

# **Money Can't Buy Me Growth: Making Change Happen in Post-communist Countries?**

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The European Bank for Reconstruction and Development (EBRD) was set up in 1991 with the aim to foster private sector development and to encourage the creation of the market economy in the post-communist countries of Central and Eastern Europe and the former Soviet Union. Between 1994 and 2004, the EBRD has spent over 20 billion euros on loans and equity stakes in private and public investment projects in the target countries. This paper assesses the return on this investment in terms of economic growth in transition economies. The main finding is that Western money can't buy us growth in post-communist countries – although money does seem to buy market-oriented reform and democratization. Hence, the EBRD has only an indirect effect (if any) on economic growth during transition: EBRD investment encourages economic reforms which in turn translate into faster growth.

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## I. Introduction

Following the political and economic changes that swept across Eastern Europe after 1989, the West and especially the European Union undertook a number of actions to engage and support the formerly communist countries and to assist them in their quest to become market economies and democracies. This support took a number of forms. The EU offered the post-communist countries the opportunity (and challenge) of EU membership and undertook to assist them through pre-accession funding schemes such as the PHARE Programme. However, both of these only applied to countries with a realistic prospect of attaining full EU membership — Central Europe, the Baltics and South Eastern Europe — and thereby effectively excluded much of the former Soviet Union (as well as, temporarily, the rougher parts of former Yugoslavia). The accession process and pre-accession aid were complemented by a venture with more general and wide ranging scope of actions: the European Bank for Reconstruction and Development (EBRD) set up in 1991.<sup>1</sup>

Unlike the prospect of EU membership and pre-accession aid, the EBRD received a mandate that is almost all-inclusive in the post-communist space: its countries of operations are all post-communist economies in Eastern Europe and the former Soviet Union as well as Mongolia. Excluded are only those countries that are still nominally or genuinely communist, *i.e.*, China, Viet Nam, Cambodia, Laos and Cuba. Furthermore, the EBRD mandate prohibits it from operating in countries not committed to democratic principles and correspondingly, its involvement in some countries varies in response to political developments.

During the first eleven years of its existence, between 1994 and 2004, the EBRD has allocated 20.2 billion euros in the form of loans and equity stakes. Its funds are allocated to specific investment projects — selected by the EBRD itself — rather than being left at the discretion of national government. Although the EBRD gives funding for both private and public projects, approximately three-quarters of its funds go to the private sector. Out of the 20.2 billion euros, 56% were loans to private firms, 23% loans to

<sup>1</sup>The EBRD is an international national institution owned by 61 countries (including most of the OECD as well as the countries in which EBRD is active), the European Investment Bank and the European Community.

governments<sup>2</sup> and 21% direct equity stakes in private firms.

The average post-communist economy received the equivalent of 0.4% of its GDP in investment finance from the EBRD annually. This makes the EBRD a relatively small player in the field of development finance: the average less-developed country has received international loans and aid amounting to 7.5% of its GDP during each year between 1960 and 2000 (see Doucouliagos and Paldam 2006a). However, investments by the EBRD are typically accompanied by additional funds from private investors and/or public sources. Because of such snow-balling, the potential impact of the EBRD should therefore be greater than suggested by the relatively modest size of its investment portfolio.

Although the EBRD investment is expected to be profit-motivated, it has a number of important objectives in addition to making profit. The primary objective behind its inception was to 'help nurture a new private sector in a democratic environment' and 'build market economies and democracies in countries from central Europe to central Asia' ([www.EBRD.com](http://www.EBRD.com)). And indeed, the data display substantial variation in countries' exposure to EBRD involvement: between 1994 and 2004, Belarus received cumulatively only 1.3% of its GDP in EBRD investments, compared to 10.4% received cumulatively by Moldova. The post-communist countries benefited differently from EBRD help for a number of reasons. Some, for example, Slovenia and the Czech Republic, were seen as generally advanced and well-off and less in need of EBRD funds. Others, such as Belarus and Turkmenistan, were nearly cut off from EBRD funds because they were not sufficiently committed to democracy and/or market-oriented reform. Bosnia-Herzegovina and Serbia-Monte Negro, finally, were not benefiting from EBRD investments for several years because of their involvement in internal or external military conflicts.

