

Does Growth Generate Jobs in Eastern Europe and Central Asia?

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Abstract

In Eastern Europe and Central Asia, the link from growth to jobs was tenuous in the first decade of the transition, giving rise to the notion of jobless growth. Yet, European countries suffered large job losses during the recent recession, suggesting that jobs and growth are closely entwined. This study takes a new look at this issue. It provides a cross-country analysis of the employment intensity of growth over the last decade and a half in Eastern Europe and Central Asia, which includes the 11 Central and Eastern European countries that joined

the EU since 2004, the countries of former Yugoslavia, the Countries of Independent States and Turkey. The authors compare these findings with other regions in the world. The paper shows that the responsiveness of employment to output increased in the second decade of the transition. It also finds that in some instances employment growth increases with reforms of labor and product markets, stronger macroeconomic policy frameworks, better governance, and more economic integration and diversification.

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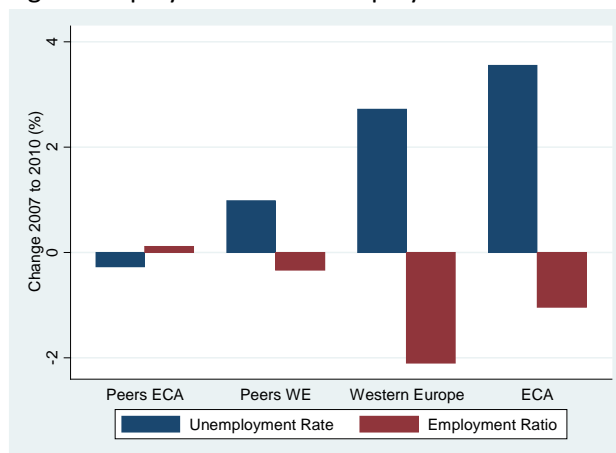
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Introduction

One reason why countries care about growth is that growth generates jobs, and jobs are central for living standards and social cohesion (World Bank 2012). Indeed, the recent recession came with large job losses in some European countries, providing stark evidence that jobs and growth are closely entwined (Figure 1). Yet, the relationship is far from straightforward. There are other factors than the state of the business cycle that influence labor market outcomes. Economic regulations and structural reforms affect whether businesses create jobs as the economy expands and destroy jobs as the economy contracts (Orlandi 2012, Bernal-Verdugo, Furceri and Guillaume 2012a and 2012b). In particular, labor market regulations can influence whether employment or wages adjust in response to output changes. For example, the Russian labor market appears to respond to economic shocks through adjustments in wages rather than employment (Gimpelson and Kapeliushnikov 2011). Likewise, regulations affect whether enterprises can avoid layoffs during recessions with adjustments in the intensive margin of the number of hours, as in some European countries during the global financial crisis (Boysen-Hogrefe and Groll 2010). Furthermore, the sectoral pattern matters (Arias-Vazquez et al 2012). In the 1990s, economic growth in the transition countries of Eastern Europe was driven in large measure by higher labor productivity rather than more employment, as countries moved resources across and within sectors, invested in capital and adopted new technologies (World Bank 2008). In developing economies, employment might be fairly stable over the business cycle due to large self-employment, on-farm and informal work (Singh, Jain-Chandra and Mohommad 2012). In natural resource rich countries, growth that is driven by higher commodity prices might generate little employment by itself. These factors meant that for a long time the link from growth to employment was tenuous in countries in Europe and Central Asia (ECA), giving rise to the notion of jobless growth (World Bank 2005).

Figure 1: Change in employment and unemployment rates from 2007 to 2010



Note: See Box 1 for country groupings.

Box 1: Data and Groupings

Our dataset combines a number of sources. The ILO's 7th edition of the Key Indicators of the Labor Market (KILM) dataset provides labor market variables; the IMF's April 2012 World Economic Outlook dataset gives us information on GDP; and the World Bank's 2012 version of the World Development Indicators is the source for natural resource rents. We take structural reform indicators from the following data sets: the World Bank's Worldwide Governance Indicators for the global sample; and the EBRD transition indicators for the ECA sample; the Fraser Institute's economic freedom indicators; the KOF Institute's globalization indices; and MIT's Economic Complexity Observatory for a measure of export diversification.

The ECA sample includes 29 countries, although data is missing for some variables and years. The global sample comprises 168 countries, which includes all countries for which labor market and GDP data is available. The unit of analysis is the country. In ECA, we give the same weight to Russia, a country with over 70 million employed workers, and Estonia, a country with less than 600,000 employed workers.

We often group countries to capture broad trends. We use a mainly geographic grouping for ECA. We contrast the ECA countries to 19 Western European countries (WE) and to 100 ECA peers (Peers of ECA), defined as low and middle income countries outside of Europe. We also look at 21 high-income countries (Peers of WE) outside of Europe as peers for Western Europe. Within ECA, we distinguish between the Balkan (countries of former Yugoslavia without Croatia), the EU11 countries (the ten EU member countries of Central Europe and Croatia, which will join the EU next year), the Countries of Independent States (CIS), and Turkey. Finally, to make sure that group averages are not driven by outliers or missing data, we generally report the median.

As Central and Eastern Europe entered its third decade of market-based economic reforms, this study takes a new look at link of economic growth and job growth. It provides a cross-country analysis of the employment intensity of growth over the last decade and a half in the region of Eastern Europe and Central Asia (ECA). It makes the following contributions:

First, we look at trends in labor market outcomes in ECA. We establish that ECA looks worse in key dimensions to the rest of the world. We also find that within ECA, labor market outcomes tend to be worst for the Balkan and best for Commonwealth of Independent States (CIS) countries.

Second, we calculate elasticities of economic growth to employment. Using different econometric specifications, we find that ECA's elasticity (around 0.085 to 0.232) is noticeably less than in Western Europe (0.407 to 0.494) but higher than for the ECA peers and the Western Europe peers. Within ECA, it is highest among the EU10 countries and lowest among CIS countries.

Third, we find that the employment intensity of growth increased over time in ECA. During 2002 to 2007, it was about twice as high as during 1995 to 2001. The elasticities rose further during the global financial crisis of 2008 to 2010, in line with the trends outside of Europe. Within ECA, the increase over time is least pronounced for the CIS.

Fourth, we control for a number of factors that could affect the employment intensity of growth. We look at labor market and product market regulation, governance, macroeconomic policy,

globalization, transition and diversification. We find that in many cases structural factors do not have a statistically significant impact on employment growth. However, we uncover some evidence that reforms of labor and product markets, economic policy frameworks, governance and diversification are associated with higher employment growth.

Labor Market Trends

We assess trends in labor market performance with three indicators: labor force participation rates; employment ratios; and unemployment rates (Box 2).

Box 2: Definitions of Labor Market Variables

The labor force participation rate is a measure of the proportion of a country's working-age population that engages actively in the labor market, either by working or looking for work. It provides an indication of the relative size of the supply of labor available to engage in the production of goods and services.

