail trade, social work, and private household, are classified as low-productivity services.

[17] Reduced earnings may lead to a rise in labor market participation. Some crises appear to have driven more women and children into the labor market, especially in rural areas (Manning 2000, McKenzie 2004 and Ezemenari et al 2003). However, in others participation rates appeared unresponsive. And in some cases underemployment rates rose significantly due to decreased labor demand (e.g. Mexico during the Peso crisis (McKenzie 2004), Thailand and

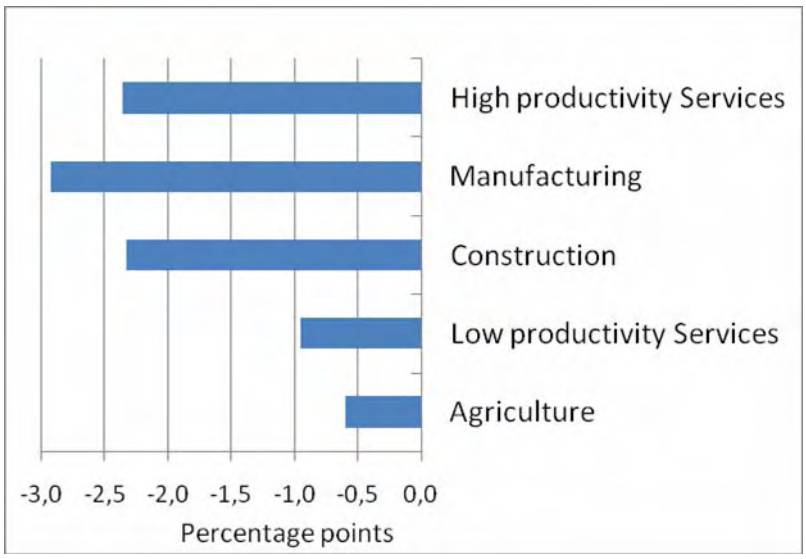


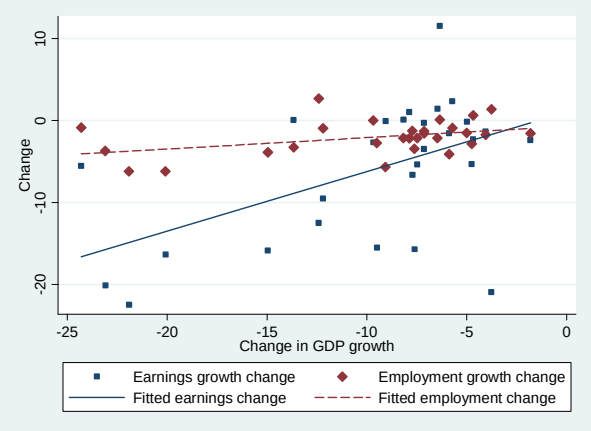

**Figure 6: Change in Employment Growth**

## In which countries were adjustment unexpectedly large?

*Examining average labor market changes across such a varied sample of countries does not tell the whole story.* While no country escaped the crisis unharmed, there was a great deal of heterogeneity across our sample of countries in the way labor markets adjusted. As suggested in the introduction, much of this heterogeneity is associated with fundamental differences in the severity of the shock, the structure of the economy, and the nature of labor market institutions. Figures 7 and 8 show how labor market outcomes varied according to the size of the shock. Countries more severely affected by the shock tended to adjust primarily through earnings, rather than employment. (Figure 7).[18] Nevertheless unemployment increased faster in countries with larger GDP declines (Figure 8). However, both graphs clearly show substantial heterogeneity even for countries with identical GDP declines. This raises the question of which country characteristics helped cushion the labor market from the negative impact of economic shocks

South Korea in 1997/8 (Sarkar and Kumar, 2002), suggesting that workers had little ability to increase their labor supply.

[18] The left side of figure 8 shows an increasing divergence between earnings and employment effects as the size of the shock increases.