Loans and equity investments from Western private investors and international institutions such as the EBRD could potentially play a crucial role during the transition from central planning to a market economy. Foreign investment and aid helps relieve financial market imperfections and lack of liquidity in emerging and transition economies. FDI can also be associated with transfer of modern technologies

<sup>2</sup> Loans given to governments can only be spent on specific investment projects approved by the EBRD, leaving essentially no discretion to the national government.

and/or with implementation of better management techniques, informal institutions (*e.g.*, trust and aversion to corruption) and corporate governance practices. Such technologies, attitudes and practices can take hold and spread to domestic firms.

Furthermore, an institution such as the EBRD, with a mandate prescribing it to invest exclusively in post-communist countries, can help resolve the information asymmetry inherent to investing in emerging countries. The EBRD has better access and more resources to acquire relevant information about potential investment projects and the reliability of potential investment partners. Therefore, the EBRD is in a position to make better informed decisions and importantly, other investors can follow it and invest into the same or similar projects, thereby leading to a snow-balling of investment.<sup>3</sup>

The EBRD can have a favorable effect on the target countries also because it seeks to encourage structural reforms. This is done by attaching conditionality to its investment finance and by seeking to invest only in countries that meet certain criteria. Last but not least, a large part of EBRD funds supports physical infrastructure and banking, both of which are likely to have relatively high multiplier effects on the economy at large.

However, there are also a number of reasons why the EBRD may fail to raise growth. Almost four-fifths of EBRD investments are loans and as such they have to be repaid. Therefore, receiving an EBRD loan should raise the level of savings, not domestic consumption. Furthermore, EBRD funds may simply crowd out domestic investment, especially where the investment project has a positive expected net present value. Alternatively, if the EBRD selects projects so as not to crowd out domestic investment, it may be choosing predominantly negative net-present-value projects that are unable to secure domestic financing.

Being an international institution financed with public funds, the EBRD investments may occasionally pursue also political objectives. For example, the EBRD may be swayed to give funds to a post-communist-country government in order to help avert an imminent crisis. Such crises, however, may play an important role in underlying reform dynamics, as Alesina and Drazen (1991) and others have demonstrated: costly reforms are frequently undertaken as a result of

<sup>3</sup> In fact, the EBRD actively syndicates co-investments from private and public sources to accompany its funds.

the economy sliding into a crisis, whereby avoiding the reform eventually bears higher costs than undertaking it. Therefore, crises may serve as an important catalyst of reform and helping avoid them may have short-term political benefits for the current government but long-term costs for the population at large.

This paper is, to the best of our knowledge, the first attempt at providing an assessment of the efficacy of EBRD involvement. Did those countries that benefited more from EBRD funds in turn grow at higher rates? Did such countries progress further in terms of economic reform and/or democratization? Did they implement wide-ranging democracy and better institutions?

The results of our analysis suggest that the EBRD has had little direct impact on economic growth in the post-communist countries during the first eleven years that it has been in business. We find some evidence that loans to the private sector may have a positive impact on growth, although this effect is of dubious significance and may be driven by endogeneity bias. Where the EBRD was more successful is at encouraging market-oriented reform: countries that received more EBRD funds progressed further in terms of implementing reforms. In this way, the EBRD appears to encourage growth indirectly: its investments encourage reform which is in turn good for growth even though the direct effect is imperceptible. Our results indeed suggest that loans to private and public sector indeed have such a positive indirect effect.

The rest of the paper is structured in the following way. The next section discusses the previous findings on the impact of foreign direct investment and development aid on growth in less developed countries. Sections 3 and 4 discuss our data and methodology, respectively. Section 5 introduces the results of our empirical analysis. Section 6 offers brief conclusions.