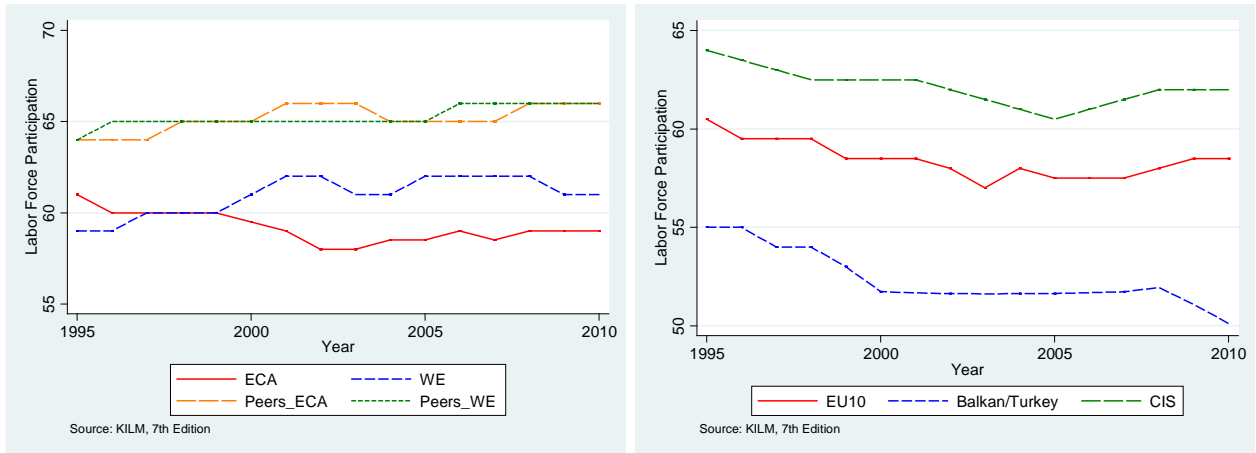
The employment-to-population ratio, or employment ratio, is defined as the proportion of a country's working-age population that is employed. It provides information on the ability of an economy to create employment.

The unemployment rate gives us the proportion of the labor force that does not have a job and is actively looking for work. It is probably the best-known labor market measure. However, the unemployment rate is viewed to be more reliable as an indicator of unutilized labor supply in developed countries than in developing countries due to informal work and underemployment.

Source: KILM Manuscript 2012.

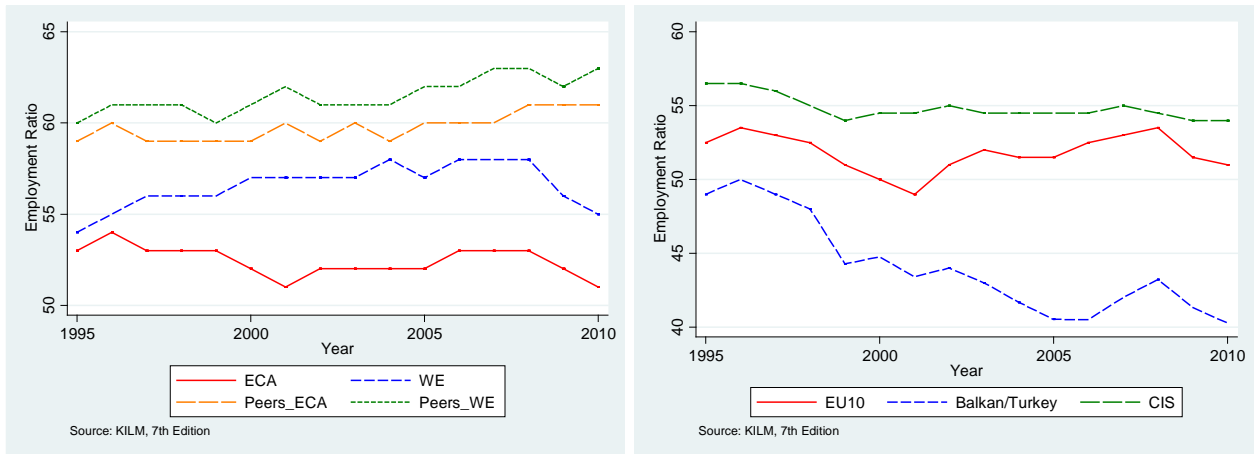
Median labor force participation rate is low in both ECA and Western Europe compared to their peers (Figure 2). But while Western Europe's labor force participation peaked in the 2000s, ECA's labor force participation stayed low throughout, in spite of a modest improvement in the mid-2000s. In 2010, ECA is the only region with labor force participation rates of less than 60 percent. Within ECA, the Balkan and Turkey fare worst and the CIS best. However, labor force participation rates in all four subregions were no higher in 2010 than in 1995.

Figure 2: Labor Force Participation Rates



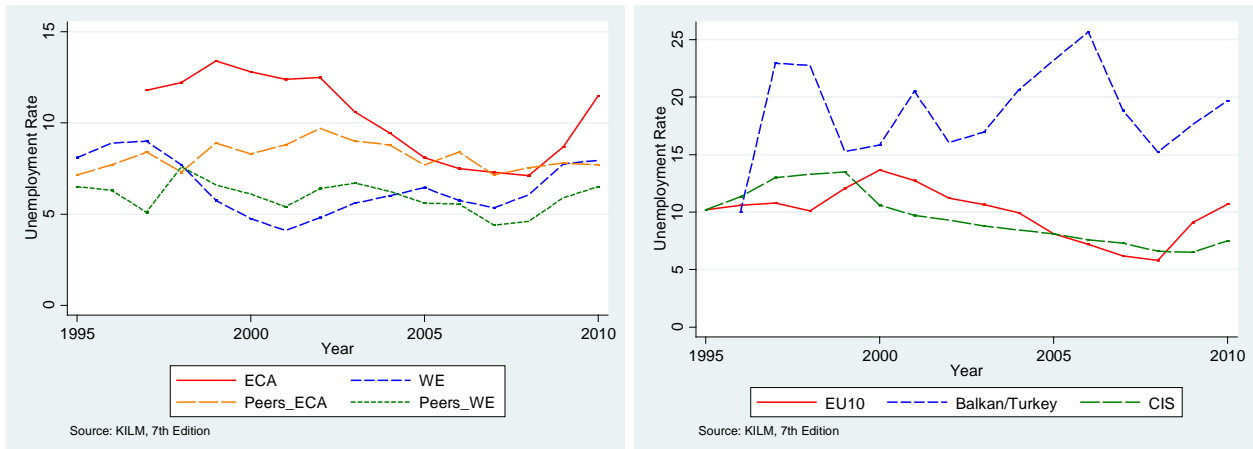
ECA is also the worst performing region with regard to employment ratios (Figure 3). Matching the pattern in Western Europe and in contrast to the pattern elsewhere, employment ratios in ECA declined noticeably as a result of the global financial crisis. In 2010, just over one in two working age persons were employed. Within ECA, the picture is again worst in the Balkan and Turkey and best in the CIS.

Figure 3: Employment Ratios



Even though ECA's labor force participation rates are low, its unemployment rates are the highest across the four regions (Figure 4). After converging to ECA peers in the years leading up to the global financial crisis, unemployment rates increased above 10 percent in recent years. Unemployment rates are especially high in Balkan/Turkey. In the CIS, unemployment rates were noticeably lower in 2010 than in the late 1990s, while in the EU10, they increased to the levels of the mid-1990s with the global financial crisis.

Figure 4: Unemployment Rates



Employment Elasticity of Output

We will now shift our attention to yet another labor market indicator: the employment intensity of growth, or, alternatively, the elasticity of employment with respect to output. This indicator measures how employment changes with economic output. For example, a value between 0 and 1 implies that output growth of one percent is associated with positive employment growth of less than one percent. Studying the employment elasticity serves two purposes. First, by evaluating how employment growth evolves with output growth, it can shed light on structural changes in the economy over time. Second, employment elasticities are closely linked to labor productivity elasticities (Kapsos 2005). Defining labor productivity as output per employed, for small changes in output, the labor productivity elasticity of output corresponds to one minus the employment elasticity of output. In case the employment elasticity is positive but less than one, the labor productivity elasticity is also positive and less than one.

We provide econometric evidence on the relationship between output and employment using a panel of advanced and developing economies from 1995 to 2010. As estimates can be biased due to problems of omitted variables, endogeneity or measurement errors, we look at a range of estimators. First, we calculate the average elasticities from 1995 to 2010 in the simplest fashion using bivariate OLS (Table 1, Column 1). ECA's elasticity is 0.18, noticeably less than in Western Europe (0.44) but higher than for peers of ECA and peers of Western Europe. Within ECA, the elasticities are highest among EU10 countries (0.32) and lowest in the CIS (0.12). Second, we include country-fixed effects to capture country-specific factors, such as geography, and economic and institutional environment, along with year indicators to control for general time effects (Column 2). The estimated elasticities are somewhat smaller but the pattern across regions is unchanged. Third, we run robust regressions that correct for outliers (Column 3). The coefficient for ECA declines further, but the broad pattern is the same. Finally, we include lagged employment on the right-hand side to capture the persistence in employment levels, and run system GMM

estimations (Column 4). The coefficient increases for ECA, but it remains less than half the level of Western Europe.

