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Economic Growth in Croatia: Potential and Constraints

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Abstract

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This paper examines the factors and constraints that affect recent and potential growth in Croatia, as well as policies that can influence it. On current productivity trends, it estimates Croatia's potential growth rate at 4–4½ percent, a result reasonably robust to different methodologies. To sustain growth at a higher rate in line with the authorities' aspirations, the analysis highlights the critical need to improve the business environment through further measures to reduce the administrative burden, legal uncertainties, and corruption. It also emphasizes the importance of attracting more greenfield foreign direct investment, and reforms to reduce the role of the state in the economy through fiscal consolidation and faster privatization.

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I. INTRODUCTION

1. **Croatia has experienced solid economic performance over the past five years, though room remains for improvement.** Croatia's average real GDP growth has lagged performance in comparable regional transition economies. Despite its many natural advantages, Croatia has attracted only modest inflows of "greenfield" investments. Export performance has been below par, and survey measures of competitiveness consistently point to a difficult business environment.

2. **This paper examines recent and prospective economic growth performance, with a view to answering the following questions:**

- What pace of economic growth can Croatia expect in the medium term?
- How can this pace be increased? In this context, what factors constrain economic growth, and how can policies tackle these constraints?

3. **The quest for economic growth has a number of facets.** Questions related to what determines the potential growth rate and what reforms could increase it should be central to deciding a country's policy agenda. In the context of the Croatian economy, a relevant question is the extent to which the solid growth performance in recent years has been driven by fundamentals and therefore can be considered sustainable, and to what extent it has been driven by temporary factors. Structural reforms related to the transition process since the mid-1990s and to EU harmonization more recently, as well as macroeconomic adjustment to safeguard economic stability in recent years, should have increased Croatia's potential growth rate. Looking forward, policymakers need to know what policies and reforms could increase Croatia's growth rate further and lead to a faster income convergence to the EU.

4. **The paper is set out as follows.** Section II summarizes the main features of recent economic performance and surveys some of the potential underlying determinants. Section III estimates potential growth for Croatia over the next five years using the standard statistical and production-function methodologies. These estimates suggest that on current productivity trends, Croatia's potential growth rate is between 4 and 4½ percent. Section IV corroborates these estimates using a cross-country econometric model for growth, and draws out some implications of how policy reforms could influence growth. Section V takes a different perspective by using the "growth diagnostic" approach to identify the binding constraints on growth. Section VI concludes with a discussion of policies to sustain higher growth rates in line with the authorities' aspirations.

II. STYLIZED FACTS AND THE DETERMINANTS OF ECONOMIC GROWTH

5. **Economic growth has been solid in recent years, though slightly below regional standards.** Real GDP growth averaged 4.8 percent annually over 2002–06, slightly below the peer country average over 2002–06 of nearly 6 percent (Figure 1).² Nevertheless, this performance represents a pickup from Croatia’s average economic growth of some 3¼ percent annually over 1997–2001. Recent growth has relied on strong domestic investment.

6. **Export performance has been disappointing.** Real export growth averaged 6 percent annually during 2002–06, significantly below the peer country average (over 10 percent). In contrast to GDP growth, export growth fell compared to the previous period (when it averaged 6½ percent over 1997–2001). At the same time, recent economic performance has been associated with heightened external vulnerabilities.³ External debt jumped from 61½ percent of GDP at end-2001 to nearly 80 percent by end-2004, subsequently increasing to 85 percent at end-2006. The current account deficit averaged 6 percent of GDP during 2001–05, and widened in 2006 to 7.6 percent of GDP.

7. **Total foreign direct investment (FDI) into Croatia is close to the regional average (averaging just below 5 percent of GDP annually during 2002–06), but “greenfield” FDI has been well below potential.** UNCTAD data on the number of new greenfield FDI projects suggests that Croatia has lagged in attracting new investors (Figure 2). While these data need to be interpreted cautiously in the absence of comparable data on the size of projects, other evidence also points to underlying weakness in greenfield FDI. In a cross-country study for southeastern Europe, Demekas, Horváth, Ribakova, and Wu (2005) estimate a gravity model for “potential” nonprivatization FDI (which captures greenfield FDI) using data to 2003. They find that the estimated gap (underperformance) between actual and potential FDI in Croatia is one of the largest in the region. Moreover, the financial sector has received a very large share of FDI (both privatization and new capital, and therefore not of the “greenfield” variety). This is the case whether looking over an extended period (30 percent of total inflows over 1993–2006) or more recently (over 40 percent of FDI each year in 2004–06, partly reflecting capital injections to foreign-owned banks).

8. **Croatia’s progress in transition has lagged the top reforming countries.** Looking at Croatia’s reform progress in recent years in more detail, progress relative to other

² For a detailed discussion on the factors behind Croatia’s growth experience in the late 1990s, see Vujčić and Lang (2002).

³ Accordingly, policies aiming to mitigating external vulnerabilities were central to the authorities’ program under Croatia’s 2004–06 Stand-By Arrangement.

economies has been slower in a number of areas. According to the EBRD transition indicators (up to 2006), Croatia's overall transition compares well with most south and eastern European economies, but lags behind transition in central European economies (Figure 3). Croatia's transition rank has not changed during recent years (Figure 4) despite progress in all aspects of transition (Figure 5). And Croatia still lags behind most other transition economies in competition policy, large-scale privatization, and price liberalization (Figure 6). According to the EFN index of economic freedom (up to 2004), Croatia has progressed in most areas of macroeconomic and structural reform measured by the index (Figure 7), but by less than the rest of the world (Figure 8). As a result, Croatia's ranking for the overall EFN index has fallen over the past ten years.

9. **A vast empirical literature has identified a multitude of factors that can determine economic growth.**⁴ Based on the main results from this literature, we compare below the main possible determinants of growth in Croatia with those in the rest of Europe. These results also allow us to simulate an empirical growth model for Croatia, estimate Croatia's potential growth, and quantify the growth impact of economic and structural reforms (see Section D).

10. **Several stylized facts emerge from a cross-country comparison of growth determinants.** The Appendix compares the main growth determinants in Croatia with selected neighboring and regional economies in southeastern Europe (SEE), other peer economies in central and eastern Europe (CEE), and the euro area. The table in the Appendix shows several alternative indicators for each growth determinant for recent years, depending on data availability. The literature has found that each of these variables significantly affects economic growth. Cross-country comparisons of their values can highlight the factors that are driving growth in Croatia relative to other countries in Europe, the factors in which Croatia lags behind, and the reforms on which Croatia should focus in order to increase growth in the future. According to these comparisons, in terms of growth prospects:

- Croatia compares well with other transition economies with respect to:
 - *potential for convergence*, with GDP per capita (in purchasing power standards) reaching 48 percent of the euro area average;

⁴ For more details, see Levine and Renelt (1992); Fischer (1993); Barro and Sala-i-Martin (2004); George, Oxley, and Carlaw (2004); Helpman (2004); Aghion and Durlauf (2005); and the Economic Growth Resources website (<http://www.bris.ac.uk/Depts/Economics/Growth/>, updated by Jonathan Temple).

- *public sector investment*, spending considerably more as a share of GDP than other SEE and CEE countries;
- *monetary policy*, with low inflation, broadly in line with inflation rates in most of the rest of Europe;
- *demographics*, with a high dependency ratio but similar to that in the rest of Europe;
- *infrastructure*, where based on EBRD indicators reform is close to what seen in other transition economies;
- *human capital*, with enrollment ratios and spending per student close to the rest of Europe for both primary and secondary education, and a level of labor force education that does not give particular reason for concern—although more detailed data are more alarming (see Section E);
- *health of the population*, according to most indicators, although this comes at a relatively high cost since Croatia's public sector spends considerably more on health care as a share of GDP than both the SEE and CEE countries;
- *the new economy*, with the use and production of information technology broadly as developed as in the CEE, although less than in the euro area;
- *financial sector*, with a more advanced banking sector than that of most SEE and CEE countries and a limited presence of the state in the sector;⁵ and
- *international trade*, with all indicators suggesting a very open economy.
- Croatia does not compare as well with other transition economies with respect to:
 - *private sector investment and FDI*, which as shares of GDP have been below those in other CEE countries, in particular for greenfield FDI;
 - *government size*, with general government spending as a share of GDP well above levels in the SEE and the CEE countries, despite fiscal consolidation in recent years;⁶

⁵ Hilaire and Ilyina (2007) and Mitra (2007) investigate the main financial risks and vulnerabilities in Croatia.

⁶ Pushak, Tiongson, and Varoudakis (2007) present empirical evidence of a nonlinear relationship between size of government and economic growth in transition economies. Above a threshold of 35 percent of GDP, they find a negative impact of public spending on growth, though no measurable impact on growth below this threshold.

- *transition*, lagging behind the CEE countries, particularly in large-scale privatization, enterprise restructuring, competition policy, and price liberalization,⁷ and with a more significant role of the state in the economy than in the rest of Europe;
- *the business environment*, which is less friendly than the business environment in the CEE countries and in the euro area according to almost all indicators (Figure 9);
- *the legal system*, with indicators for property rights, contract enforcement, and corruption less favorable than in both the CEE countries and the euro area; and
- *the labor market*, with a relatively high unemployment rate, in particular for the long-term unemployed and the young, and a low labor force participation rate, which very likely result from limited labor market flexibility—the indicators considered suggest that Croatia has a more rigid labor market than both the SEE and the CEE countries (see below on employment protection legislation; see also Tonin (2005)).

III. POTENTIAL GROWTH ESTIMATES FOR THE CROATIAN ECONOMY

11. **Estimates of potential output growth can be a useful tool in economic policy.**

They provide a guideline for medium-term growth projections; they are used to estimate a cyclically-neutral budget balance; they can determine if actual growth is driven by temporary factors or by changes in the potential of the economy to grow faster; and they can guide decisions in setting the reform agenda. Moreover, estimates of the output gap—derived from actual and estimated potential output—can indicate inflationary pressures in the economy.

12. **For transition economies, estimates of potential growth are necessarily tentative.**

Data problems, such as unavailability of some key variables, relatively short time-series, measurement issues, and frequent changes in statistical methods can make this task very difficult for most of these economies. Furthermore, the process of structural transformation that has been taking place during the transition period raises questions about the use of historical data to estimate potential growth and, more generally, the use of recent trends to determine future prospects. But with these caveats, almost fifteen years of economic transition in Croatia provides enough information to attempt the empirical exercise of estimating potential growth. Using a number of alternative empirical methodologies to estimate potential growth could partly address some of the above concerns.

⁷ Croatia's poor performance on the price liberalization indicator reflects continuing tight control of fuel prices.

13. **This paper uses three methods to estimate Croatia's potential growth:**

- The Hodrick-Prescott (HP) filter: this is a univariate statistical method that removes short-run fluctuations, resulting in a series whose smoothness is determined by a parameter choice;
- Estimation of a production function: this method assumes that Croatia's production function can be approximated by the Cobb-Douglas technology with two-factors, capital and labor, and with constant returns to scale; and
- Simulation of a growth empirical model for Croatia: the coefficient estimates from a cross-country growth regression are used to derive Croatia's potential output growth, based on the current values of the growth determinants in Croatia.

14. **These methods suggest that on current productivity trends, Croatia's potential growth is between 4 and 4½ percent.** Table 1 summarizes the results. The average of these estimates (taking the middle estimate from the growth regression) is 4.3 percent. The following sections explain these calculations in detail.

Table 1. Croatia: Potential Real GDP Growth

Based on:	
Hodrick-Prescott filter	4.4
Cobb-Douglas production function	4.3–4.4
Growth regression:	
assuming most of transition is still ahead	5.1
assuming the transition process had reached a mid-point	4.2
assuming the transition process has been completed	3.2
Average	4.3

The Hodrick-Prescott filter

15. **The Hodrick-Prescott (HP) filter is one of the simplest and most widely used methodologies to estimate potential growth.** It is a filter used to obtain a smooth estimate of the long-term trend component of a series.⁸ Real GDP growth data for Croatia start in 1994. To avoid a bias from the latest available data point—the HP filter puts too much weight on recent observations—we extend the series up to 2007, based on the Winter 2007

⁸ For details, see Hodrick and Prescott (1997).

projections of the World Economic Outlook. The HP filter gives real GDP growth of 4.4 percent for 2006, which is taken as an estimate of potential growth for Croatia.

Estimating a production function for Croatia

16. **The following estimates a two-factor production function for Croatia.** The production function includes capital and labor:

$$Y(t) = A(t) F[K(t), L(t)] \quad (1)$$

where Y is real GDP; A is an index of the level of technology, also called total factor productivity (TFP); K is capital; and L is employment.