## **II. Economic Impact of Investment and Aid**

Inflow of foreign investment can, in principle, play an instrumental role in facilitating economic development of emerging and less developed countries. FDI inflows bring in additional financial capital to countries that often have abundant labor but scarce physical capital. Hence, the effect of FDI should be similar to that of domestic savings, which standard neoclassical models of growth (such as the

Solow model) predict to have a positive relation with growth (when away from the steady state) and with the steady-state level of output per capita. Even more importantly, FDI can facilitate the transfer of modern technologies and management practices from developed to developing countries. A well-know result by Borensztein, De Grerorio, and Lee (1998) is that FDI does not affect growth on its own but has a positive effect when the destination country possesses sufficiently high stock of human capital. Hence, they conclude that foreign investment and human capital are complementary.

FDI also tends to encourage exports. Balusubramanyam, Salisu, and Sapsford (1996) show that FDI fosters growth in developing countries, especially in those that espouse an export-promoting rather than import-substituting trade policy. Liu, Wang, and Wei (2001) and Pramadhani, Bissoondeal, and Driffield (2007), analyzing the relationship between FDI and growth in China and Indonesia, respectively, find that FDI inflows accelerate export growth in both countries.

The evidence on the impact of FDI on growth specifically in the transition countries, however, is mixed. Li, Liu, and Rebelo (1998) and Huang (2008) find a positive relationship between FDI inflows and economic growth of Chinese provinces, and Neuhaus (2006) argues that FDI inflows drive growth in the post-communist countries in Central and Eastern Europe. Luroudi, Papanastasiou, and Vamvakidis (2004), however, argue that after removing outliers the relationship is between FDI and growth in post-communist countries is insignificant.

Given the way the EBRD was set-up and is run, its efforts to aid the post-communist transition can be measured also against the benchmark of development and stabilization aid provided by international institutions such as the World Bank and the International Monetary Fund. The record of their achievements, however, is generally dismal. The gap between rich and poor countries has widened, despite vast amounts of money spent on development aid: Easterly (2006) points out that per-capita income in the richest country of the world was approximately six times that of the poorest country in the early 1800s whereas that ratio has increased to 70 to one at present. Nevertheless, the behavior of the extreme ends of income distribution is not necessarily representative of the distribution as a whole. Doucouliagos and Paldam (2006a) report on results of their three meta-analyses (see Doucouliagos and Paldam 2006b, 2006c, 2006d). They have identified a total of 103 studies and over one thousand

regressions analyzing the impact of aid on economic growth (with or without accounting for conditioning factors such as measures of sound economic policies) and on accumulation of capital. Their findings are very disappointing: aid has no robust and statistically significant impact on growth and only a small positive and weakly significant effect on accumulation.

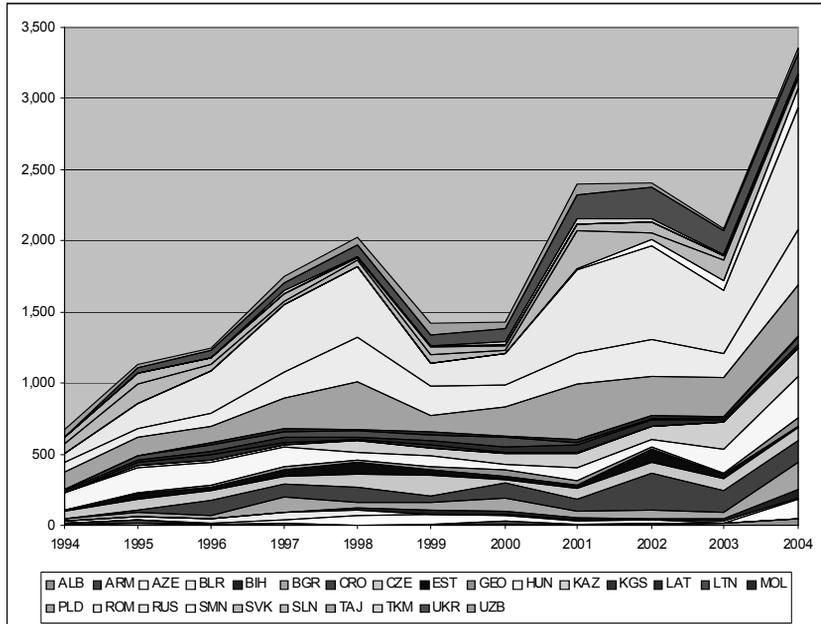
Such findings are indicative of the general state of the literature (see also Rajan and Subramanian 2005). In fact, Doucouliagos and Paldam (2006a) show that the trend in the literature is towards finding zero effect of aid on growth: with increasing amount of data and higher sophistication of econometric analysis, later studies tend to find lower effect of aid on growth than earlier studies (the variance in estimates across different studies has declined over time too).