The macroeconomic situation changed during 1995 to 2010. The transformation to a market economy and the Asian crisis in the late 1990s gave way to an economic upswing in the early 2000s until the global financial crisis hit in 2008. Separating three time periods (columns 5 to 16), we find that the employment intensity of growth ECA doubled in ECA from 1995 to 2001 to 2002 to 2007, and increased further in 2008 to 2010. The trends in other regions are less clearcut.

In Table 2, we distinguish three subregions within ECA: EU10, the CIS and the Balkan and Turkey. There are two consistent patterns. Employment responds most to output in the EU10, and the least in the CIS (with the exception of the period of 1995 to 2001 in the Balkan and Turkey). Second, elasticities tend to increase over time for all three subregions. The only exception is the EU10, where the coefficients remained stable or declined from 2002 to 2007 to 2008 to 2010.

Structural Indicator Trends

Aside from economic growth, there are many factors that are likely to affect the performance of the labor market. We focus on those factors that we can trace consistently across time and country groups. We distinguish five sets of indicators: labor markets (regulations and informality), product markets, economic policy, governance and diversification. The variables are typically not available for the full period. As an illustration, we briefly look at one variable for each dimension that will turn out to be significant for the regression analysis:

- Hiring regulations improved in ECA during 2002 and 2008, driven by improvements in the EU10 and the CIS (Figure 5), before they worsened somewhat during the global financial crisis.
- ECA has a larger shadow economy than advanced regions. Its size declined somewhat due to improvements especially in the CIS (Figure 6).
- ECA closed the gap to the doing business frontier over time, along with its peers, thanks to improvements in all three subregions (Figure 7).
- ECA experienced rapid economic globalization, like Western Europe (Figure 8). Both regions became more globalized than their peers over time. All three ECA subregions globalized economically over time.
- ECA improved somewhat corruption control over time due to the Balkan and Turkey (Figure 9).

ECA's export diversification was overall fairly stable (Figure 10). Since it declined among the peers of Western Europe, ECA became the second most diversified region after Western Europe. Export diversification increased in EU11 but declined in CIS.

Figure 5: Hiring regulations

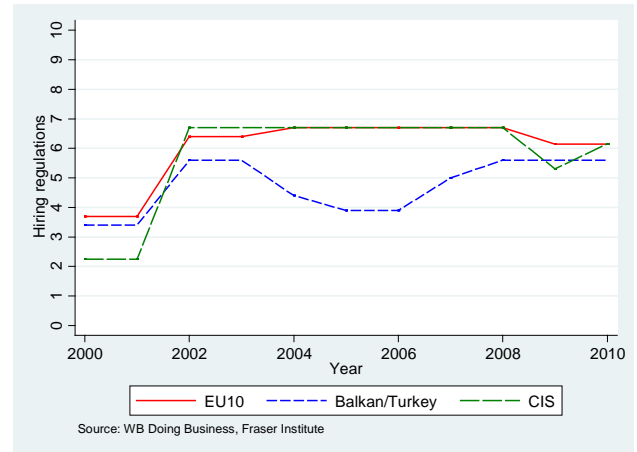
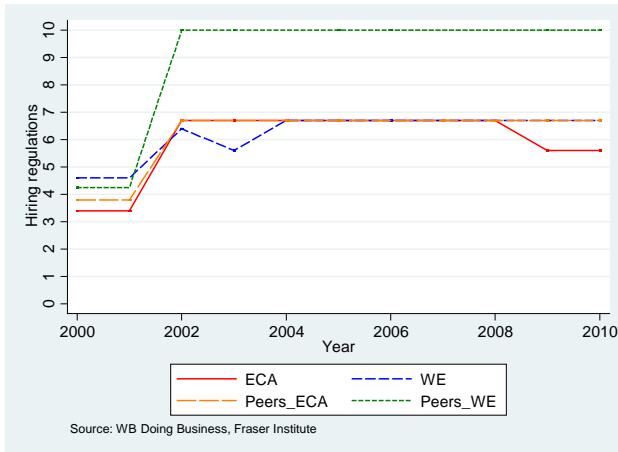


Figure 6: Shadow economy

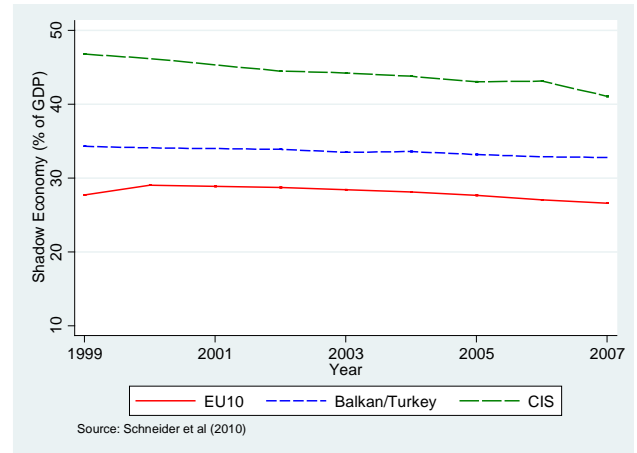
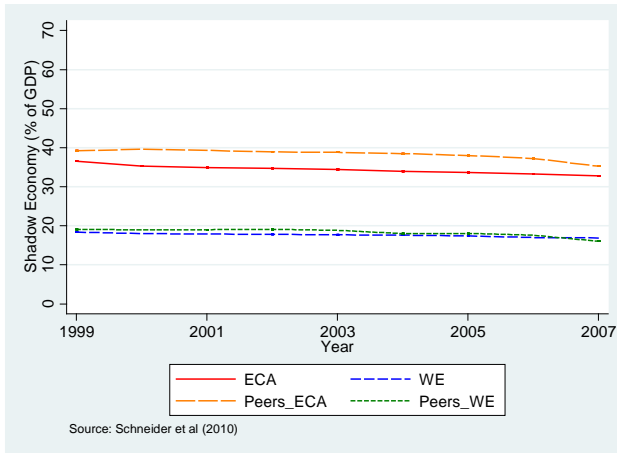


Figure 7: Ease of doing business

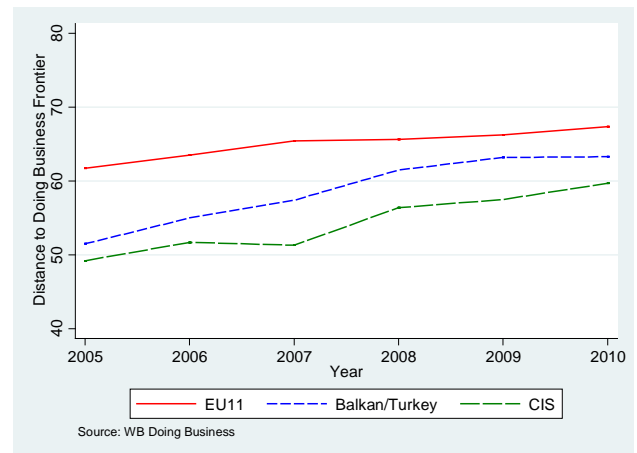
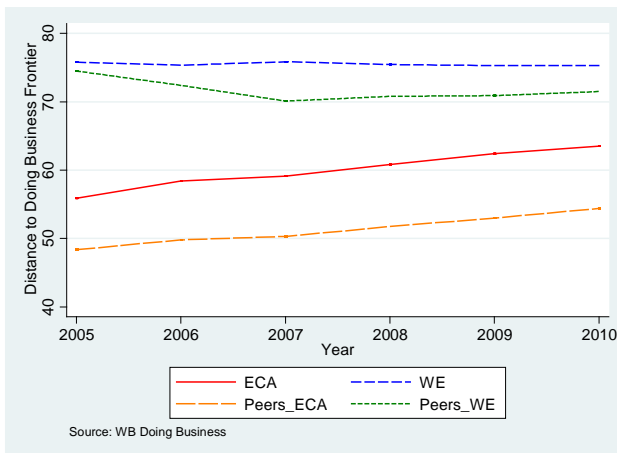