17. **The real growth rate can be decomposed,** assuming Cobb-Douglas technology and constant returns to scale, as follows:

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + \alpha \frac{\dot{K}}{K} + (1 - \alpha) \frac{\dot{L}}{L} \quad (2)$$

where α is the share of rental payments to capital in total income and $(1 - \alpha)$ is the share of wage payments to labor in total income, assuming competitive product markets.⁹

18. **We estimate the above equation for Croatia using multiple sources for capital stock data.** All data sources are from the IMF World Economic Outlook (WEO, Winter 2007), except the data for average wages, which are from the Croatian National Bank (CNB), and historical data for the capital stock, for which we use two alternative series. The first is estimates provided by the CNB for the period 1994–2005 using the perpetual inventory method. The second is based on direct calculations of the capital stock by sector for the period 1999–2003, provided by the Croatian Central Bureau of Statistics (CROSTAT). For the years before and after these periods, the capital stock is estimated based on the perpetual-inventory method, using WEO data for investment and assuming a rate of capital depreciation of 2.7 percent, which is the estimate used by CROSTAT. Although measuring the capital stock directly may be preferable to estimates using the perpetual-inventory method, the CROSTAT data are still preliminary and may change. Therefore, the discussion that follows addresses results from both methodologies.

19. **The estimates require several further assumptions.** Croatia's employment income share is calculated as the ratio of the total wage bill (average wage times total employment) over nominal GDP. For future years, Croatia's average wage is assumed to grow by 6 percent, which is equal to its average growth in recent years. This gives an employment income share of about 0.47–0.51, depending on the year. Based on the constant returns to

⁹ For more details, see Barro and Sala-i-Martin (2004).

scale assumption, the capital income share is one minus the employment income share, or 0.49–0.53.¹⁰ What follows assumes that the current TFP trend growth continues in the medium term.

**Table 2. GDP Growth and Contributions:
Estimates from a Production Function for Croatia**

	1996–2001	2002–05	2006–09
Using CNB capital stock estimates			
Real GDP growth	3.6	4.7	4.4
Contributions:			
Capital	3.2	2.7	2.8
Labor	-1.0	0.9	0.5
Productivity	1.5	1.1	1.1
Using CROSTAT capital stock estimates			
Real GDP growth	3.6	4.7	4.3
Contributions:			
Capital	1.5	2.2	2.2
Labor	-1.0	0.9	0.5
Productivity	3.2	1.6	1.6

20. **The production function-based estimates in Table 2 suggest that Croatia’s potential growth is between 4.3 and 4.4 percent.** The estimates suggest that the growth of Croatian output has been primarily driven by capital accumulation, with only a limited contribution from TFP growth in recent years and even less from employment. To some extent, this is not surprising. Croatia was newly independent and a new market economy in the aftermath of a war. Infrastructure investment and rebuilding regions that were destroyed during the war should have led to a high growth contribution of capital during the 1990s. Indeed, as noted in Section B, the share of public investment in GDP has been much higher in Croatia than in other transition economies. In more recent years, privatization and high interest from domestic and foreign investors is expected to have also contributed to growth, although Croatia’s private investment share in GDP is not as high as in more advanced transition economies (see Section B, and Appendix). The estimates that use the CROSTAT capital stock suggest a somewhat higher contribution from TFP growth, in particular during the 1990s, but a slightly lower potential growth.

¹⁰ Using estimates from the literature for the income share of labor in other emerging markets leads to similar results.

21. **Persistently high unemployment rates and relatively low labor participation rates lead to a very limited contribution of employment to growth in Croatia.** Reforms introduced in 2003 to increase labor market flexibility may have led to the small positive contribution of labor to growth in recent years, from a negative contribution in the late 1990s. Based on the above estimates, if a period of fast employment growth allowed Croatia to reduce the unemployment rate from the present 11 percent to say 8 percent over the next three years, the temporarily higher employment contribution would boost annual potential growth to 4.8 percent over this period.

IV. ESTIMATING AND SIMULATING A GROWTH MODEL FOR CROATIA

22. **This section estimates an econometric growth model based on a large cross-country sample.** The estimates use a sample of a 109 developed and developing economies over the period 1996–2005.¹¹ The estimated coefficients are then used to forecast Croatia's potential growth based on the current values of the independent variables in Croatia. All data sources are as indicated in Table 3. The empirical specification is the following:

$$(Real\ GDP\ per\ capita\ growth)_i = c + \beta X_i + u, \quad \text{for country } i = 1, \dots, n \quad (3)$$

The dependent variable is the average per capita real GDP growth rate for each country i ; c is the constant term; β is the matrix of parameters to be estimated; X_i is the matrix of independent variables; and u is the error term. Each country has one observation, which is either the average over 10 years or the initial value in 1996, depending on the variable. Focusing on the last ten years has a number of advantages: the sample includes transition economies; some cross-country indices are not available for earlier years; and overall data quality has improved compared to previous years.

23. **Causality can be difficult to determine in growth regressions.**¹² Even though estimation with instrumental variables has confirmed the robustness of most of the above growth determinants, one has to be cautious and interpret the estimates as broad correlations, which indicate an interaction with growth that may be going both ways.

24. **Our preferred specification captures the most important, but not all, determinants of growth.** We estimated a large number of empirical specifications based on different combinations of the growth determinants that were discussed above. We selected our preferred specification by including only variables that turned out to be statistically significant and robust to changes in the specification. This does not imply that the omitted variables do not affect growth, since almost all of these variables were statistically significant

¹¹ The sample size is determined by data availability.

¹² See for example Temple (2000).

in some empirical specifications. Since some of these variables are alternative measures of similar aspects of the economy and are highly correlated, one has to choose those that seem to explain growth the most.

The estimated equation is (heteroskedasticity-consistent t-statistics in parentheses):

Real GDP per capita growth = $0.98(0.62) + 1.88(2.71)$ *dummy for SEE and CEE*
 $-0.49(-3.62)$ *initial real GDP per capita* $-0.43(-1.78)$ *population growth*
 $+0.14(3.58)$ *investment/GDP* $-0.02(-2.29)$ *inflation rate* $+0.001(3.18)$ *credit to private*
sector/GDP $+0.43(2.30)$ *index of economic freedom* $-0.03(-3.85)$ *cost of business start-up*
procedures (% of GNI per capita)

Number of observations: 109; R^2 : 0.56; Adjusted R^2 : 0.52; F-statistic: 15.80

25. **The results are consistent with the discussion in Section B.** Keeping everything else constant, countries with a relatively low income level, a low population growth rate (a low dependency ratio), a high investment share, a low inflation rate, and a relatively developed financial sector (measured by the ratio of private sector credit to GDP) grow faster. Both macroeconomic and structural policies affect economic growth. The index of economic freedom, which measures a number of different aspects of macroeconomic and structural policies and reforms, has a positive and statistically significant estimate.¹³ Moreover, countries with high costs for starting new businesses grow more slowly. Variables measuring aspects of fiscal policy enter the regression through the index of economic freedom. Although such variables—fiscal deficit, or government consumption—have been found to affect growth negatively by a number of the studies referred to above, the chosen specification seems to explain cross-country growth differences better, at least for this period. The FDI-to-GDP ratio has a positive and statistically significant estimated coefficient, but only when the cost of business start-up procedures is not included in the regression.¹⁴ This is because of collinearity, since countries with low costs for starting a new business attract more FDI as a result.

26. **The regression also includes a separate constant term for the SEE (including Croatia) and the CEE transition economies.** We tried a number of country dummies, but this was the only one which turned out statistically significant. Dummy variables for Africa and for East Asia, although statistically significant in growth regressions for earlier decades,

¹³ The index of economic freedom is an average of a large number of sub-indices, which are grouped as follows (see also Table 3): size of government, legal system and property rights, sound money, freedom to trade internationally, and regulation. For more details, definitions, and the list of indices within the above groups, see <http://www.freetheworld.com/>

¹⁴ These results are available from the authors.

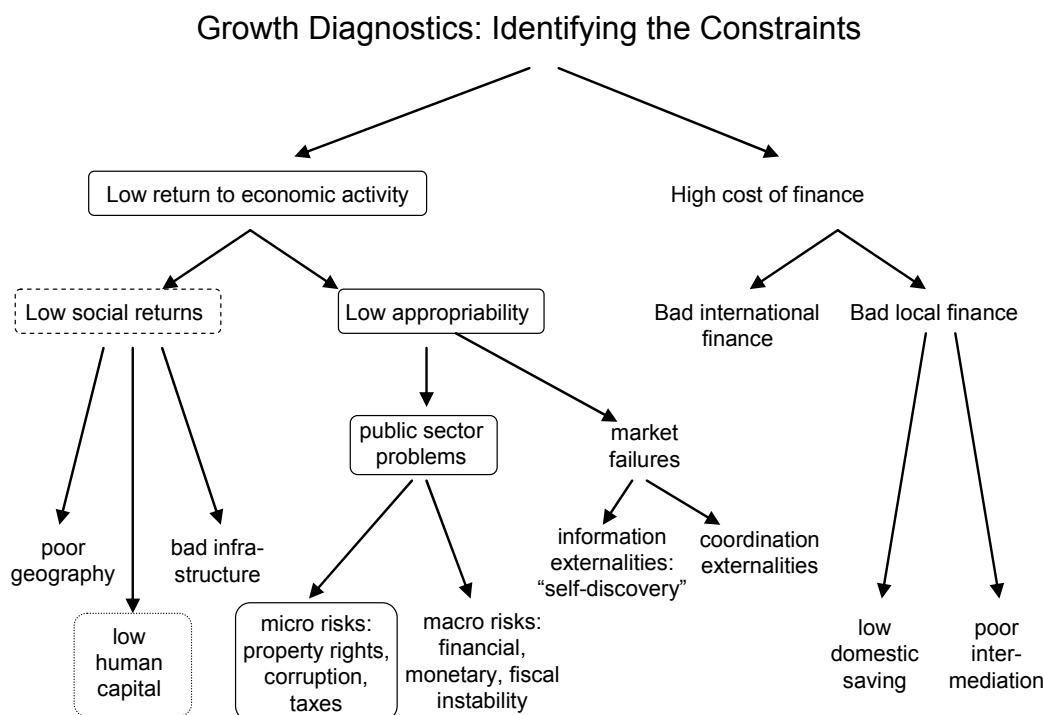
with negative and positive estimates respectively, do not turn out significant in this specification. The significance of the dummy variable for the SEE and the CEE transition economies suggest that they have been growing faster than what would have been expected based on the growth determinants in this model—by 1.9 percent in terms of per capita GDP. Most of these economies collapsed in the beginning of their transition during the early 1990s, while some experienced social unrest, or, as in the case of Croatia, war. However, this was followed by a strong economic recovery after the mid-1990s, as peace prevailed, the transition process moved forward, and the region’s economies opened up to the rest of the world. The result may have been a growth “bonus”, which, however, may not continue in the future, at least not to the same extent.

27. The scope for “catch-up” economic growth depends on where Croatia stands in the transition process. Using the above estimates and the latest values of the independent variables for Croatia, as indicated in the Appendix, gives the potential growth estimates in Table 1. This simulation implies that Croatia’s potential growth would be 5.1 percent (in terms of both real GDP and real GDP per capita terms). However, assuming that the growth “bonus” from transition will not continue to the same extent in the years ahead, changes this estimate to potential growth of 4.2 percent, if the growth “bonus” is reduced by half, or to 3.2 percent, if it is eliminated completely. Since the transition process is still under way, the mid-estimate of 4.2 percent seems to be a more reliable potential growth estimate for Croatia.

28. This growth model can help forecast the impact of reforms on Croatia’s economic growth. Using the potential growth estimate of 4.2 percent as the starting point, we focus on the impact of changes in the economic freedom index and in the cost of starting a new business, which are areas in which Croatia lags behind the CEE and the euro area. If the values of these two variables in Croatia reach the average levels in the CEE through economic and structural reforms, the simulation of the above growth model suggests that Croatia’s potential growth will increase to 4.6 percent. If they reach the average value in the euro area, Croatia’s potential growth would increase to 4.7 percent. Finally, if they reach the level in Ireland, which has been one of the bolder reformers and stronger performers during recent years in Europe, Croatia’s potential growth will increase to 5 percent. To the extent that accelerated reforms promote higher levels of FDI, especially greenfield FDI, potential growth could rise farther—though quantifying such a pickup would be beyond the scope of the model.