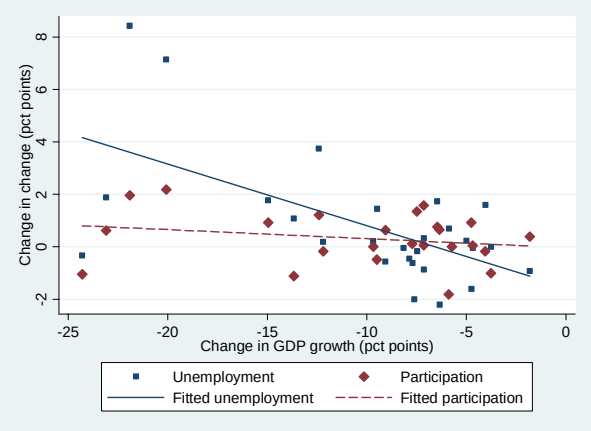



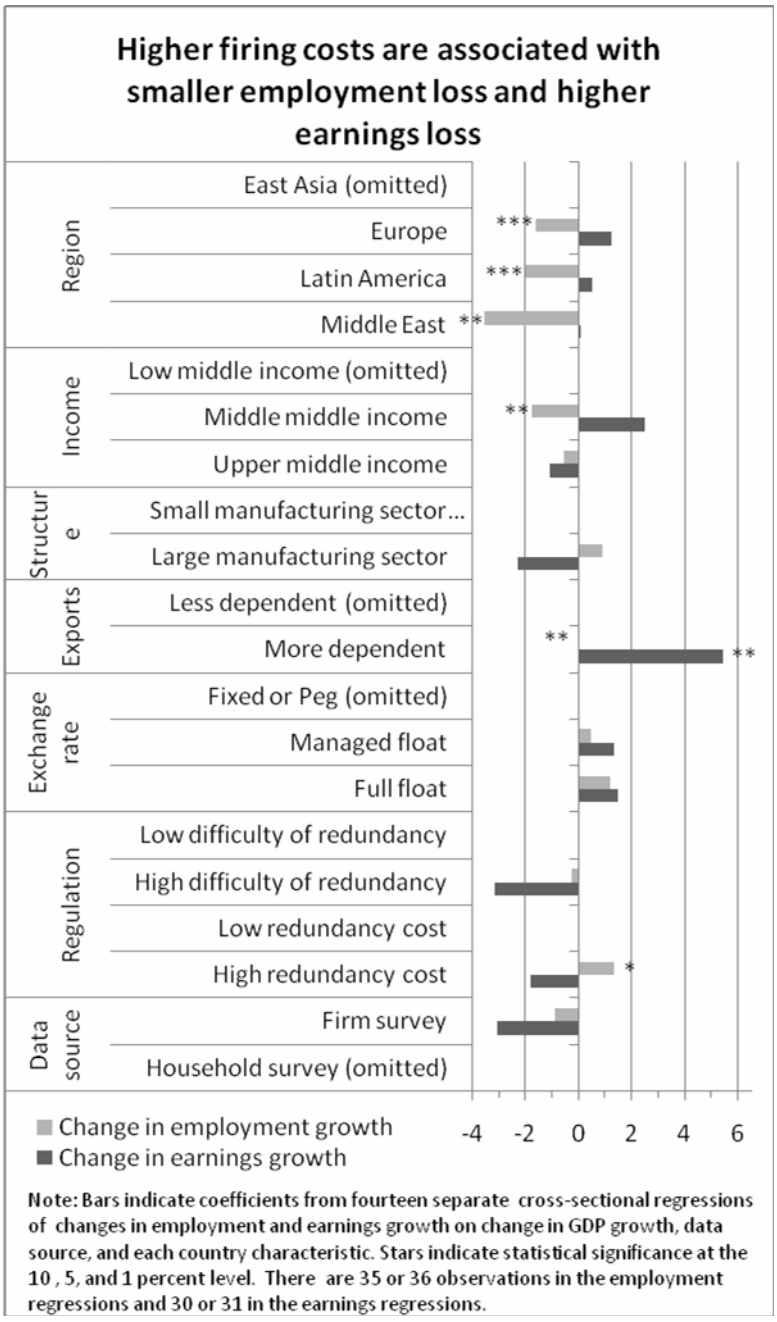

**Figure 7** **Figure 8**

To assess the role of these other factors, this paper classifies countries along seven dimensions. The first two are region and level of per capita GDP, which are intended to capture structural differences in the economy and in labor market institutions. Countries are also classified according to the relative size of the manufacturing and export sector, two areas of the economy where crisis impacts were most severe. Exports were also affected by countries' exchange rate regimes, as those with currencies pegged to the dollar suffering larger falls in exports, since the dollar appreciated roughly 15 percent against the Euro in the latter half of 2008.[19] Finally, countries are grouped according to their level of labor regulation (high/low) to investigate the expectation that stringent labor market regulations, if enforced, discouraged employers from shedding workers during a downturn. Two measures of firing costs from the 2009 Doing Business Indicators are used for this purpose: the difficulty of firing index and the firing cost.