Figure 8: Economic globalization flows

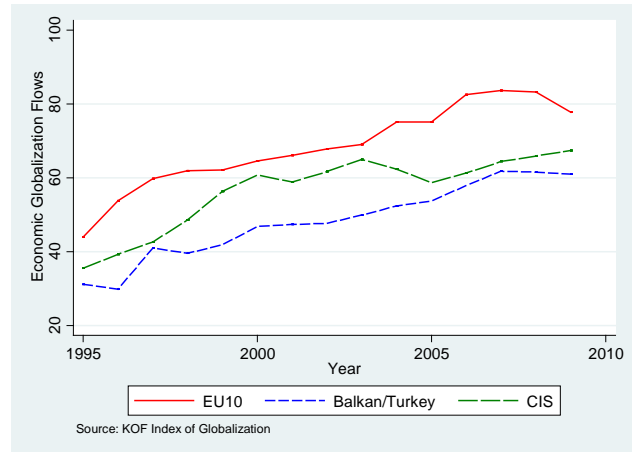
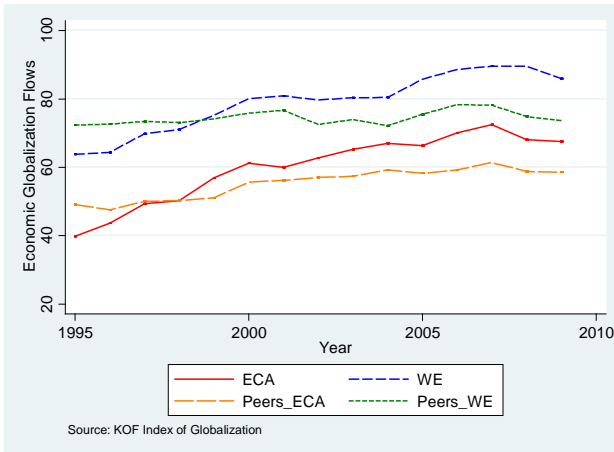


Figure 9: Corruption control

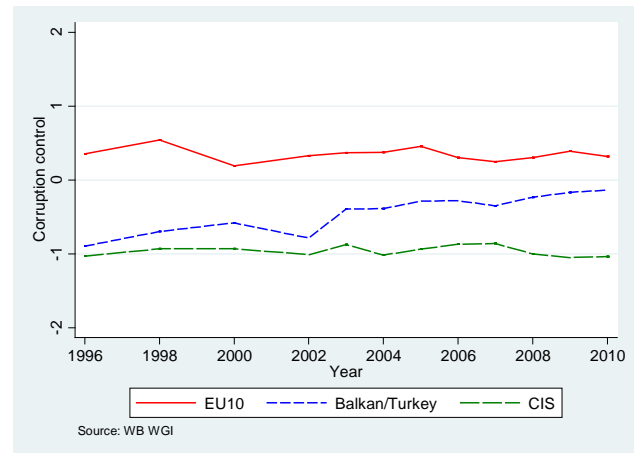
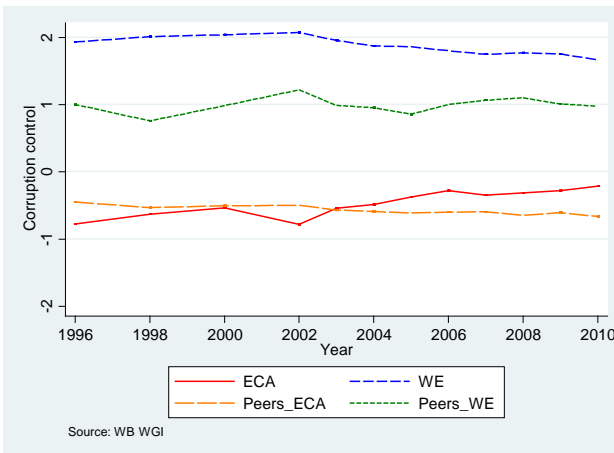
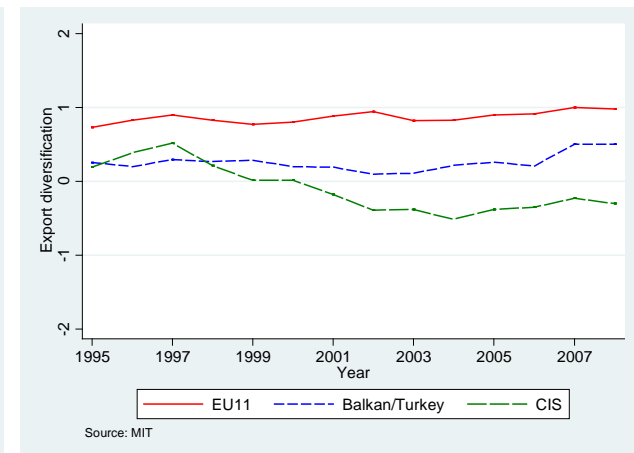
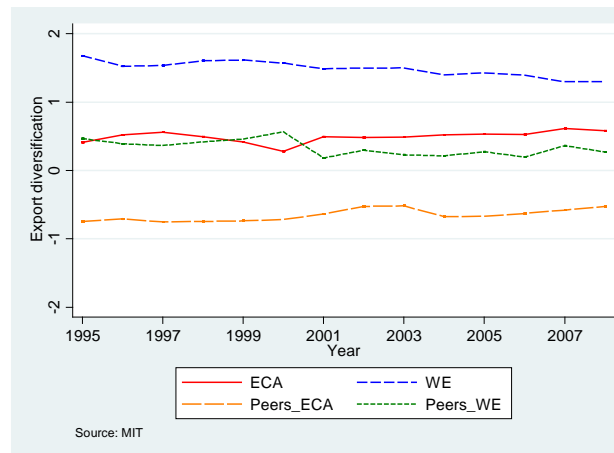


Figure 10: Export diversification



Employment Elasticity and Structural Reform

Structural factors are likely to influence the relationship between employment and output change. For example, firms might be more readily responding to economic expansions in case workers can be hired and laid off at low cost. More broadly, labor market institutions, product market reforms, economic policy, governance and economic diversification could all affect the employment elasticity of growth. There are a large number of structural variables that could be included in the regressions, and parameter estimates could turn out to be sensitive to the selection of variables. In the following, we use a simple approach. We include variables separately as right-hand side regressors, along with growth and fixed year and country effects. Even with this simplified approach, structural variables are often not significant. However, we find a number of statistically significant relationships where structural reforms boost employment growth:

- On labor markets, employment growth increases with less hiring regulations in ECA and the EU10, and a smaller shadow economy in the EU10 and the Balkan and Turkey (Table 3).
- On product markets, employment growth increases with a greater ease of doing business in ECA and the CIS and less credit regulations in ECA (Table 4). With regard to EBRD transition indicators, we find that employment growth increases with more firm restructuring in ECA and the EU10, better competition policy in the CIS, more banking reform in the EU10, and more infrastructure reform in the CIS (Table 5).
- On economic policy, employment growth increases with smaller size of government in ECA, sound money in ECA, and greater economic flows across borders in ECA, the EU10 and the CIS (Table 6).
- On governance, employment growth increases with more corruption control in ECA and the CIS, more political stability in the CIS, better quality of regulation in ECA (but not in the EU10), more government effectiveness in ECA and the CIS, and more voice and accountability in ECA (Table 7).
- On economic diversification, employment growth increases with higher export diversification in ECA. It also decreases with higher natural resource rents in ECA and in the CIS, but the coefficients are not statistically significant (Table 8). In addition, we look at how sectoral employment responds to overall output growth. The impact is insignificant on agricultural employment. Industrial employment increases with economic growth in ECA and the EU10. Service sector employment increases with economic growth in ECA, the EU10 and the CIS.