V. CONSTRAINTS ON GROWTH: A “GROWTH DIAGNOSTIC” APPROACH

29. The growth diagnostic approach seeks to identify binding constraints on growth. This approach, proposed by Hausmann, Rodrik, and Velasco (2005), stresses the need to prioritize policies to target the binding constraints, as opposed to pursuing a laundry list of “good” policies that fail to address the constraints. The decision tree below (text chart) shows where to look for the possible factors holding back private investment and economic growth.



Source: Adapted from Hausmann, Rodrik, and Velasco (2005).

30. **A process of elimination can help identify binding versus nonbinding constraints.** The starting point is to determine whether growth is being inhibited by low returns to activity (left-hand side of the tree) or high costs of finance (right-hand side). For Croatia, we can quickly exclude the factors on the right-hand side of the decision tree:

- *Bad international finance?* No. Croatia has enjoyed ample access to international finance, evident from the increase in external debt over the past several years. Moreover, Croatian bond spreads—already low by regional standards—have fallen to historically low levels (Figure 10). If anything, this ease of access has itself had indirect costs by also easing the urgency of structural reforms (Box 1).
- *Bad local finance?* No. Domestic saving is ample and financial intermediation strong.
 - Gross national saving averaged nearly 24 percent of GDP through 2002–06, high by regional standards (of CEE and SEE countries, only Slovenia had a higher saving ratio).
 - Turning to intermediation, Vujčić and Lang (2002) argue that following the rehabilitation of the banking sector and the entry of foreign banks in the late 1990s, the sector is now supporting rather than inhibiting growth. Bank credit to the private sector was 72 percent of GDP as at end-2006; rapid credit growth (also in the nonbank sector) and steadily falling interest rates (Figure 11) also suggest strongly that the barriers to growth are elsewhere.

Box 1: Has High External Debt Slowed Economic Reforms in Croatia?

Easily available foreign financing can delay economic reform, resulting in slower economic growth. Vamvakidis (2007) shows, using a theoretical political economy model, that government and private sector foreign borrowing makes the cost of the status quo easier to bear, resulting in postponement of necessary reforms. In this case, external financing acts like a “pain reliever” that postpones the needed treatment of a “sick” economy. Empirical evidence for a panel of developing and emerging economies for the last three decades suggests that countries that borrow more adopt macroeconomic and structural reforms at a slower pace and, therefore, have slower economic growth.

A simulation, based on estimates from the Vamvakidis (2007) model, shows the extent to which Croatia’s rising external debt in recent years may have delayed economic and structural reforms. Reform progress is measured for purposes of the model using the EFN index of economic freedom. The estimated basic specification for 78 developing and emerging economies, for the period 1970–2000 is:¹

Change in the index of economic freedom = 2.56(12.94) -0.38(-6.56) index for change in external debt/GDP -0.42(-7.02) index of economic freedom in first year of estimation + 0.07(1.00) lagged dummy variable for collapse in economic growth + 0.44 (5.95) lagged dummy variable for inflation crisis + 0.05 (3.54) index for change in external debt/GDP times index of economic freedom in first year of estimation + 0.47(1.85) trade/GDP + 0.00(0.32) foreign aid/GDP.

Number of observations: 308; R²: 0.25; Adjusted R²: 0.24; F-statistic: 14.53

Had Croatia’s external debt-to-GDP ratio remained stable during 2001–05 (instead of rising by 19 percentage points), these estimates suggest that Croatia’s ranking for the index of economic freedom in the world would have been 65 out of 123 economies (instead of 76), all else constant. The estimates thus imply that eleven countries reformed faster than Croatia during this period, simply because Croatia’s increase in external indebtedness reduced pressures for economic reforms.

These results highlight the potential indirect as well as the direct benefits from slowing down external borrowing. Lower external borrowing has the obvious direct benefit of reducing external vulnerabilities. The model implies that lower external borrowing would also indirectly benefit Croatia by contributing to a faster pace of reform and, through this channel, to faster potential economic growth. Indeed, curbing external borrowing has been one of the main targets of macroeconomic policy in recent years.

¹ Heteroskedasticity-consistent t-statistics in parentheses. For a detailed discussion of the empirical specification and robustness tests, see Vamvakidis (2007).

31. **The analysis thus focuses in more detail on low returns to economic activity.** The low returns hypothesis is consistent with the earlier observations that overall investment is high by regional standards; private investment and real GDP growth slightly below average; and export performance significantly below average. It is also consistent with relatively low levels of FDI, since foreign investors are much less likely than local entrepreneurs to be

financially constrained. The next step is to consider whether the problem is low social returns (that is, low total economic returns on factor accumulation, regardless of their ultimate recipient), or low “appropriability”, i.e., low private returns even if social returns are high (for example, because of taxes, corruption, market failures, or some other cause).

32. Low social returns—stemming from human capital problems—are one candidate explanation. Three factors can explain low social returns, though the first two can be readily ruled out for Croatia:

- *Geography?* On the contrary, Croatia’s location gives it ready access to central, Mediterranean and southeastern Europe; and its long (and beautiful) coastline underpins the vital tourism industry (tourist receipts account for over 20 percent of GDP).
- *Infrastructure?* Croatia’s infrastructure compares favorably by regional standards (Figure 12), and EBRD indicators also point to progress in infrastructure reform. Indeed, public expenditure on infrastructure has been high in Croatia: for example, spending on highway construction (investment spending by the HAC and HC road funds) averaged nearly 2½ percent of GDP over 2002–06. Thus, infrastructure does not appear to be constraining growth.
- *Human capital?* Although education and literacy levels are in line with regional standards, the Institute for Public Finance (IJV, 2004) finds that “employees in the Republic of Croatia do not have the skills, knowledge, and abilities necessary to develop globally competitive products and to compete in the European Union.”

33. A lack of skilled human capital could be a constraint on growth. As noted earlier, activity rates are very low and have dropped for both men and women over the past five years. In principle this could reflect low demand for labor. However, Šošić (2004, in the IJV study) finds that the return on investment to education—rising from 7.6 percent in 1996 to 10.5 percent in 2002—is significantly above western and central European levels (around 6.5 percent). High returns to education, especially given their recent increase, are consistent with the hypothesis that a limited supply of educated workers is constraining economic growth.

34. Low appropriability also cannot be ruled out as a growth constraint for Croatia. The growth diagnostic approach divides the possible causes between market failures and public sector problems and inefficiencies.

35. Reasonable levels of innovation in Croatia suggest that market failures in the form of information externalities are unlikely to be the main problem:

- The diversification of Croatia’s export base does not seem out of line with peer countries. Klinger and Lederman (2006) report cases of export “discoveries” or “inside-the frontier innovations” during 1997–2002 for 73 countries: Croatia ranked a respectable 23rd in

terms of number of discoveries.¹⁵ Croatia also performs satisfactorily by regional standards (Table 3).

**Table 3. Croatia and Selected European Countries:
Identified Cases of “Inside-The-Frontier” Innovation, 1997–2002**

Poland	221	Moldova	33
Romania	114	Turkey	30
Hungary	90	Portugal	27
Latvia	68	Cyprus	26
Estonia	53	Slovak Republic	22
Croatia	47	Czech Republic	8
Greece	46	Italy	5
Slovenia	43	Spain	5
Macedonia, FYR	42		

Source: Klinger and Lederman (2006).

**Table 4. Innovation in Croatia and Selected European Countries:
Patents Granted in United States and Europe**

	US Patent and Trademark Office 1993–2000	2001–05	European PO 2005
Albania	1	0	0
Bulgaria	20	21	5
Bosnia and Herzegovina	0	2	0
Czech Republic	81	141	26
Estonia	8	15	3
Croatia	58	54	9
Hungary	350	274	32
Lithuania	7	11	1
Latvia	5	9	0
Macedonia, FYR	0	1	0
Poland	97	83	15
Romania	22	36	20
Slovak Republic	15	20	10
Slovenia	74	88	24

Sources: U.S. Patent and Trademark Office; European Patent Office.

¹⁵ Using 6-digit data from the UN COMTRADE database, Klinger and Lederman define a “discovery” as an export good that the country did not previously export (in a base period of 1994–96).

- Innovation—measured by new patents—is also broadly in line with peer countries (Table 4), especially taking population size into account, albeit well behind the regional leaders Hungary and Slovenia (Figure 13).

- But room for improvement remains. In the World Economic Forum’s most recent *Global Competitiveness Report* (World Economic Forum, 2006), one of Croatia’s weakest rankings was on FDI as a source of new technology—a consequence of the limited inflows of greenfield FDI.

36. **The public sector is not generating “macro risks” that obviously constrain growth.** “Financial/monetary” risks are low: indeed the CNB has successfully maintained broad exchange rate stability and delivered consistently low inflation since the mid-1990s. And following the significant fiscal consolidation since 2004, Croatia would meet—or at least is within striking distance of—the Maastricht deficit and debt criteria. However, public debt is high by regional standards, even if below the euro area average. While external vulnerabilities and the need to ensure debt sustainability are powerful arguments for further fiscal consolidation, the fiscal stance is not a direct and immediate constraint on economic growth.

37. **But the weak business environment suggests that “micro risks” from the public sector are impeding growth significantly.** Notwithstanding recent reforms (Box 2), survey evidence consistently ranks Croatia’s business environment below the average of its peers in CEE countries and the euro area (Figure 9), though the picture is mixed compared with the SEE countries. The World Bank’s *Doing Business* survey finds that it costs more and takes longer to start a new business and to register property in Croatia (text table). Furthermore, Croatia’s legal system, based on indicators for property rights, contract enforcement, and corruption, does not compare well with the legal systems in the CEE and in the euro area (Appendix). Relatedly, the World Economic Forum *Global Competitiveness Report* for several years has persistently identified inefficient government bureaucracy as the most problematic factor for doing business. In the context of the growth diagnostic, these findings are consistent with growth being constrained by public sector “micro risks”: problems with property rights; problems stemming from the large size of government, including inefficient bureaucracy and the high regulatory burden; and corruption.

Ease of Doing Business	2006 rank	2005 rank	Change in rank
Overall	124	134	10
Starting a business	100	112	12
Dealing with licenses	170	171	1
Employing workers	130	131	1
Registering property	109	109	0
Getting credit	117	117	0
Protecting investors	156	156	0
Paying taxes	58	72	14
Trading across borders	92	140	48
Enforcing contracts	28	28	0
Closing a business	80	76	-4

Source: The World Bank’s *Doing Business* website.

Box 2. Recent Business Environment Reforms

The authorities are aware of the weaknesses in the business environment and have already taken several important steps to simplify procedures at the central government level:¹

- The hitro.hr service launched in 2005 introduced a “one-stop shop” to establish a business and provides a platform for a variety of “e-government” services.
- To assist foreign investors, the Trade and Investment Promotion Agency was effectively established in late 2005.
- A working group (with USAID assistance) is preparing a “regulatory guillotine” to propose elimination of obsolete and/or unnecessary regulations; its report is expected in July 2007.
- A project² was launched in 2002 (with World Bank and EU assistance) to improve the land cadastre and registry system to cut delays in the process of registering land and buildings. The number of pending land registration cases has been cut from 339,000 at end-2003 to 215,000 at end-2005. Land registry data was published on the internet in May 2005.
- The government established “entrepreneurial zones” on land free of ownership uncertainty to provide businesses with space, infrastructure and easier administrative procedures. Consistent with EU rules, the zones do not provide any tax incentives.

¹ For further information, see the authorities’ *Strategic Development Framework for 2006–2013*.

² See <http://www.zikprojekt.hr>

38. Looking more closely at these “micro risks”, property rights and red tape are particular problem areas.

- *Property rights and contract enforcement.* Although the *Doing Business* survey ranks Croatia favorably on contract enforcement—with the number of procedures required to enforce contracts being in line with the OECD average—contract enforcement remains slow. According to the European Commission (2006): “The judicial system has continued to suffer from slow and inefficient court proceedings, poor case management and low administrative and professional capacity. These circumstances may discourage economic actors from taking cases to court and undermine an effective enforcement of creditor and property rights.”

- *Administrative and regulatory burden.* With measures under way at the central government level (Box 2), public and private sector representatives emphasized problems at the local level during the Article IV discussions: investors often face uncertainties and delays in obtaining necessary permits and numerous and nontransparent fees, with complex local government regulations seen as conducive to corruption. In addition, employment protection legislation (EPL) is strict. Tonin (2005) calculates the OECD indices of the strictness of EPL for several central and eastern European (non-OECD) countries: Croatia has the second-

strictest EPL in the sample, and is also high by OECD standards. EPL is especially strict for temporary workers (Figure 14). The EPL is successful in protecting jobs for existing employees (insiders), but a severe disincentive to new job creation (see also OECD Employment Outlook 2006).