[20] Only a few of these characteristics are closely correlated with each other. [21]

[19] We use the IMF's *de facto* exchange rate-regime to classify countries by their currency regime. http://www.imf.org/external/np/mfd/er/2006/eng/0706.htm

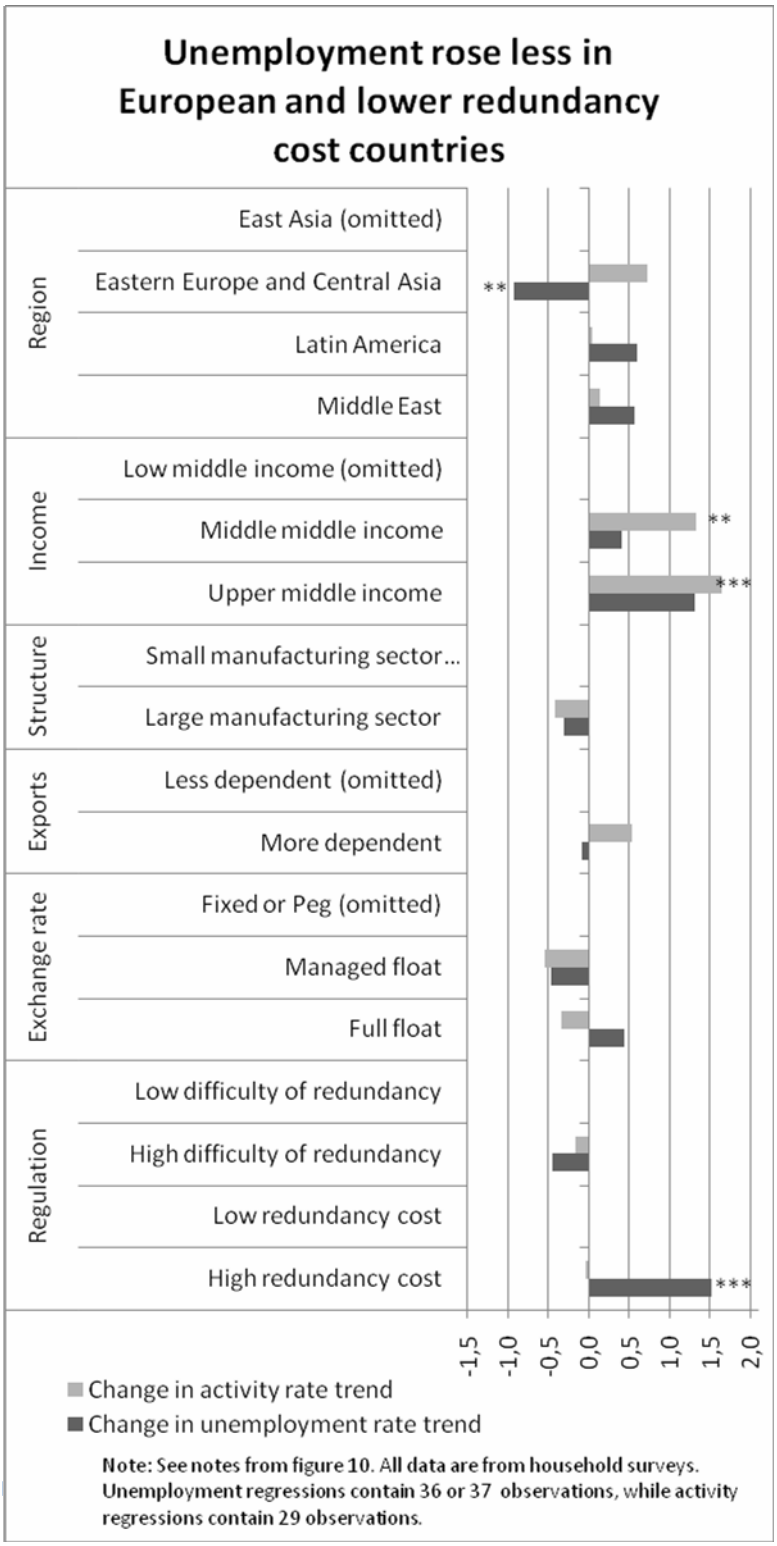
[20] Countries are classified as high manufacturing, high export, difficult to fire, and high firing cost countries, based on whether the indicator exceeds the median across countries in the sample. The difficulty of firing index measures whether redundancy is allowed as a basis for terminating workers, and the existence of rendundancy regulations and requirements. The redundancy cost indicator measures the cost of advance notice requirements, severance payments and penalties due when terminating a redundant worker, expressed in weeks of salary Additional information on the redundancy indices is available at http://www.doingbusiness.org/Methodology/Surveys/EmployingWorkers.aspx