Conclusions

The sluggish response of employment growth to the post-transition recovery in ECA countries gave rise to the notion of jobless growth in the 1990s. In this paper, we provide evidence that the responsiveness of employment to output increased in the second decade of the transition. In other words, employment decisions of businesses depend more on the state of the business cycle than in the past, perhaps because structural reforms have increased the flexibility of the labor market (IMF

2012a and 2012b, Ball, Leigh and Loungani 2013). The changes are most pronounced for the EU10 and Balkan and Turkey, while the employment elasticity remained low in the CIS even during the global financial crisis. In addition, we provide some evidence that employment growth increases with reforms of labor and product markets, stronger macroeconomic policy frameworks, better governance, and more economic integration and economic diversification (Crivelli, Furceri and Toujas-Bernate 2012). However, in many instances, structural factors appear to have no significant impact on employment growth. This suggests that job dynamics depend on the interplay of a number of factors, and reforms in one area might not improve labor market outcomes due to the interaction with other areas (Blanchard, Jaumotte and Loungani 2013; World Development Report 2012).

These findings imply two policy conclusions. First, the state of the business cycle, including the strength of aggregate demand, matters for labor market outcomes in many ECA countries. This suggests that weak labor market trends are foremost a result of weak growth, especially in the short term. Second, structural reforms are likely to improve employment growth although the impact might often be visible only over time.

Table 1: Regression results for employment elasticity of growth: world

| Variables | 1995 to 2010 | | | | 1995 to 2001 | | | | 2002 to 2007 | | | | 2008 to 2010 | | |
|--------------------------------|--------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | (1) OLS | (2) FOLS | (3) ROLS | (4) SGMM | (5) OLS | (6) FOLS | (7) ROLS | (8) SGMM | (9) OLS | (10) FOLS | (11) ROLS | (12) SGMM | (13) OLS | (14) FOLS | (15) ROLS |
| ECA | | | | | | | | | | | | | | | |
| Output coeff. | 0.181 | 0.120 | 0.085 | 0.232 | 0.074 | 0.075 | 0.058 | 0.062 | 0.140 | 0.124 | 0.060 | 0.128 | 0.325 | 0.221 | 0.201 |
| Output t-stats. | 7.2 | 3.7 | 3.6 | 4.5 | 1.9 | 2.0 | 1.9 | 1.1 | 2.5 | 1.4 | 1.4 | 1.3 | 6.8 | 2.4 | 3.9 |
| Number of obs. | 413 | 413 | 413 | 413 | 161 | 161 | 161 | 161 | 168 | 168 | 168 | 140 | 84 | 84 | 84 |
| R squared | 0.111 | 0.289 | 0.472 | | 0.023 | 0.433 | 0.555 | | 0.036 | 0.343 | 0.697 | | 0.358 | 0.689 | 0.883 |
| AB AR2 test (p value) | | | | 0.411 | | | | 0.913 | | | | 0.087 | | | |
| Hansen J statistics (p value) | | | | 0.942 | | | | 0.231 | | | | 0.125 | | | |
| Western Europe | | | | | | | | | | | | | | | |
| Output coeff. | 0.438 | 0.407 | 0.494 | 0.472 | 0.538 | 0.320 | 0.331 | 0.516 | 0.448 | 0.428 | 0.536 | 0.572 | 0.333 | 0.028 | |
| Output t-stats. | 13.7 | 7.1 | 11.1 | 4.1 | 8.4 | 3.3 | 3.3 | 5.1 | 6.9 | 4.2 | 5.4 | 4.5 | 3.7 | 0.2 | |
| Number of obs. | 285 | 285 | 285 | 285 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 95 | 57 | 57 | |
| R squared | 0.397 | 0.521 | 0.681 | | 0.388 | 0.649 | 0.647 | | 0.300 | 0.630 | 0.680 | | 0.201 | 0.669 | |
| AB AR2 test (p value) | | | | 0.154 | | | | 0.232 | | | | 0.614 | | | |
| Hansen J statistics (p value) | | | | 0.997 | | | | 0.316 | | | | 0.508 | | | |
| Peers of ECA | | | | | | | | | | | | | | | |
| Output coeff. | 0.046 | 0.032 | 0.019 | 0.103 | 0.049 | 0.022 | -0.004 | 0.038 | 0.028 | 0.013 | 0.015 | 0.062 | 0.083 | 0.065 | 0.004 |
| Output t-stats. | 4.2 | 2.7 | 3.1 | 2.6 | 2.8 | 1.1 | -0.5 | 0.7 | 1.6 | 0.6 | 1.8 | 0.6 | 3.2 | 1.9 | 0.9 |
| Number of obs. | 1462 | 1462 | 1462 | 1462 | 566 | 566 | 566 | 566 | 596 | 596 | 596 | 498 | 300 | 300 | 300 |
| R squared | 0.012 | 0.239 | 0.587 | | 0.014 | 0.325 | 0.872 | | 0.004 | 0.352 | 0.810 | | 0.033 | 0.500 | 0.986 |
| AB AR2 test (p value) | | | | 0.485 | | | | 0.228 | | | | 0.449 | | | |
| Hansen J statistics (p value) | | | | 0.243 | | | | 0.119 | | | | 0.977 | | | |
| Peers of Western Europe | | | | | | | | | | | | | | | |
| Output coeff. | 0.070 | 0.038 | -0.008 | -0.013 | 0.007 | -0.007 | -0.014 | -0.010 | 0.432 | 0.284 | 0.266 | 0.036 | 0.591 | 0.087 | |
| Output t-stats. | 3.3 | 1.8 | -0.8 | -0.4 | 0.6 | -0.5 | -1.3 | -1.2 | 5.9 | 3.8 | 10.5 | 0.1 | 5.6 | 0.9 | |
| Number of obs. | 310 | 310 | 310 | 310 | 121 | 121 | 121 | 121 | 126 | 126 | 126 | 105 | 63 | 63 | |
| R squared | 0.033 | 0.523 | 0.538 | | 0.003 | 0.556 | 0.685 | | 0.219 | 0.710 | 0.951 | | 0.340 | 0.914 | |
| AB AR2 test (p value) | | | | 0.52 | | | | 0.17 | | | | 0.326 | | | |
| Hansen J statistics (p value) | | | | 0.996 | | | | 0.423 | | | | 0.175 | | | |

Note: The dependent variable is employment growth. The output coefficient is the parameter estimate of output growth.

OLS stands for cross-sectional bivariate regressions. FOLS include in addition country and year fixed-effects.

ROLS stands for robust regressions. SGMM stands for system generalized method of moments regressions.

The null hypothesis of the Arellano-Bond AR(2) test is that the first-differenced errors exhibit no second-order serial correlation.

The null hypothesis of the Hansen J-statistics is that the instruments are not correlated with the residuals.