- *Corruption.* According to Transparency International's corruption perceptions index (CPI; Figure 15), Croatia suffers from "serious", though not "severe", levels of corruption.¹⁶ The WEF (2006) Global Competitiveness Report corroborates this finding. However, Demekas, Horváth, Ribakova, and Wu (2005) find no direct evidence that corruption has dampened FDI in SEE countries, though they note that efforts to combat corruption could still stimulate foreign investment indirectly.

- *Tax burden?* Evidence is mixed. Croatia's corporate income tax rate of 20 percent is broadly in line with the CEE average. A 2006 study by the Economics Institute of Zagreb¹⁷ estimated "forward-looking" effective average tax rates on investment for 20 countries, concluding that Croatia's tax burden is favorable and needs to be better communicated to potential foreign investors. This would suggest that the corporate income tax burden is unlikely to be the binding constraint on growth, or at least on foreign investment. On the other hand, respondents to the *Global Competitiveness Report* cite the tax burden as the third most important problem for doing business in Croatia (behind inefficient government bureaucracy and corruption). Moreover, as in several other countries in the region, social contribution rates (totaling 37 percent of gross earnings) are high.¹⁸

39. **In sum, the growth diagnostic indicates that public sector-related micro risks are the most important binding constraint on growth, because of their impact on the business environment.** This is consistent with the results from the previous section. The diagnostic also points to human capital problems as an additional constraint on growth.

VI. CONCLUSIONS

40. **The estimate for potential economic growth of 4–4½ percent over the medium term is robust to different methodologies.** The Hodrick-Prescott, production function and growth regression methodologies yield very similar overall results, though different capital

¹⁶ Transparency International categorizes corruption as "serious" for a CPI score below 5 and as "severe" for a CPI score below 3.

¹⁷ An English-language summary of the study is available at:
<http://www.eizg.hr/AdminLite/FCKeditor/UserFiles/File/summary-etr.pdf>

¹⁸ Gueorguiev (2007) adapts the Fund's Global Fiscal Model to Croatia to show that more ambitious expenditure reforms would provide room for significant cuts in taxes (possibly including cuts in social contributions), in turn stimulating investment, employment, growth, and consumption.

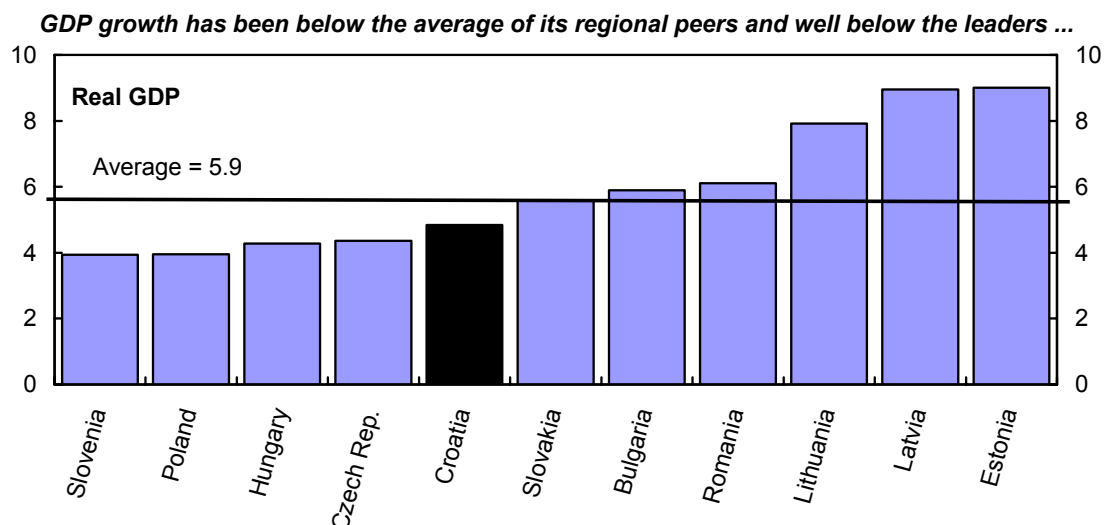
stock estimates imply a different breakdown between capital accumulation and TFP. The authorities' medium-term aspirations for higher economic growth thus depend on structural reforms to boost TFP growth and, related to this, to attract more greenfield FDI. In the short term, Croatia's growth rate may well exceed its estimated potential, but the results in this paper suggest that growth rates above 4–4½ percent cannot be sustained without further progress in economic reforms.

41. **The cross-country comparisons of growth determinants and the estimates from the growth regression suggest areas where economic reforms are needed to increase Croatia's potential growth.** Reducing the role of the state in the economy through fiscal consolidation and privatization would help ensure macroeconomic stability, enhance market competition, and support private sector activity. Structural reforms to create a business-friendly environment, by facilitating the start-up of new businesses, creating an efficient bureaucracy, increasing labor market flexibility, and reforming the judiciary would allow Croatia to experience growth rates closer to those observed in peer countries. The estimates also suggest that, without faster progress in these reforms, the Croatian economy could grow more slowly than in the recent past as the growth “bonus” from transition diminishes.

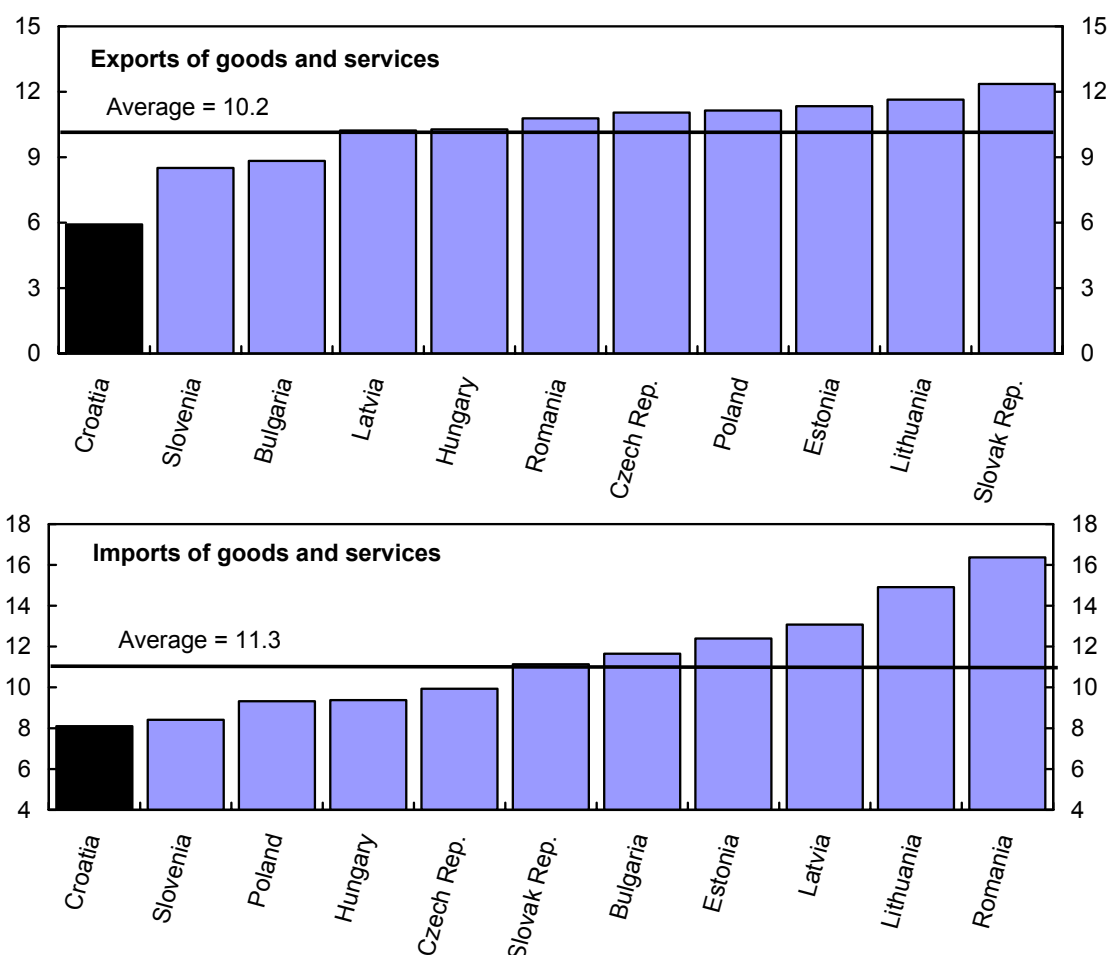
42. **The growth diagnostic reinforces the importance of improving the business environment.** The diagnostic approach shows that the important constraints on growth reflect neither financing problems nor a lack of ideas for investment. Rather, Croatia is not yet as good a place to do business as it could be, even allowing for recent improvements. Moreover, the diagnostic suggests that measures in other areas expected to be conducive to growth—for example, significant reductions in expenditure that would allow for both a lower fiscal deficit as well as tax cuts—would yield their full benefits only if the business environment is improved as well.

43. **The possible human capital constraint on economic growth warrants a measured policy response.** Growth will not necessarily be boosted simply by allocating more resources to education: Croatia already performs favorably on broader indicators of education and literacy. More difficult measures may nevertheless be much more fruitful. In response to the problem of insufficiently skilled employees, encouraging “lifelong learning” could boost labor productivity and growth. Also, consolidating the numerous welfare benefits could help address disincentives to labor-market participation.

Figure 1. Growth and Trade: Croatia and Selected European Countries
Geometric real growth rates, 2002–06



... and foreign trade has expanded slowly by regional standards, with an ECB gravity model suggesting that Croatia's trade with the euro area may be well below potential. 1/

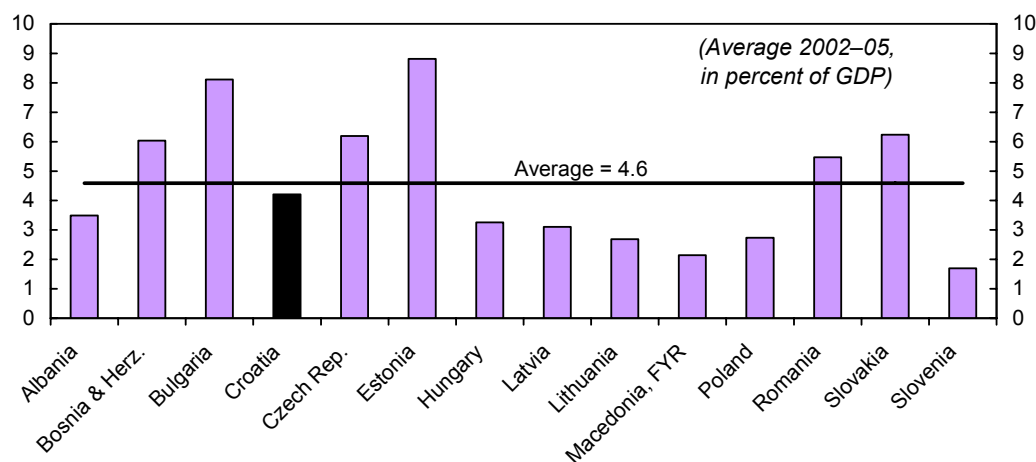


Source: IMF's *World Economic Outlook* database.

1/ Bussière, M., J. Fidrmuc, and B. Schnatz, "Trade Integration of Central and Eastern European Countries: Lessons from a Gravity Model," ECB Working Paper 545, November 2005.