[21] In only 4 cases do the pair-wise correlations between characteristics exceed 0.25.Latin American countries are most likely to be upper middle income and least likely to be lower middle income. Europe and Central Asian countries and middle income MICS tend to have larger manufacturing sectors, but Latin American countries are less likely to have large manufacturing sectors. Finally, countries with high redundancy costs are far more likely to be in East Asia or Latin America than Europe, and are less likely to be middle income countries. Somewhat surprisingly, the correlation between a high difficulty of redundancy and high redundancy cost is weak and negative.




*Countries with larger export sectors, and less stringent regulation better maintained previous trends in earnings without incurring large employment costs.* Figure 9 shows how earnings and employment are associated with each set of country characteristics after accounting for the declines in countries' GDP growth.[22] The most striking results are those associated with exports and firing regulations. High export countries were much better able to maintain earnings, at negligible cost to employment. Countries with higher redundancy costs were better able to protect employment, on the order of 1 to 2 percentage points. However, this may have partially come at the expense of greater earnings reductions. Countries with more costly and cumbersome firing regulations had two to three percentage point greater declines in earnings. The relationship between firing regulations and earnings declines is only suggestive and not statistically significant, however, due to the imprecision of the earnings measures.

[22] Figure 9 reports coefficient estimates from 7 regressions. Each bar represents the coefficient from a regression of employment or earnings g**Figure 9** variables.Stars indicate significance level. For earnings and employment equations, the regression also controlled for whether the data was derived from a firm or a household survey.