Table 2: Regression results for employment elasticity of growth: ECA

| Variables | 1995 to 2010 | | | | 1995 to 2001 | | | | 2002 to 2007 | | | | 2008 to 2010 | |
|-------------------------------|--------------|-------|-------|-------|--------------|--------|--------|-------|--------------|-------|-------|-------|--------------|-------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| | OLS | FOLS | ROLS | SGMM1 | OLS | FOLS | ROLS | SGMM1 | OLS | FOLS | ROLS | SGMM1 | OLS | FOLS |
| EU10 | | | | | | | | | | | | | | |
| Output coeff. | 0.324 | 0.240 | 0.251 | 0.369 | -0.022 | 0.022 | 0.049 | 0.023 | 0.467 | 0.431 | 0.414 | 0.835 | 0.421 | 0.297 |
| Output t-stats. | 7.7 | 3.9 | 4.5 | 5.6 | -0.3 | 0.2 | 0.5 | 0.1 | 3.7 | 2.1 | 2.9 | 5.4 | 6.0 | 1.8 |
| Number of obs. | 150 | 150 | 150 | 150 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 50 | 30 | 30 |
| R squared | 0.288 | 0.483 | 0.525 | | 0.001 | 0.361 | 0.381 | | 0.194 | 0.523 | 0.636 | | 0.566 | 0.779 |
| AB AR2 test (p value) | | | | 0.375 | | | | 0.57 | | | | 0.048 | | |
| Hansen J statistics (p value) | | | | 1 | | | | 0.782 | | | | 0.749 | | |
| Balkan and Turkey | | | | | | | | | | | | | | |
| Output coeff. | 0.169 | 0.092 | 0.145 | 0.251 | -0.006 | -0.087 | -0.030 | 0.151 | 0.264 | 0.382 | 0.425 | 0.895 | 0.597 | 0.687 |
| Output t-stats. | 1.6 | 0.7 | 1.5 | 1.5 | -0.1 | -0.8 | -0.6 | 1.0 | 0.7 | 0.8 | 1.6 | 1.6 | 3.2 | 2.4 |
| Number of obs. | 94 | 94 | 94 | 94 | 31 | 31 | 31 | 31 | 42 | 42 | 42 | 35 | 21 | 21 |
| R squared | 0.028 | 0.271 | 0.402 | | 0.000 | 0.514 | 0.897 | | 0.013 | 0.337 | 0.494 | | 0.352 | 0.770 |
| AB AR2 test (p value) | | | | 0.377 | | | | 0.141 | | | | 0.542 | | |
| Hansen J statistics (p value) | | | | 1 | | | | 0.999 | | | | 0.917 | | |
| CIS | | | | | | | | | | | | | | |
| Output coeff. | 0.124 | 0.082 | 0.063 | 0.091 | 0.110 | 0.083 | 0.039 | 0.055 | 0.145 | 0.081 | 0.049 | 0.114 | 0.176 | 0.126 |
| Output t-stats. | 4.5 | 2.6 | 2.9 | 2.2 | 2.4 | 1.8 | 1.6 | 0.7 | 2.6 | 1.2 | 1.7 | 2.0 | 3.3 | 2.2 |
| Number of obs. | 180 | 180 | 180 | 180 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 60 | 36 | 36 |
| R squared | 0.102 | 0.498 | 0.754 | | 0.074 | 0.550 | 0.822 | | 0.087 | 0.542 | 0.896 | | 0.240 | 0.859 |
| AB AR2 test (p value) | | | | 0.912 | | | | 0.734 | | | | 0.187 | | |
| Hansen J statistics (p value) | | | | 1 | | | | 0.734 | | | | 0.597 | | |

Note: The dependent variable is employment growth. The output coefficient is the parameter estimate of output growth.

OLS stands for cross-sectional bivariate regressions. FOLS include in addition country and year fixed-effects.

ROLS stands for robust regressions. SGMM stands for system generalized method of moments regressions.

The null hypothesis of the Arellano-Bond AR(2) test is that the first-differenced errors exhibit no second-order serial correlation.

The null hypothesis of the Hansen J-statistics is that the instruments are not correlated with the residuals.

Table 3: Fixed-effects regression results for employment elasticity of growth: labor market

| Variables | | ECA | WE | PECA | PWE | EU10 | BalTur | CIS |
|-------------------------------|---------|--------|--------|--------|--------|--------|--------|-------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Hours regulations | | | | | | | | |
| Output | Coeff. | 0.255 | 0.351 | 0.088 | 0.093 | 0.465 | 0.502 | 0.103 |
| | t-stat. | 4.3 | 5.0 | 4.1 | 1.7 | 5.7 | 1.8 | 1.8 |
| Other variable | Coeff. | 0.001 | 0.001 | 0.000 | -0.001 | 0.000 | 0.014 | 0.003 |
| | t-stat. | 0.5 | 0.5 | 0.3 | -0.5 | -0.2 | 1.0 | 1.1 |
| | N | 232 | 196 | 746 | 136 | 100 | 63 | 76 |
| | R2 | 0.36 | 0.53 | 0.25 | 0.87 | 0.63 | 0.37 | 0.60 |
| Hiring regulations | | | | | | | | |
| Output | Coeff. | 0.252 | 0.356 | 0.087 | 0.092 | 0.476 | 0.451 | 0.104 |
| | t-stat. | 4.4 | 5.1 | 4.1 | 1.7 | 6.1 | 1.6 | 1.8 |
| Other variable | Coeff. | 0.003 | 0.000 | 0.000 | -0.006 | 0.004 | 0.002 | 0.001 |
| | t-stat. | 1.7 | 0.0 | -0.5 | -1.2 | 2.3 | 0.3 | 0.2 |
| | N | 242 | 196 | 767 | 134 | 110 | 63 | 76 |
| | R2 | 0.37 | 0.53 | 0.25 | 0.88 | 0.64 | 0.36 | 0.59 |
| Size of shadow economy | | | | | | | | |
| Output | Coeff. | 0.103 | 0.426 | 0.012 | 0.043 | 0.134 | -0.481 | 0.148 |
| | t-stat. | 1.3 | 5.5 | 0.7 | 1.3 | 0.9 | -1.7 | 2.0 |
| Other variable | Coeff. | -0.001 | -0.005 | -0.001 | -0.010 | -0.010 | -0.051 | 0.000 |
| | t-stat. | -0.2 | -1.7 | -1.7 | -10.0 | -1.5 | -2.7 | 0.1 |
| | N | 223 | 171 | 842 | 172 | 89 | 45 | 89 |
| | R2 | 0.24 | 0.66 | 0.28 | 0.77 | 0.46 | 0.36 | 0.49 |
| Informality | | | | | | | | |
| Output | Coeff. | 0.080 | 0.368 | 0.032 | 0.064 | 0.168 | -0.143 | 0.104 |
| | t-stat. | 1.9 | 5.5 | 2.3 | 2.2 | 2.2 | -0.7 | 2.2 |
| Other variable | Coeff. | 0.033 | 1.183 | 0.037 | -0.136 | -0.488 | 1.862 | 0.030 |
| | t-stat. | 0.4 | 4.2 | 1.0 | -1.5 | -2.1 | 1.0 | 0.4 |
| | N | 301 | 265 | 1213 | 261 | 134 | 50 | 117 |
| | R2 | 0.22 | 0.56 | 0.22 | 0.51 | 0.38 | 0.35 | 0.43 |

Note: The dependent variable is employment growth. The output coefficient is the parameter estimate of output growth. All regressions also include country and year fixed-effects.