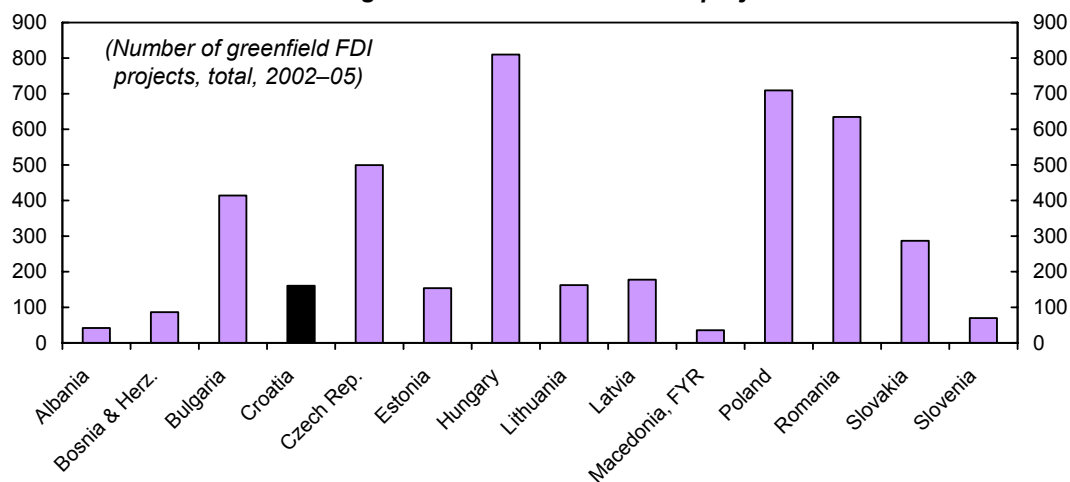
Figure 2. Croatia and Selected European Countries: Foreign Direct Investment, 2002–05

Net foreign direct investment (FDI) into Croatia has approached the regional average, but with a high share from privatizations and/or in the financial sector.



Source: IMF World Economic Outlook database.

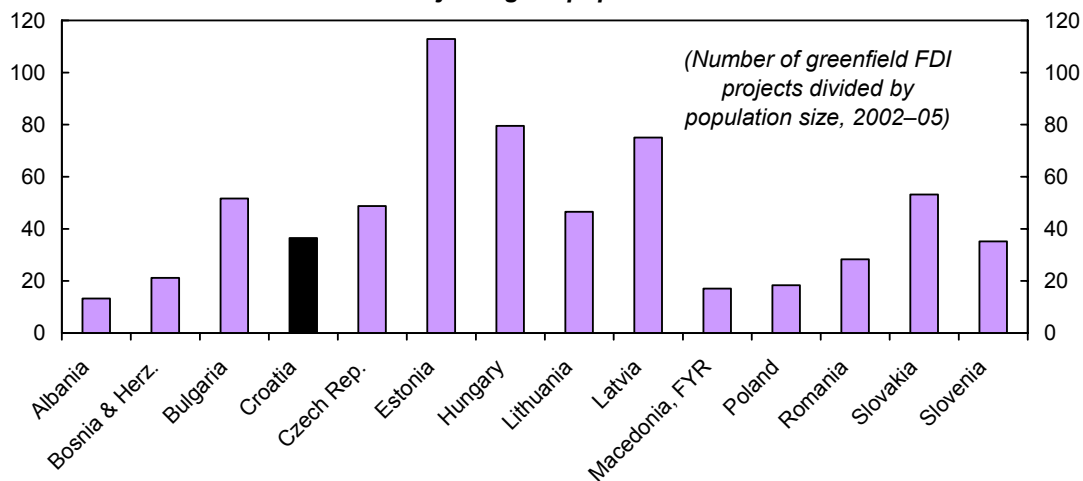
Available data indicate that Croatia has lagged in attracting greenfield FDI, whether looking at the total number of new projects ... 1/



Source: UNCTAD World Investment Report 2006.

1/ These data should be interpreted cautiously in the absence of comparable data on the size of projects.

... or adjusting for population size.



Sources: UNCTAD; and Fund staff estimates.

Figure 3. EBRD Average Transition Indicator, 2006

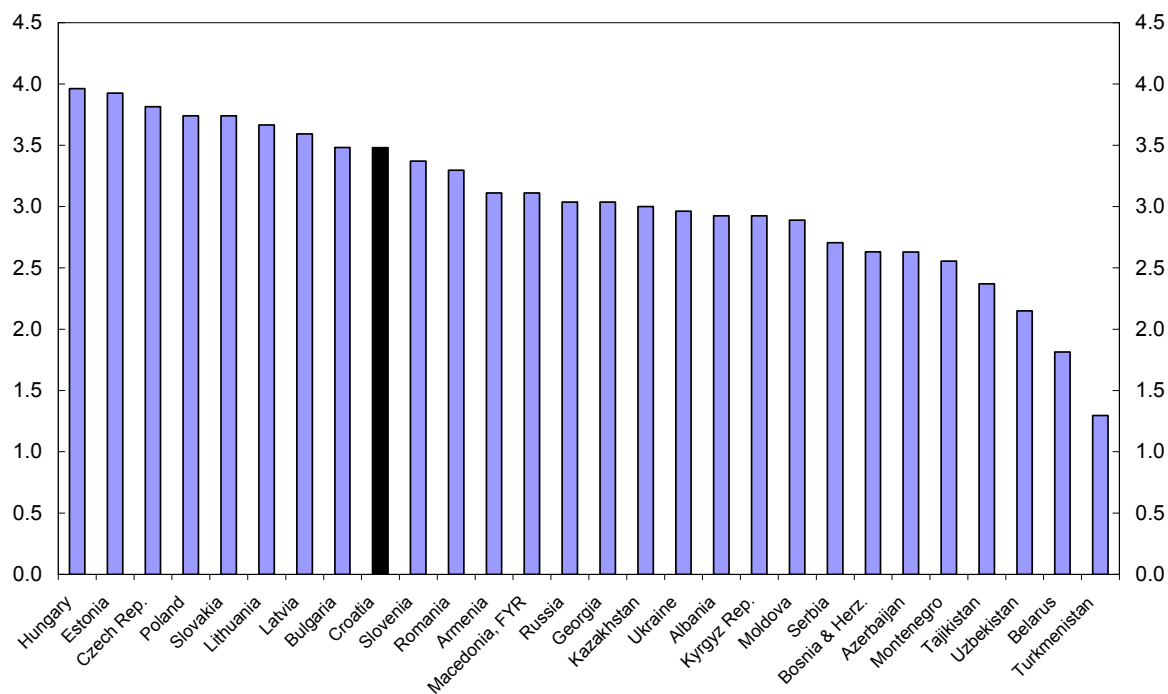
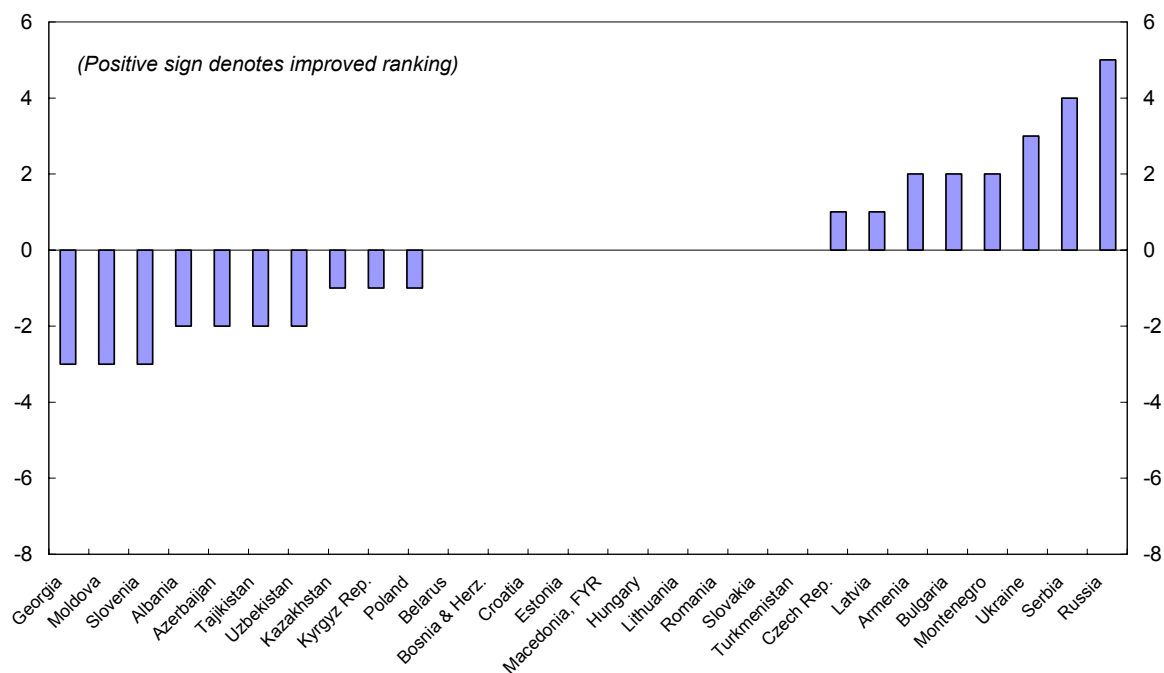


Figure 4. Change in Rank in EBRD Average Transition Indicator, 2001–06



Source: European Bank for Reconstruction and Development.

Figure 5. Croatia, Change in EBRD Indices, 1996–2006

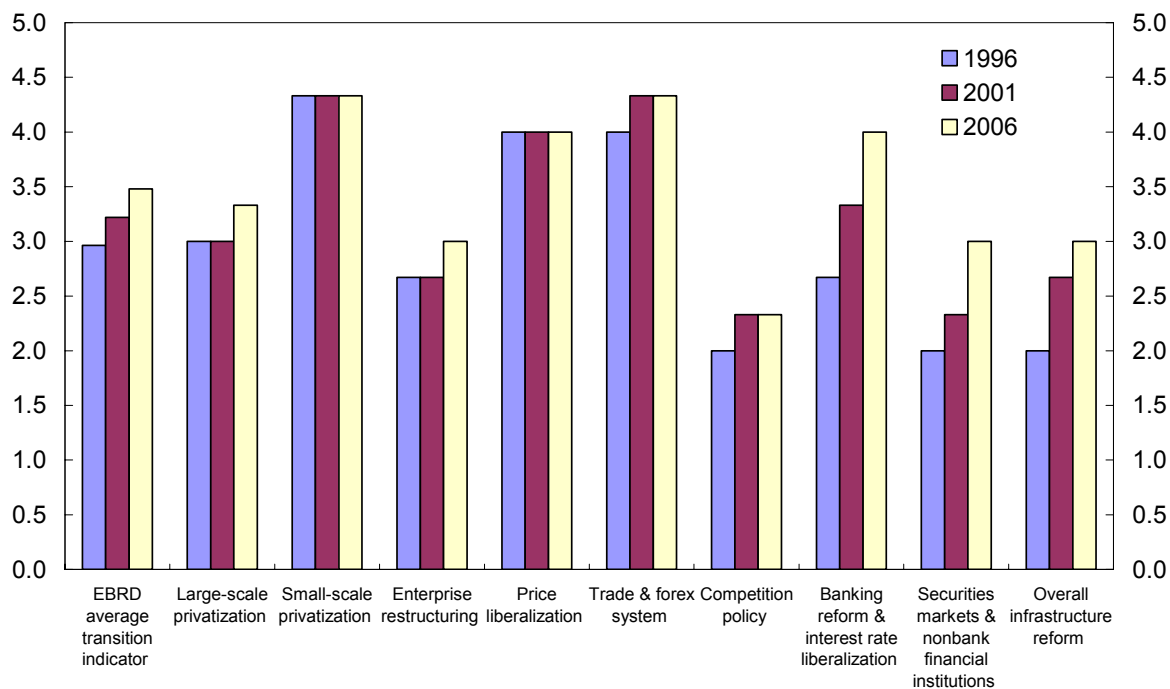
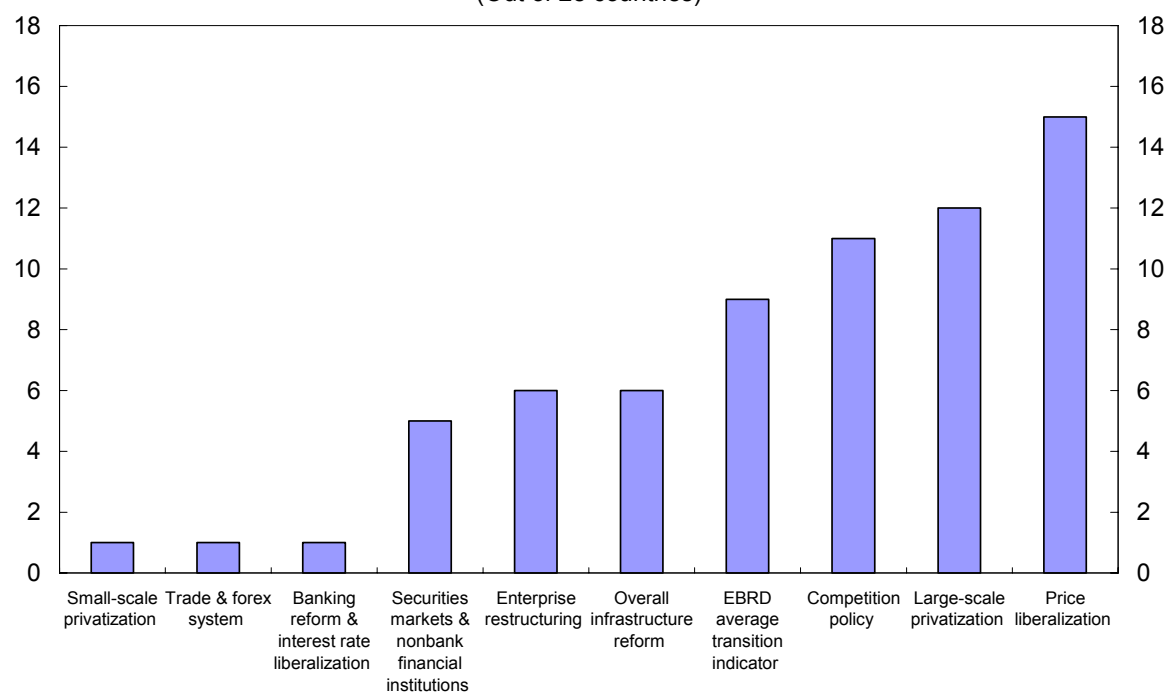


Figure 6. Croatia, Ranking in EBRD Indices, 2006

(Out of 28 countries)



Source: European Bank for Reconstruction and Development.