*Increases in unemployment, after factoring in the size of the shock, were larger outside of Europe and in countries with higher redundancy costs.* After controlling for GDP growth, unemployment increases were particularly low in Eastern Europe and Central Asia (Figure 10). This suggests that concerns that European institutions exacerbated unemployment increases during the crisis were exaggerated, at least for the middle income European countries in our sample. Activity rates and unemployment rates increased in higher-income countries, as laid-off workers in these countries were more able to afford to search for work, in part perhaps because spouses or younger members of the household rejoined the labor force. Finally, countries with higher redundancy costs experienced significantly larger increases in unemployment. During the crisis, unemployment rates increased most for youth, who may have faced particular difficulty obtaining employment in countries with higher redundancy costs.

## How accurate were projections of employment changes?

*Employment became more sensitive to changes in GDP during the crisis.* We estimated the relationship between employment growth and GDP growth before and after the crisis, on the 37 countries that reported data for each of these variables. Our preferred estimates control for time-invariant characteristics of the country. They indicate that the employment elasticity rose during the crisis, from 0.16 before the crisis to 0.25 after the crisis (Table A4).[23]

*This result is of importance since forecasts of employment changes are often based on methods that combine estimates of employment elasticities with GDP projections.* The ILO, for example, predicts present and future employment based on regressions of employment rates on GDP growth, controlling for time-invariant country characteristics (ILO, 2010, p.79). If the relationship between GDP growth and employment growth changes during the crisis, extrapolating from the past may lead to inaccurate estimates of employment loss.

*Thus predictions based on pre-crisis elasticities significantly underestimated employment loss during the crisis.* Projections of employment growth derived from pre-crisis elasticities predicted employment growth of 0.47 percent. However, in the countries analyzed, employment actually declined on average, although slightly, by -0.08 percent. Therefore, on average the employment estimates overstated employment growth by 0.55 percentage points. This is a significant overestimate, given that employment growth in total declined about 2 percentage points.

**Table 1: Pre-crisis employment elasticities understated employment losses.**

| | Pre-crisis | Post-crisis |
|---|---|---|
| Elasticity | 0.16 | 0.25 |
| Average projected employment growth (based on post-crisis GDP) | | 0.47 |
| Average actual employment growth | 1.88 | - 0.08 |
| Average overestimate of employment growth | | 0.55 |
| Average magnitude of discrepancy | | 1.9 |

*Forecasting employment changes on the basis of GDP alone typically produces inaccurate estimates for individual countries.* The extent of the discrepancy between actual and predicted employment ranged from -10.5 to 6.5 percentage points. On average across the countries, the prediction was off by a magnitude of 1.9 percentage points.[24]

[23] These estimates come from regressions, based on quarterly data, of annual percent change in employment growth on annual percent change in employment, controlling for country fixed effects. Separate regressions were run for the 8 quarters before the crisis and for the four during the crisis. Results are shown in appendix table A4. The increase in the employment elasticity from 0.16 to 0.25 is not statistically significant, but leads to economically meaningful discrepancies between predicted and actual employment.

[24] In other words, the average of the absolute value of the discrepancy across countries and quarters is 1.9

## From evidence to policy responses

*Evidence on labor market adjustments is an important input in the design of policy responses.* While economic growth has bottomed out and appears to be recovering in the advanced economies, labor markets recover more slowly and can often take years to bounce back from sharp downturns (Rogoff and Reinhardt, 2009). In the meantime, the nature of the labor market adjustment determines winners and losers. For example, employment declines tend to concentrate losses among an unlucky few, while earnings declines spread losses more evenly amongst the workforce.

*The appropriate mix of policies to respond to the crisis depends partly on the nature of the labor market adjustment.* Income replacement programs such as unemployment insurance or public works are most effective in mitigating the impact of job loss. In contrast, when the labor market adjustment occurs through earnings, then income maintenance program—such as cash transfers or income tax credits—become particularly important. Targeting the working poor through income support programs is therefore a priority in these circumstances. [25]