Table 4: Fixed-effects regression results for employment elasticity of growth: product market

| Variables | | ECA | WE | PECA | PWE | EU10 | BalTur | CIS |
|-----------------------------|---------|-------|-------|-------|--------|-------|--------|-------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Distance to frontier | | | | | | | | |
| Output | Coeff. | 0.209 | 0.295 | 0.015 | 0.048 | 0.391 | 0.539 | 0.062 |
| | t-stat. | 3.3 | 2.9 | 0.6 | 0.8 | 4.9 | 1.5 | 2.0 |
| Other variable | Coeff. | 0.002 | 0.000 | 0.001 | 0.001 | 0.003 | -0.005 | 0.001 |
| | t-stat. | 1.9 | 0.2 | 2.4 | 0.8 | 1.2 | -1.2 | 2.0 |
| | N | 162 | 109 | 586 | 107 | 60 | 41 | 66 |
| | R2 | 0.45 | 0.59 | 0.34 | 0.92 | 0.82 | 0.42 | 0.83 |
| Credit regulation | | | | | | | | |
| Output | Coeff. | 0.232 | 0.332 | 0.068 | 0.122 | 0.434 | -0.068 | 0.131 |
| | t-stat. | 4.2 | 4.6 | 3.5 | 1.6 | 5.5 | -0.3 | 1.8 |
| Other variable | Coeff. | 0.006 | 0.003 | 0.000 | 0.001 | 0.003 | 0.013 | 0.003 |
| | t-stat. | 2.0 | 1.5 | 0.1 | 0.3 | 0.9 | 1.5 | 0.7 |
| | N | 210 | 209 | 810 | 175 | 110 | 44 | 56 |
| | R2 | 0.37 | 0.53 | 0.24 | 0.61 | 0.62 | 0.38 | 0.51 |
| Business regulation | | | | | | | | |
| Output | Coeff. | 0.354 | 0.413 | 0.120 | 0.144 | 0.422 | | |
| | t-stat. | 5.5 | 6.3 | 3.6 | 2.9 | 5.3 | | |
| Other variable | Coeff. | 0.009 | 0.003 | 0.002 | -0.003 | 0.008 | | |
| | t-stat. | 1.5 | 0.7 | 0.7 | -0.8 | 1.1 | | |
| | N | 143 | 187 | 362 | 99 | 110 | | |
| | R2 | 0.53 | 0.60 | 0.24 | 0.72 | 0.62 | | |

Note: The dependent variable is employment growth. The output coefficient is the parameter estimate of output growth. All regressions also include country and year fixed-effects.

Table 5: Fixed-effects regression results for employment elasticity of growth: ECA product market

| Variables | | ECA | EU10 | BalTur | CIS |
|------------------------------|---------|-------|--------|--------|-------|
| | | (1) | (2) | (3) | (4) |
| Firm restructuring | | | | | |
| Output | Coeff. | 0.125 | 0.219 | 0.073 | 0.079 |
| | t-stat. | 3.7 | 3.3 | 0.4 | 2.6 |
| Other variable | Coeff. | 0.015 | 0.032 | -0.024 | 0.010 |
| | t-stat. | 1.8 | 1.9 | -0.7 | 1.1 |
| | N | 386 | 135 | 71 | 180 |
| | R2 | 0.30 | 0.51 | 0.29 | 0.50 |
| Competition policy | | | | | |
| Output | Coeff. | 0.13 | 0.24 | 0.06 | 0.08 |
| | t-stat. | 3.78 | 3.40 | 0.32 | 2.72 |
| Other variable | Coeff. | 0.01 | 0.00 | -0.02 | 0.02 |
| | t-stat. | 1.3 | 0.3 | -0.7 | 2.4 |
| | N | 386 | 135 | 71 | 180 |
| | R2 | 0.30 | 0.49 | 0.29 | 0.52 |
| Banking reform | | | | | |
| Output | Coeff. | 0.124 | 0.202 | 0.068 | 0.083 |
| | t-stat. | 3.6 | 3.0 | 0.3 | 2.7 |
| Other variable | Coeff. | 0.008 | 0.022 | -0.011 | 0.003 |
| | t-stat. | 1.3 | 2.1 | -0.5 | 0.4 |
| | N | 386 | 135 | 71 | 180 |
| | R2 | 0.30 | 0.51 | 0.28 | 0.50 |
| Infrastructure reform | | | | | |
| Output | Coeff. | 0.125 | 0.261 | 0.083 | 0.092 |
| | t-stat. | 3.6 | 3.8 | 0.4 | 2.9 |
| Other variable | Coeff. | 0.005 | -0.018 | 0.005 | 0.018 |
| | t-stat. | 0.7 | -1.7 | 0.1 | 1.8 |
| | N | 386 | 135 | 71 | 180 |
| | R2 | 0.29 | 0.50 | 0.28 | 0.51 |

Note: The dependent variable is employment growth.

The output coefficient is the parameter estimate of output growth.

All regressions also include country and year fixed-effects.

Table 6: Fixed-effects regression results for employment elasticity of growth: economic policy

| Variables | | ECA | WE | PECA | PWE | EU10 | BalTur | CIS |
|--|---------|-------|--------|--------|--------|-------|--------|-------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Size of government | | | | | | | | |
| Output | Coeff. | 0.300 | 0.350 | 0.075 | 0.123 | 0.398 | -0.146 | 0.133 |
| | t-stat. | 4.3 | 5.0 | 3.9 | 1.7 | 4.7 | -0.7 | 0.8 |
| Other variable | Coeff. | 0.008 | 0.002 | 0.002 | 0.014 | 0.006 | -0.011 | 0.003 |
| | t-stat. | 1.9 | 1.0 | 2.5 | 2.5 | 1.2 | -0.7 | 0.5 |
| | N | 165 | 209 | 780 | 175 | 110 | 33 | 22 |
| | R2 | 0.46 | 0.52 | 0.26 | 0.63 | 0.62 | 0.57 | 0.76 |
| Sound money | | | | | | | | |
| Output | Coeff. | 0.301 | 0.370 | 0.074 | 0.121 | 0.414 | -0.153 | 0.051 |
| | t-stat. | 4.4 | 5.3 | 3.8 | 1.6 | 5.4 | -0.7 | 0.3 |
| Other variable | Coeff. | 0.004 | -0.005 | -0.001 | -0.001 | 0.006 | 0.005 | 0.001 |
| | t-stat. | 1.8 | -1.3 | -1.2 | -0.1 | 2.2 | 0.8 | 0.2 |
| | N | 165 | 209 | 780 | 175 | 110 | 33 | 22 |
| | R2 | 0.46 | 0.53 | 0.26 | 0.61 | 0.63 | 0.57 | 0.75 |
| Economic globalization flows | | | | | | | | |
| Output | Coeff. | 0.118 | 0.452 | 0.031 | 0.010 | 0.300 | -0.047 | 0.090 |
| | t-stat. | 3.5 | 6.8 | 2.4 | 0.6 | 5.1 | -0.3 | 2.6 |
| Other variable | Coeff. | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 |
| | t-stat. | 3.9 | 1.1 | 1.2 | 0.3 | 2.2 | 0.7 | 2.0 |
| | N | 357 | 266 | 1316 | 247 | 126 | 77 | 154 |
| | R2 | 0.32 | 0.53 | 0.23 | 0.36 | 0.62 | 0.25 | 0.49 |
| Economic globalization restrictions | | | | | | | | |
| Output | Coeff. | 0.171 | 0.462 | 0.072 | 0.219 | 0.332 | -0.035 | 0.145 |
| | t-stat. | 4.1 | 7.1 | 4.2 | 3.3 | 5.4 | -0.2 | 2.7 |
| Other variable | Coeff. | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | t-stat. | 0.7 | -1.5 | 1.7 | -0.3 | -0.4 | 0.4 | -0.7 |
| | N | 315 | 266 | 1068 | 219 | 126 | 77 | 112 |
| | R2 | 0.29 | 0.53 | 0.20 | 0.55 | 0.60 | 0.24 | 0.45 |

Note: The dependent variable is employment growth. The output coefficient is the parameter estimate of output growth. All regressions also include country and year fixed-effects.