Figure 7. Croatia's Macroeconomic and Structural Reforms, 1995–2004
(Index 1 to 10)

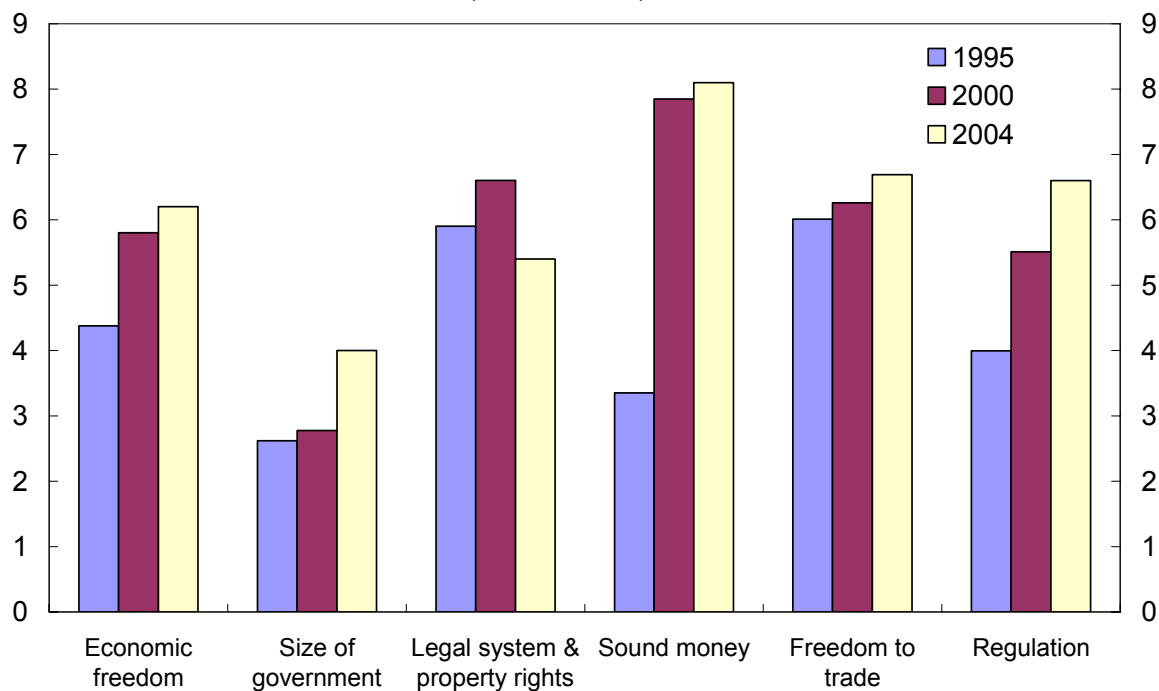


Figure 8. Croatia's Rank in the World in Macroeconomic and Structural Reforms, 1995–2004

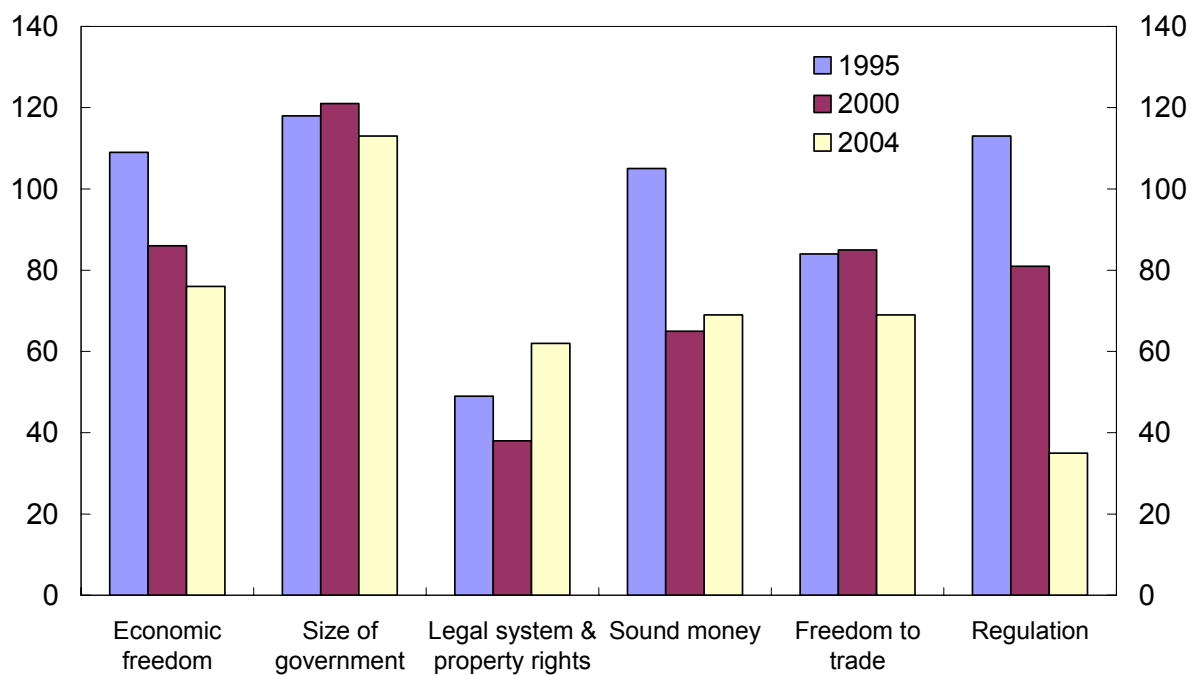
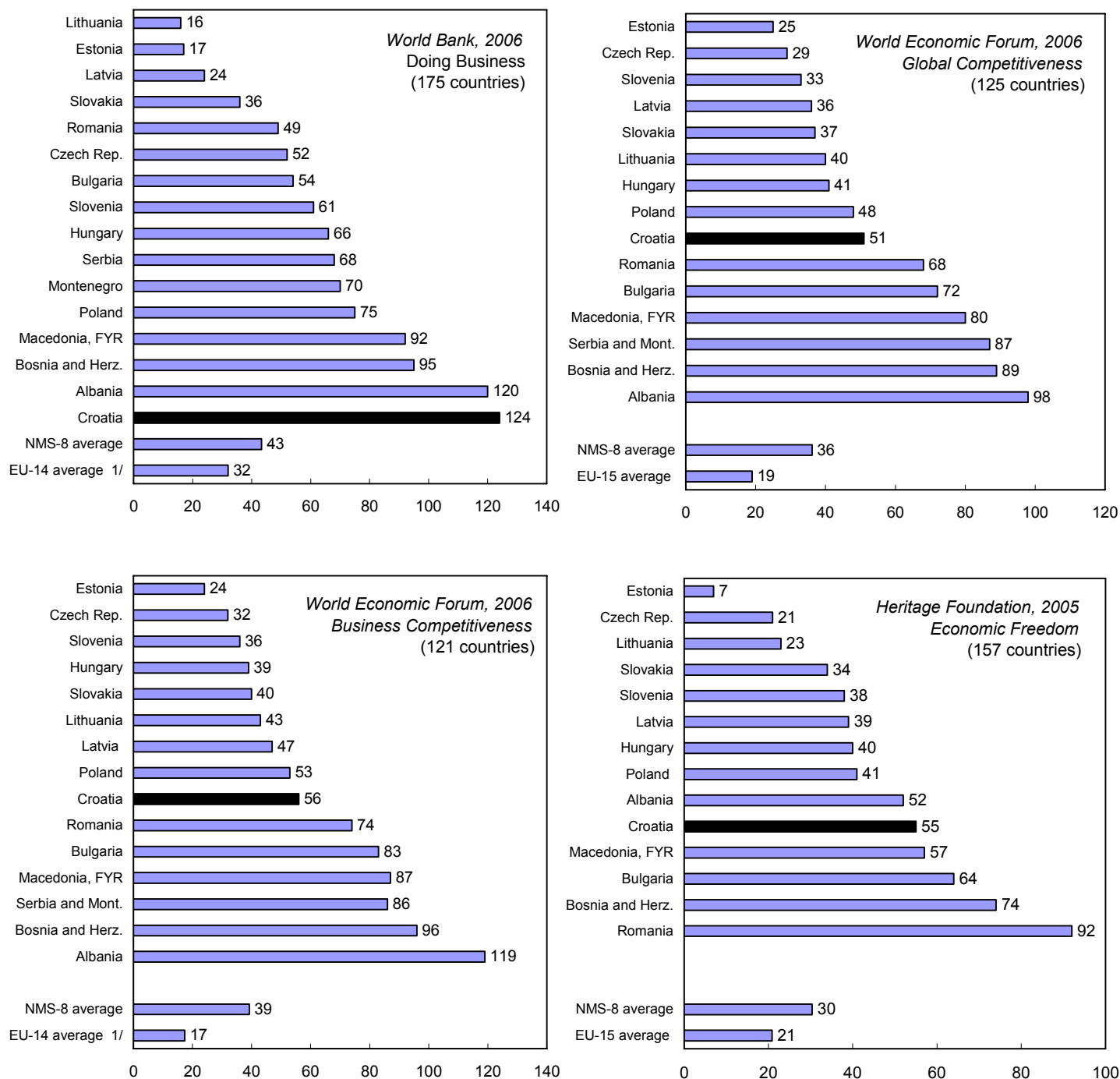


Figure 9. Croatia and Selected European Countries:
Business Environment, 2005–06

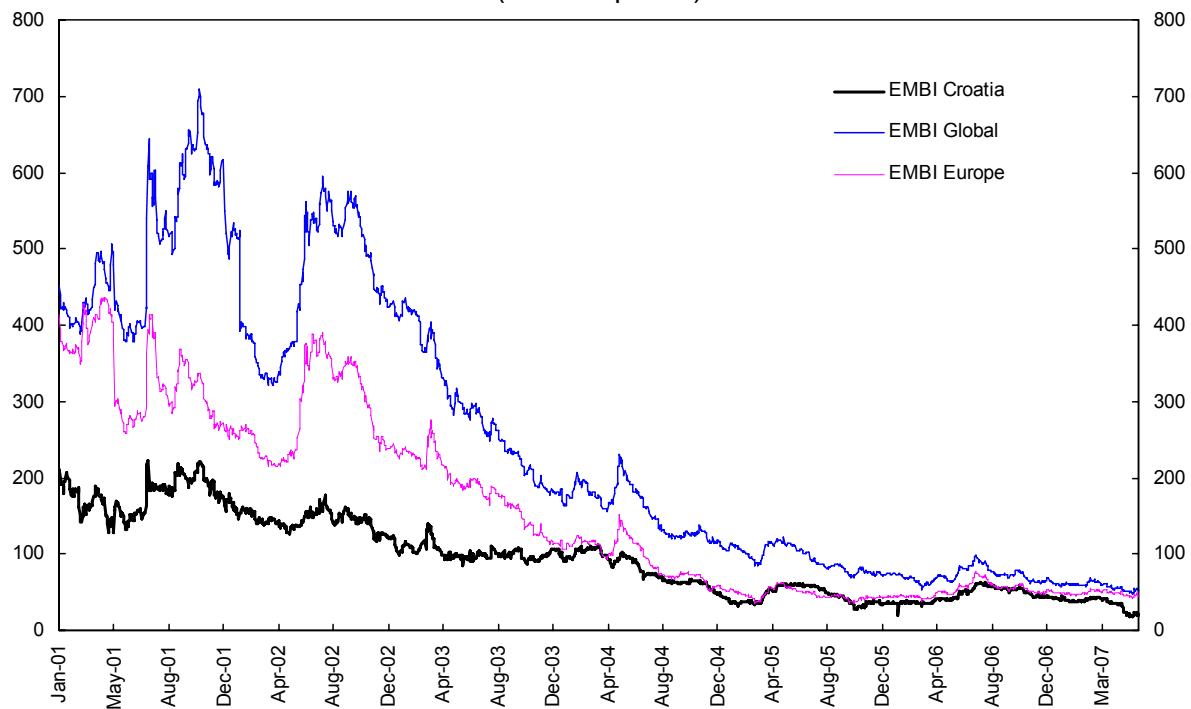
Croatia consistently performs below the average of its peers in central and eastern Europe in various cross-country rankings of business environment indicators.