**Most policy responses during crises times have concentrated on employment generation.[26]** For example, employment generation programs were implemented in response to crises in Argentina, Mexico, Korea, and and Thailand. Meanwhile, wage subsidies were implemented in response to past crises Costa Rica, Argentina, and Malaysia. Public works programs have also been implemented in response to crises, as in Indonesia in 1998. None of these programs, however, directly benefited the informal sector workers, and relatively few provide income support to workers who maintained their jobs.[27]

*The emerging evidence presented in this paper suggests that effective policy packages should support earnings and household income.* Responses taken in European OECD countries -- such as partial

[25] Surprisingly little is known about how well passive and active labor market program work during severe downturns, despite the large literature on the impact of active and passive labor market programs on labor market outcomes (Betcherman et al 2004; Fretwell et al 1999; Auer et al 2005),

[26] For more detail see Paci et al 2011, and Robalino et al, 2011

[27] Argentina and Mexico concentrate on employment generation while Brazil had a large unemployment insurance scheme (Marquez 2000). Costa Rica and Argentina also had wage subsidy programs. Argentina's *Jefes* program promoted employment in Argentina's private sector, to recover lost jobs in companies with sufficient capacity (Marshall 2004). In Mexico, though there were not many legal reforms of labor market policies, changes took place largely through collective bargaining. Social security reform was implemented in 1995, but did not involve changes in employer level contributions (Marshall 2004). In Korea, job creation and a Wage Claim Guarantee was the thrust of the policy response to the East Asian Crisis (Phang and Kim, 2001). They also had a job training program to encourage reemployment (Hur 2001). An Employment Insurance Scheme that was active from 1995 was extended to cover all enterprises in 2008 (Phang and Kim, 2001). Even in Thailand the emphasis of labor market policies in response to the crisis was direct job creation rather than self-employment. Informal workers were not protected, but likely to benefit from "income support activities" such as tax reductions on VAT, price supports for rice, etc. (Betcherman and Islam 2001). In Indonesia, public works were mainly to provide emergency income and create social capital, with ultimate goal to create a total of 226 million person-days of employment. While Malaysia already had a public works program in place, they initiated wage subsidies in August 1998. In response to the 1997 crisis, The Philippines initiated an Emergency Loans program, while providing wage subsidies and training (Betcherman and Islam 2001).

unemployment insurance, expanding cash transfers to poor workers, and temporary wage subsidies–may be priority interventions in those countries where hours and earnings adjustments dominated.

*Sound diagnostics are also important to understand the causes and implications of different adjustment patterns.* Labor markets can adjust to downturns in different ways, with different implications for workers. The nature of these adjustments is at least partially determined by countries' labor market policies and institutions, and has important implications for the welfare of the poor. Future downturns are bound to occur, and additional research based on sound labor market diagnostics can help unravel the link between policies and institutions, labor market adjustments, and outcomes for the poor.

# APPENDIX:

**Table A1: Average Changes in Labor Market Indicators, Before and After the Crisis**

| Indicator | Number of countries | Pre-crisis | Average percent change, post-crisis | Difference |
|---|---|---|---|---|
| **GDP growth** | 28 | 7.3 | -2.4 | -9.7 |
| **Wage bill growth** | 28 | 9.4 | 1.1 | -8.3 |
| Employment growth | 28 | 1.8 | -0.2 | -2.0 |
| Earnings growth | 28 | 7.3 | 1.3 | -6.0 |
| Hours worked growth | 14 | 1.7 | -5.2 | -6.9 |
| Real wage growth | 14 | 6.5 | 7.2 | 0.7 |
| Nominal wage growth | 14 | 12.9 | 12.2 | -0.7 |
| CPI growth | 14 | 7.0 | 6.0 | -1.0 |
| **Unemployment rate** | 28 | 9.0 | 9.7 | 0.7 |
| **Participation rate** | 24 | 53.0 | 53.3 | 0.3 |

Notes: Pre-crisis period is an average of year on year changes over eight quarters from Q3 2006 to Q32008. Post-crisis period is an average between Q4 2008 and Q3 2009.