Table 7: Fixed-effects regression results for employment elasticity of growth: governance

| Variables | | ECA | WE | PECA | PWE | EU10 | BalTur | CIS |
|---------------------------------|---------|--------|--------|--------|--------|--------|--------|-------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Rule of law | | | | | | | | |
| Output | Coeff. | 0.140 | 0.398 | 0.028 | 0.170 | 0.387 | 0.232 | 0.069 |
| | t-stat. | 3.6 | 6.2 | 2.0 | 4.0 | 6.2 | 0.9 | 1.9 |
| Other variable | Coeff. | -0.001 | -0.005 | 0.004 | -0.015 | -0.002 | -0.042 | 0.009 |
| | t-stat. | -0.1 | -0.5 | 1.3 | -1.1 | -0.2 | -0.9 | 1.0 |
| | N | 320 | 228 | 1145 | 249 | 108 | 68 | 144 |
| | R2 | 0.31 | 0.52 | 0.24 | 0.61 | 0.70 | 0.29 | 0.49 |
| Corruption control | | | | | | | | |
| Output | Coeff. | 0.149 | 0.396 | 0.029 | 0.144 | 0.387 | 0.217 | 0.078 |
| | t-stat. | 3.8 | 6.1 | 2.1 | 3.5 | 6.3 | 0.8 | 2.2 |
| Other variable | Coeff. | 0.019 | 0.004 | 0.001 | 0.020 | 0.004 | 0.031 | 0.019 |
| | t-stat. | 2.4 | 0.5 | 0.5 | 2.2 | 0.4 | 0.9 | 2.3 |
| | N | 320 | 228 | 1144 | 249 | 108 | 68 | 144 |
| | R2 | 0.33 | 0.52 | 0.23 | 0.62 | 0.70 | 0.28 | 0.51 |
| Political stability | | | | | | | | |
| Output | Coeff. | 0.134 | 0.379 | 0.032 | 0.160 | 0.431 | 0.305 | 0.070 |
| | t-stat. | 3.4 | 5.8 | 2.2 | 3.9 | 6.0 | 1.1 | 2.0 |
| Other variable | Coeff. | 0.008 | 0.009 | -0.001 | 0.002 | -0.013 | -0.024 | 0.011 |
| | t-stat. | 1.2 | 1.5 | -0.8 | 0.2 | -1.1 | -0.9 | 1.7 |
| | N | 320 | 228 | 1146 | 249 | 108 | 68 | 144 |
| | R2 | 0.31 | 0.52 | 0.23 | 0.61 | 0.70 | 0.29 | 0.50 |
| Quality of regulations | | | | | | | | |
| Output | Coeff. | 0.137 | 0.405 | 0.028 | 0.152 | 0.435 | 0.243 | 0.071 |
| | t-stat. | 3.5 | 6.1 | 2.0 | 3.7 | 6.8 | 0.9 | 2.0 |
| Other variable | Coeff. | 0.014 | -0.004 | 0.004 | 0.025 | -0.033 | 0.031 | 0.005 |
| | t-stat. | 1.6 | -0.5 | 1.7 | 2.1 | -2.2 | 0.7 | 0.6 |
| | N | 320 | 228 | 1145 | 249 | 108 | 68 | 144 |
| | R2 | 0.32 | 0.52 | 0.24 | 0.62 | 0.72 | 0.28 | 0.49 |
| Government effectiveness | | | | | | | | |
| Output | Coeff. | 0.139 | 0.365 | 0.027 | 0.178 | 0.390 | 0.350 | 0.063 |
| | t-stat. | 3.6 | 5.7 | 1.9 | 4.2 | 6.3 | 1.3 | 1.8 |
| Other variable | Coeff. | 0.019 | 0.019 | 0.006 | -0.021 | -0.002 | -0.080 | 0.024 |
| | t-stat. | 2.1 | 2.9 | 1.9 | -1.5 | -0.1 | -1.4 | 2.9 |
| | N | 320 | 228 | 1144 | 249 | 108 | 68 | 144 |
| | R2 | 0.32 | 0.54 | 0.24 | 0.61 | 0.70 | 0.30 | 0.52 |
| Voice and accountability | | | | | | | | |
| Output | Coeff. | 0.152 | 0.395 | 0.029 | 0.161 | 0.390 | 0.255 | 0.077 |
| | t-stat. | 3.8 | 6.1 | 2.0 | 3.9 | 6.4 | 0.9 | 2.2 |
| Other variable | Coeff. | 0.014 | 0.005 | 0.002 | -0.013 | -0.028 | 0.008 | 0.011 |
| | t-stat. | 1.6 | 0.3 | 0.9 | -0.8 | -1.2 | 0.2 | 1.2 |
| | N | 320 | 228 | 1146 | 249 | 108 | 68 | 144 |
| | R2 | 0.32 | 0.52 | 0.23 | 0.61 | 0.71 | 0.27 | 0.49 |

Note: The dependent variable is employment growth. The output coefficient is the parameter estimate of output growth. All regressions also include country and year fixed-effects.

Table 8: Fixed-effects regression results for employment elasticity of growth: diversification

| Variables | | ECA | WE | PECA | PWE | EU10 | BalTur | CIS |
|----------------------------------|---------|--------|-------|--------|-------|--------|--------|-------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Export diversification | | | | | | | | |
| Output | Coeff. | 0.081 | 0.519 | 0.046 | 0.313 | 0.110 | -0.058 | 0.073 |
| | t-stat. | 2.2 | 8.0 | 2.9 | 4.6 | 1.5 | -0.3 | 2.2 |
| Other variable | Coeff. | 0.014 | 0.012 | -0.003 | 0.011 | 0.012 | -0.026 | 0.000 |
| | t-stat. | 2.0 | 1.6 | -1.2 | 1.1 | 0.6 | -0.5 | 0.0 |
| | N | 337 | 208 | 873 | 195 | 130 | 64 | 143 |
| | R2 | 0.25 | 0.60 | 0.22 | 0.60 | 0.35 | 0.26 | 0.53 |
| Natural resource rent | | | | | | | | |
| Output | Coeff. | 0.125 | 0.408 | 0.029 | 0.037 | 0.234 | 0.027 | 0.084 |
| | t-stat. | 3.8 | 7.1 | 2.4 | 1.8 | 3.7 | 0.2 | 2.7 |
| Other variable | Coeff. | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.004 | 0.000 |
| | t-stat. | -1.3 | 0.4 | 0.5 | 0.2 | 0.7 | 0.9 | -0.8 |
| | N | 413 | 285 | 1435 | 304 | 150 | 83 | 180 |
| | R2 | 0.29 | 0.52 | 0.23 | 0.52 | 0.49 | 0.26 | 0.50 |
| Agricultural employment | | | | | | | | |
| Output | Coeff. | -0.007 | 0.282 | 0.959 | 0.569 | -0.062 | 0.036 | 0.174 |
| | t-stat. | 0.0 | 0.7 | 0.2 | 0.5 | -0.3 | 0.1 | 0.8 |
| | N | 283 | 281 | 425 | 177 | 143 | 47 | 93 |
| | R2 | -0.02 | 0.00 | -0.05 | 0.00 | 0.23 | 0.29 | 0.33 |
| Industrial employment | | | | | | | | |
| Output | Coeff. | 0.328 | 0.899 | 0.762 | 0.512 | 0.624 | 0.034 | 0.057 |
| | t-stat. | 2.4 | 6.6 | 4.0 | 3.2 | 6.9 | 0.0 | 0.3 |
| | N | 283 | 281 | 425 | 177 | 143 | 47 | 93 |
| | R2 | 0.16 | 0.43 | 0.22 | 0.74 | 0.69 | 0.35 | 0.41 |
| Service sector employment | | | | | | | | |
| Output | Coeff. | 0.649 | 0.153 | 0.166 | 0.241 | 0.292 | -0.208 | 1.412 |
| | t-stat. | 2.4 | 1.7 | 0.9 | 2.8 | 5.2 | -0.6 | 1.9 |
| | N | 283 | 281 | 425 | 177 | 143 | 47 | 93 |
| | R2 | 0.00 | 0.17 | 0.01 | 0.42 | 0.45 | 0.43 | 0.26 |

Note: The dependent variable is employment growth. The output coefficient is the parameter estimate of output growth. All regressions also include country and year fixed-effects.

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