Sources: World Bank; World Economic Forum; Heritage Foundation.

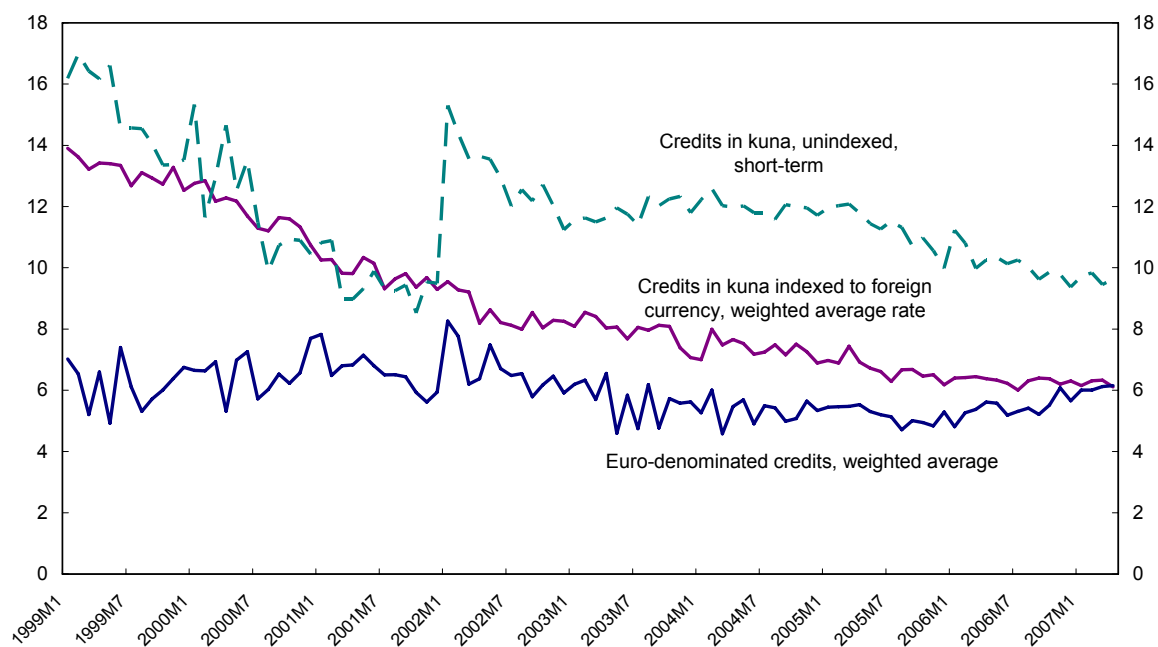
1/ No ranking available for Luxembourg.

Figure 10. Croatia and Selected Regions: Sovereign Bond Spreads, 2001–07
(In basis points)



Sources: JP Morgan; and Bloomberg.

Figure 11. Croatia: Bank Lending Rates, 1999–2007



Source: Croatian National Bank.

Figure 12. Croatia and Selected European Countries: Infrastructure

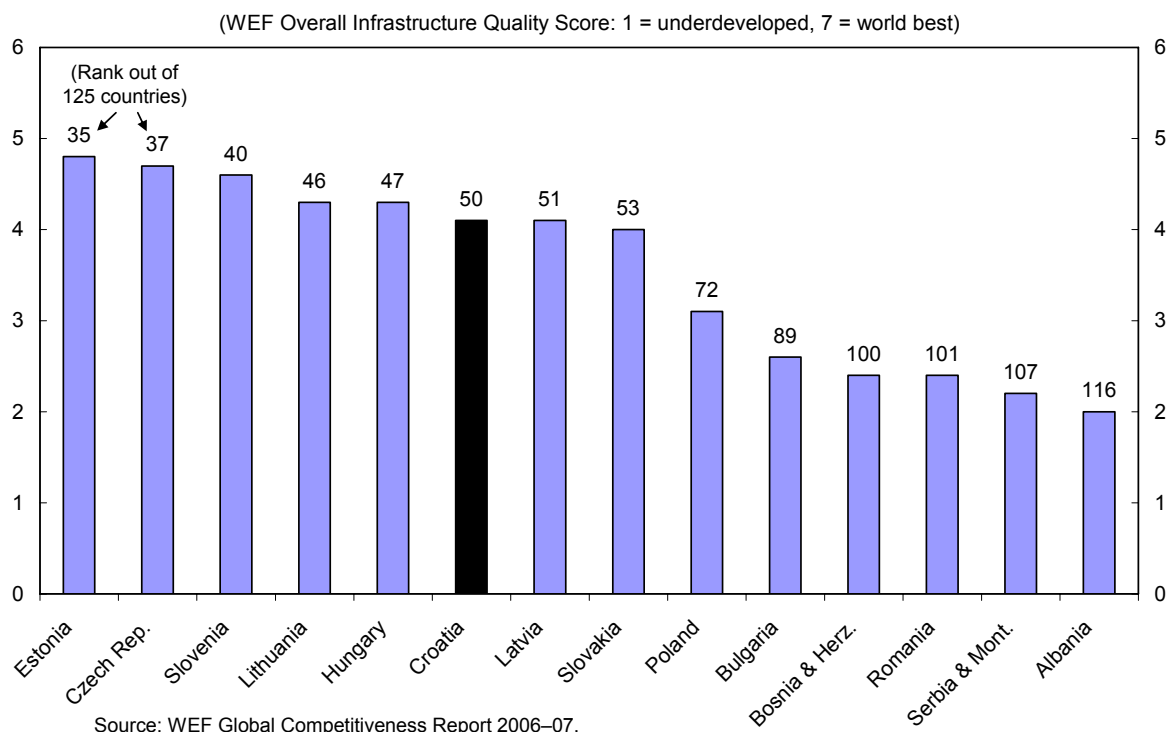


Figure 13. Measuring Innovation, 2001–05

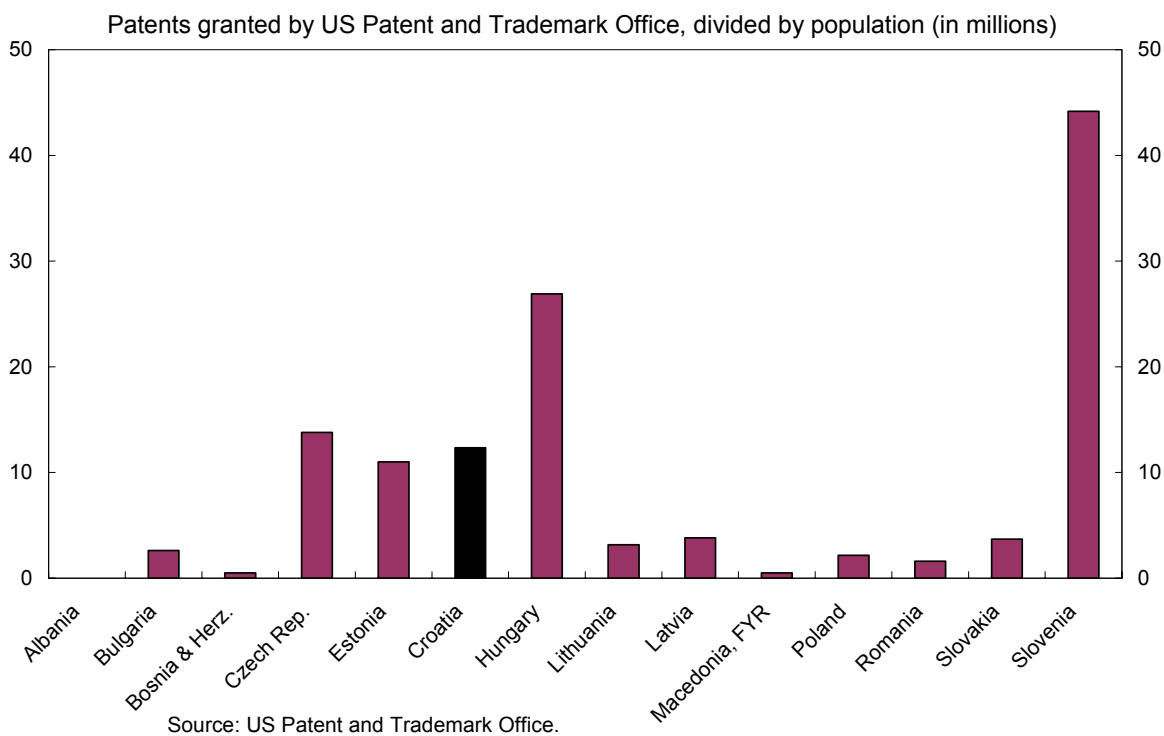
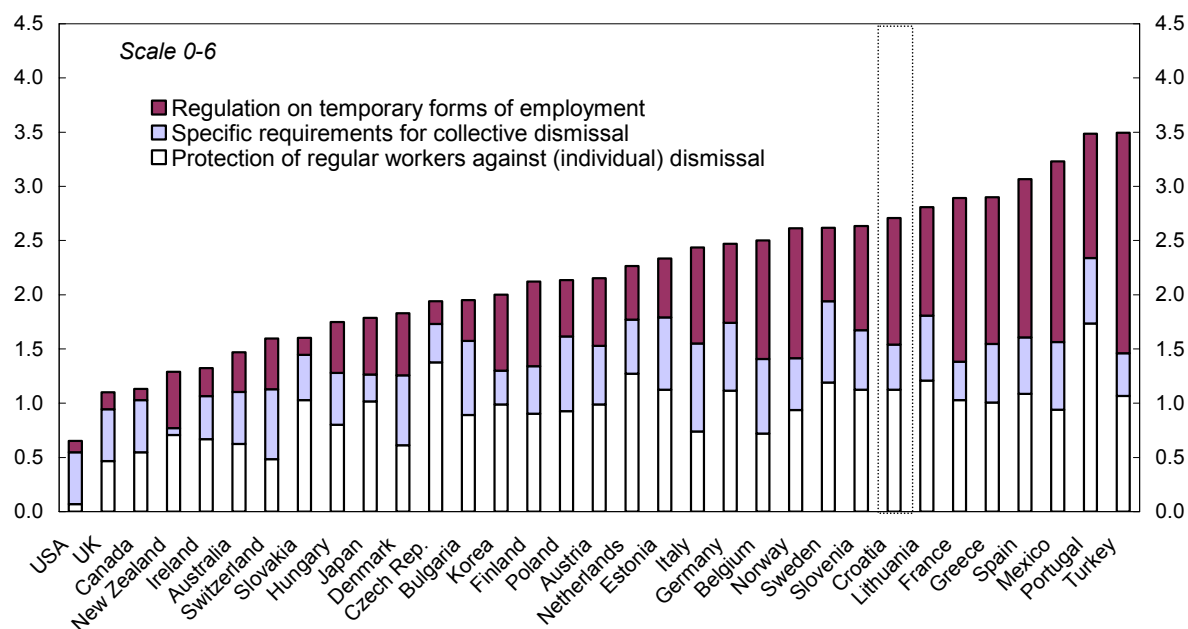
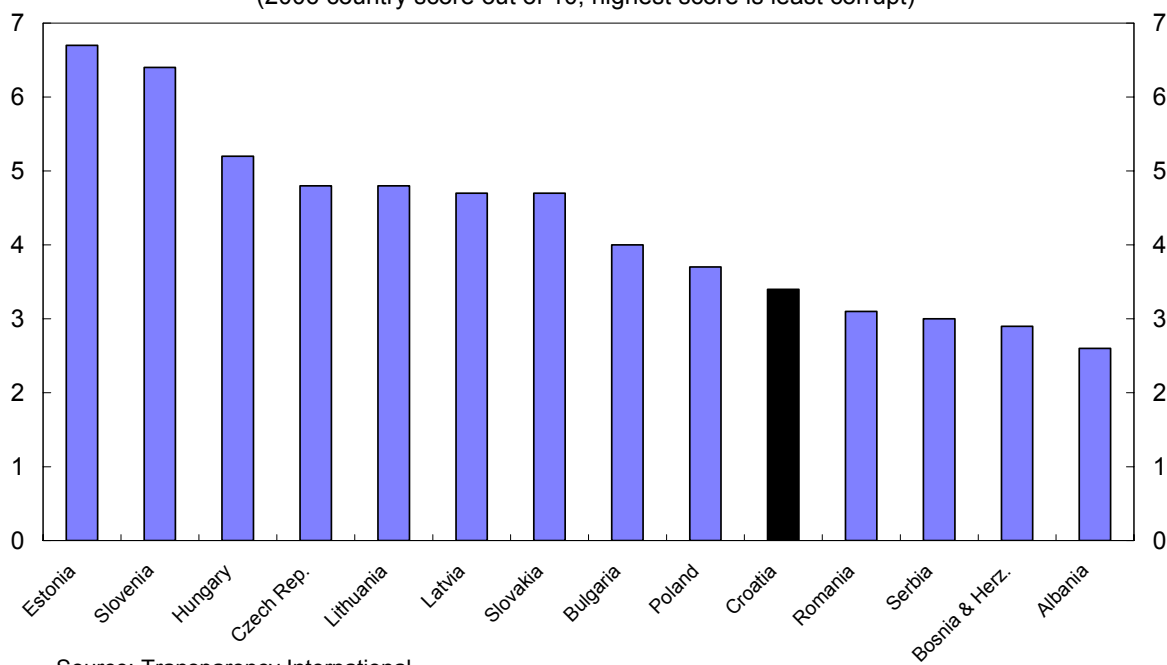