**A.2 Table A2: Country summary**

| **Country** | **Data Source** | | **Income group** | **Severity Group** | **Change in growth rate** (percentage points) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Employment | Earnings | | | GDP | Wage Bill | Employment | Earnings | Hours |
| **East Asia** | | | | | **-5.64** | **-5.38** | **-0.14** | **-5.13** | **0.22** |
| Urban China | Firm | Firm | LMIC | Mild | -5.00 | 0.88 | -1.52 | 2.55 | |
| Indonesia | Household | Household | LMIC | Mild | -1.81 | -3.98 | -1.53 | -2.39 | 0.22 |
| Malaysia | Household | N/A | HMIC | Medium | -8.92 | | 0.21 | | |
| Philippines | Household | Legislated | LMIC | Mild | -4.68 | -1.59 | 0.62 | -2.26 | |
| Sri Lanka | Household | Legislated | LMIC | Mild | -3.76 | -19.52 | 1.38 | -20.93 | |
| Thailand | Household | Household | MIC | Medium | -9.68 | -2.67 | 0.03 | -2.65 | |
| **Europe/Central Asia** | | | | | **-11.84** | **-11.30** | **-2.70** | **-8.32** | **-5.66** |
| Albania | Household | N/A | LMIC | Mild | -0.16 | | 0.89 | | |
| Armenia | Household | Firm | LMIC | Severe | -24.31 | -13.77 | -0.84 | -9.39 | |
| Belarus | Household | Firm | MIC | Medium | -7.48 | -5.07 | -2.12 | -3.15 | |
| Bosnia /Herzegovina | Firm | Firm | MIC | | N/A | | -17.26 | | |
| Bulgaria | Firm | Firm | MIC | Medium | -9.07 | -6.29 | -5.66 | -0.04 | -0.01 |
| Georgia | Firm | N/A | HMIC | Severe | -13.31 | | -1.19 | | |
| Kazakhstan | Household | Firm | MIC | Medium | -7.87 | -1.09 | -2.16 | 1.04 | |
| Kyrgyz Republic | Firm | Firm | LMIC | Medium | -7.82 | | -0.44 | | |
| Latvia | Household | Firm | HMIC | Severe | -21.92 | -28.68 | -6.20 | -22.47 | -0.23 |
| Lithuania | Household | Firm | HMIC | Severe | -20.08 | -22.30 | -6.19 | -16.35 | |
| Macedonia | Household | Household | MIC | Medium | -6.35 | 12.11 | 0.10 | 11.57 | |
| Moldova | Household | Firm | LMIC | Medium | -7.78 | -4.25 | -3.28 | 0.08 | |
| Montenegro | Household | N/A | HMIC | | N/A | | 1.31 | | |
| Poland | Household | Firm | HMIC | Mild | -4.75 | -8.39 | -2.83 | -5.31 | -0.31 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Romania | Household | Firm | MIC | Severe | -12.20 | -8.69 | -0.95 | -9.50 | -0.28 |
| Russia | Household | Firm | MIC | Severe | -14.96 | -20.11 | -3.86 | -15.87 | |
| Serbia | Household | Firm | LMIC | Medium | -7.62 | -18.67 | -3.42 | -15.71 | -18.84 |
| Tajikistan | Household | Household | LMIC | | N/A | | 1.03 | | |
| Turkey | Household | Household | HMIC | Severe | -12.42 | -9.60 | 2.69 | -12.49 | -14.29 |
| Ukraine | Firm | Firm | LMIC | Severe | -23.10 | -23.45 | -3.68 | -18.90 | |
| **Latin America** | | | | | **-6.82** | **-5.35** | **-1.89** | **-2.47** | **-5.08** |
| Urban Argentina | Household | Firm | HMIC | Medium | -5.72 | 1.42 | -0.91 | 2.39 | -11.59 |
| Urban Brazil | Household | Firm | MIC | Medium | -7.14 | -1.60 | -1.30 | -0.25 | -6.22 |
| Chile | Firm | Firm | HMIC | Medium | -6.46 | -0.76 | -2.14 | 1.45 | |
| Urban Colombia | Household | Firm | MIC | Medium | -7.14 | -5.17 | -1.55 | -3.46 | -1.85 |
| Urban Ecuador | Household | Household | LMIC | Mild | -4.05 | -8.34 | -0.72 | -1.32 | |
| Jamaica | Household | N/A | MIC | Mild | -3.17 | | -3.75 | | |
| Mexico | Household | Firm | HMIC | Medium | -9.49 | -18.13 | -2.73 | -15.50 | -9.72 |
| Peru | Firm | Firm | MIC | Medium | -8.17 | -2.17 | -2.14 | 0.12 | -3.39 |
| Trinidad and Tobago | Household | N/A | HMIC | | N/A | | 0.03 | | |
| Uruguay | Household | Household | HMIC | Medium | -5.27 | | | 2.36 | 2.29 |
| Venezuela | Household | Firm | HMIC | Medium | -7.72 | -8.04 | -1.27 | -6.61 | |
| Dominican Republic | Firm | Industry | MIC | Medium | -9.10 | | -4.38 | | |
| Paraguay | N/A | Firm | LMIC | Medium | -8.40 | | | -3.85 | |
| **Middle East/Africa** | | | | | **-2.80** | **-5.71** | **-2.25** | **0.25** | **1.89** |
| Egypt | Household | N/A | LMIC | Mild | -2.58 | | -3.61 | | |
| Jordan | Household | N/A | HMIC | Medium | -5.76 | | | | |
| Mauritius | Household | N/A | MIC | Mild | -3.31 | | -3.69 | | |
| South Africa | Household | Household | MIC | Medium | -5.88 | -5.71 | -4.10 | -1.53 | |
| West Bank/Gaza Strip | Household | Household | HMIC | Mild | -0.40 | | | 2.04 | 1.89 |