Figure 14. Employment Protection Legislation, 2003–04



Sources: for Croatia, Tonin (2005) based on the Labor Act as amended up to September 21, 2004.
 For Bulgaria, Estonia, Lithuania, and Slovenia, also see Tonin (2005) based on legislation as at 2004.
 For OECD countries, see OECD (2006), Figure 3.9; data refer to 2003.

Figure 15. Corruption Perceptions Index
 (2006 country score out of 10, highest score is least corrupt)



Source: Transparency International.

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Appendix. Determinants of Growth: Croatia and the Rest of Europe, 2001–05

	Croatia	SEE 1/	CEE 1/	Euro area	Source
Growth					
Real GDP growth, 2002–05	4.7	4.8	5.8	1.2	WEO
Real GDP per capita growth, PPP adjusted (in percent), 2002–05	6.5	6.8	7.9	2.8	WEO
Total factor productivity growth (in percent), 2002–05	1.6	-0.4	WEO/staff est.
Convergence					
Real GDP per capita, PPP adjusted, in percent of euro area, 2005	42.7	31.8	53.1	100.0	WEO
Population					
Age dependency ratio, 2004	0.5	0.5	0.4	0.5	WDI
Population growth (in percent), 2002–04	0.0	-0.1	-0.3	0.5	WDI
Investment					
Gross fixed capital formation (in percent of GDP), 2002–05	27.5	21.6	24.3	20.2	WEO
Of which:					
private	20.7	17.0	22.0	...	WEO
public	6.8	4.6	3.5	...	WEO
Gross national saving (in percent of GDP), 2002–05	23.6	19.3	14.5	20.7	WEO
Foreign direct investment, inflows (in percent of GDP), 2002–05	4.8	5.3	5.6	3.5	WEO
Fiscal policy					
General government balance (in percent of GDP), 2005	-4.1	-0.3	-2.5	-2.3	WEO
General government primary balance (in percent of GDP), 2005	-1.8	1.1	-1.0	0.5	WEO
General government, total expenditure and net lending (in percent of GDP), 2005	49.0	38.9	40.5	47.5	WEO
Of which:					
consumption	20.4	19.6	18.0	20.4	WEO
General government, gross debt (in percent of GDP), 2005	44.3	33.7	23.8	70.8	WEO
Tax rates (% of managers surveyed ranking this as a major business constraint), 2002	27.8	28.8	33.2	...	WDI
Monetary policy					
CPI inflation (in percent), 2005	3.3	5.5	3.4	2.2	WEO
Sound money (index, increasing from 1 to 10), 2004	8.1	8.2	9.2	9.6	EFN
Transition					
Average transition (index, increasing from 1 to 5), 2005	3.4	3.0	3.7	...	EBRD
Of which:					
Large scale privatization	3.3	3.2	3.9	...	EBRD
Small scale privatization	4.3	3.7	4.3	...	EBRD
Enterprise restructuring	3.0	2.4	3.4	...	EBRD
Price liberalization	4.0	4.1	4.3	...	EBRD
Competition Policy	2.3	2.0	2.9	...	EBRD
Economic freedom index (index, increasing from 1 to 10), 2004	6.2	5.9	7.1	7.5	EFN
Size of government (index, increasing from 1 to 10), 2004	4.0	4.5	5.7	5.3	EFN
Financial sector development					
M2 (in percent of GDP), 2004	64.5	44.6	45.8	72.9	WDI
M3 (in percent of GDP), 2004	67.0	48.3	48.3	85.0	WDI
Domestic credit to private sector (in percent of GDP), 2004	57.5	28.4	36.0	106.0	WDI
Bank branches (per 100,000 people), 2004	23.4	7.2	12.7	53.1	WDI
Interest rate spread (lending rate minus deposit rate), 2004	9.9	5.6	4.2	4.0	WDI
Banking assets held by government-owned banks (in percent of total banking assets), 2001	5.0	22.8	9.3	2.0	WDI
Banking assets held by foreign-owned banks (in percent of total banking assets), 2001	89.3	52.1	82.2	6.2	WDI
Banking reform & interest rate liberalization (index, increasing from 1 to 5), 2004	4.0	3.0	3.8	...	EBRD
Credit market regulation (index, increasing from 1 to 10), 2004	9.3	7.8	8.3	8.4	EFN
Market capitalization of listed companies (in percent of GDP), 2004	31.9	16.4	27.7	71.6	WDI
Stocks traded, turnover ratio (in percent), 2004	5.9	16.1	32.4	102.0	WDI
Securities markets & non-bank financial institutions (index, increasing from 1 to 5), 2005	2.7	2.0	3.3	...	EBRD
Finance (% of managers surveyed ranking this as a major business constraint), 2002	21.6	24.7	19.9	...	WDI

Determinants of Growth: Croatia and the Rest of Europe, 2001–05 (continued)

	Croatia	SEE 1/	CEE 1/	Euro area	Source
Business environment					
Business regulations (index, increasing from 1 to 10), 2004	5.1	4.7	5.9	6.3	EFN
Starting a new business					
Cost of business start-up procedures (% of GNI per capita), 2004	14.4	19.9	12.6	11.9	WDI
Start-up procedures to register a business (number), 2004	12.0	10.3	8.0	8.0	WDI
Time required to start a business (days), 2004	49.0	44.0	41.6	37.1	WDI
Registration of property					
Procedures to register property (number), 2004	5.0	7.2	5.1	5.4	WDI
Time required to register property (days), 2004	956.0	172.0	79.6	55.7	WDI
Legal system					
Legal system & property rights (index, increasing from 1 to 10), 2004	5.4	4.4	6.0	7.8	EFN
Courts (% of managers surveyed ranking this as a major business constraint), 2002	27.6	21.6	12.6	...	WDI
Corruption (% of managers surveyed ranking this as a major business constraint), 2002	22.5	30.0	15.6	...	WDI
Procedures to enforce a contract (number), 2004	22.0	34.0	25.1	21.6	WDI
Time required to enforce a contract (days), 2004	415.0	501.2	389.0	298.2	WDI
Time to resolve insolvency (years), 2004	3.1	3.7	3.2	1.3	WDI
Infrastructure					
Overall infrastructure reform (index, increasing from 1 to 5), 2005	3.0	2.5	3.2	...	EBRD
<i>Of which:</i>					
Telecommunications	3.3	2.9	3.7	...	EBRD
Railways	2.7	2.8	3.3	...	EBRD
Electric power	3.0	3.0	3.5	...	EBRD
Roads	2.7	2.5	2.6	...	EBRD
Water and waste water	3.3	2.2	3.5	...	EBRD
International trade					
Trade (% of GDP), 2005	102.8	108.0	131.1	73.9	WEO
Trade and foreign exchange system (index, increasing from 1 to 5), 2005	4.3	4.1	4.3	.	EBRD
Freedom to trade internationally (index, increasing from 1 to 10), 2004	6.7	6.6	7.9	8.1	EFN
Human capital					
Illiteracy rate (in percent of population older than 15)	1.9	2.1	0.9	1.6	UNESCO
Primary school enrollment ratio (in percent of relevant age group), 2003	87.3	93.6	90.3	99.4	WDI
Secondary school enrollment ratio (in percent of relevant age group), 2003	85.0	84.6	90.1	92.2	WDI
Public spending on education (in percent of GDP), 2002	4.5	3.9	5.3	5.1	WDI
Expenditure per student, primary (in percent of GDP per capita), 2002	24.0	14.4	18.3	18.3	WDI
Expenditure per student, secondary (in percent of GDP per capita), 2002	23.5	13.4	22.5	26.3	WDI
Labor force with primary education (in percent of total), 2001	20.1	25.0	14.0	33.2	WDI
Labor force with secondary education (in percent of total), 2001	60.4	58.1	64.6	44.2	WDI
Labor force with tertiary education (in percent of total), 2001	17.2	16.3	21.3	21.9	WDI
Labor skills (percent of managers surveyed ranking this as a major business constraint), 2002	8.7	8.0	12.9	...	WDI
Labor market					
Unemployment rate (in percent), 2005	12.7	19.8	10.6	8.6	WEO
Long-term unemployment (in percent of total unemployment), 2002	56.4	...	50.9	43.1	WDI
Youth unemployment rate (in percent of relevant age group), 2002	36.9	32.4	24.5	17.3	WDI
Labor force participation rate (in percent), 2004	65.5	67.4	68.2	69.8	WDI
Rigidity of employment index (0=less rigid to 100=more rigid), 2004	57.0	43.5	35.1	49.1	WDI
Labor regulations (percent of managers surveyed ranking this as a major business constraint), 2002	5.4	6.6	8.6	...	WDI
Labor market regulations (index, increasing from 1 to 10), 2004	5.5	5.6	5.8	5.1	EFN

Determinants of Growth: Croatia and the Rest of Europe, 2001–05 (continued)

	Croatia	SEE 1/	CEE 1/	Euro area	Source
Health					
Life expectancy at birth, total (years), 2004	75.4	73.7	73.1	79.4	WDI
Mortality rate, infant (per 1,000 live births), 2004	6.3	12.7	6.7	4.1	WDI
Health expenditure per capita (current US\$), 2003	494	336	440	2,552	WDI
Health expenditure, total (in percent of GDP), 2003	7.8	7.6	6.7	9.6	WDI
<i>Of which:</i>					
private	1.3	2.9	1.7	2.5	WDI
public	6.5	4.7	5.0	7.1	WDI
Hospital beds (per 1,000 people), 2003	5.6	4.8	8.1	6.6	WDI
Physicians (per 1,000 people), 2003	2.4	2.3	3.2	3.5	WDI
New economy					
Research and development expenditure (in percent of GDP), 2003	1.1	0.5	0.8	2.2	WDI
High-technology exports (in percent of manufactured exports), 2004	13.0	3.1	10.5	16.3	WDI
Personal computers (per 1,000 people), 2004	189.5	148.5	309.6	420.8	WDI
Mobile phone subscribers (per 1,000 people), 2004	639.8	524.1	844.0	904.2	WDI
Internet users (per 1,000 people), 2004	293.3	187.8	360.6	443.2	WDI
Price basket for Internet (US\$ per month), 2003	17.1	19.8	24.7	22.5	WDI

Sources: IMF World Economic Outlook (WEO); World Bank World Development Indicators (WDI); European Bank of Reconstruction and Development (EBRD); Economic Freedom Network (EFN).

1/ For the purposes of this comparison, SEE countries include Albania, Bosnia and Herzegovina, Bulgaria, FYR Macedonia, Romania, Serbia and Montenegro, and Slovenia. CEE countries include Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, and the Slovak Republic.