**A.3 Table A3: Data discrepencies.**

| Indicator | Coverage/Source | Number of countries |
|---|---|---|
| **Employment** | Whole country | 27 |
| | Only urban | 6 |
| | Unclear/Largely urban | 4 |
| | | |
| **Employment** | Only formal | 3 |
| | All persons | 28 |
| | Unknown | 7 |
| | Total | 37 |
| | | |
| **Employment** | LFS/HHS | 29 |
| | Establishment survey | 8 |
| | Total | 37 |
| | | |
| **Earnings** | Industry/Non agriculture | 9 |
| | All sectors | 19 |
| | Unknown | 3 |
| | Total | 31 |
| | | |
| **Earnings** | LFS/HHS | 7 |
| | Establishment survey | 22 |
| | Legislated | 2 |
| | Total | 31 |
| | | |

Note: Excludes Bosnia and Herzogovina, Montenegro, and Tajikistan due to lack of GDP data.

**Table A4: Regression results from elasticity regressions**

| | **FE** | | **POLS** | | **RE** | |
|---|---|---|---|---|---|---|
| | Pre Crisis | Crisis | Pre Crisis | Crisis | Pre Crisis | Crisis |
| **VARIABLES** | Employment Growth | Employment Growth | Employment Growth | Employment Growth | Employment Growth | Employment Growth |
| **GDP growth** | 0.160* | 0.252*** | 0.0230 | 0.199*** | 0.0897 | 0.225*** |
| **Constant** | 0.726 | 0.282*** | 1.719*** | 0.205 | 1.190** | 0.200 |
| **Observations** | 244 | 144 | 244 | 144 | 244 | 144 |
| **R-squared** | 0.035 | 0.276 | 0.001 | 0.247 | | |
| **Number of countries** | 37 | 37 | | | 37 | 37 |
| **Robust standard errors *** p<0.01, ** p<0.05, * p<0.1** | | | | | | |

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