The World Bank and IMF both fare similarly badly, despite their different objectives (fighting poverty and fostering macroeconomic stability, respectively). Przeworski and Vreeland (2000) find that countries subject to an IMF stabilization program tend to see their growth accelerate subsequently but grow no faster than they would have without IMF involvement.

The impact of aid is not better when it comes to other relevant outcomes. Coviello and Islam (2006) find that economic aid has no effect on the quality of economic institutions. Bhaumik (2005) finds that although World Bank aid leads to a short-term improvement in health and education outcomes, it fails to translate into a long-term gain in either.

Last but not least, debt forgiveness is no better than aid: Depetris Chauvin and Kraay (2005) find that the countries that benefited from the HIPC (highly indebted poor country) initiative do not subsequently enjoy higher economic growth or investment rates and similarly they do not implement better economic policies or institutions.

The impact of EBRD activities has not been, to the best of our knowledge, analyzed so far. In theory, the EBRD should be able to do better than the World Bank and IMF. It invests in specific and carefully chosen projects instead of giving a lump-sum transfer to the government with some vague conditionality and review conditions attached to it. EBRD spending also does not have any gift element to it: all funds are disbursed as commercial loans or investment stakes that are supposed to generate profit for the bank. That said, however, the experience of the other international institutions would give us rather low expectations on the role that the EBRD might play in



Note: The graph depicts total EBRD disbursements in individual countries, in millions of euros per year.

**FIGURE 1**

EVOLUTION OF EBRD SPENDING BY COUNTRY AND TIME

engineering favorable growth and policy outcomes in post-communist countries.

### III. Data

The analysis is carried out with data on annual investments made by the EBRD between 1994 and 2004. The data distinguish between loans and equity stakes and also whether the investment project was private or public. The data further break down the investment flows by main sectors of the economy and report also repayments and/or liquidations of investments. The data were kindly provided to us by the EBRD.

During the period for which we have data, the EBRD has spent cumulatively 20.2 billion euros on investments in 27 post-communist

countries.<sup>4</sup> Figure 1, capturing the evolution of this spending, shows that EBRD investments were gradually increasing since 1994, declined sharply in the wake of the financial turmoil of 1998 and then grew again after 2000. In 2004, the last year for which we have data, the EBRD has invested the equivalent of nearly 3.5 billion euros.

The largest part of EBRD investments took the form of loans to finance private investments: 11.4 billion euros, or 56.4 percent of the total. This was followed by loans to public projects amounting to 4.6 billion (22.7 percent) and 4.2 billion in equity stakes in private firms (20.9 percent).

The cross-country break-down of EBRD investment changed over time. Hungary and Poland, being first among communist countries to liberalize their economies, benefited from an early start. Russia, Romania and Ukraine became major destinations for EBRD funds later. Finally, some countries are conspicuous because of their near absence: Belarus, Turkmenistan, Tajikistan, Serbia-Monte Negro and Bosnia-Herzegovina received very low investments for parts of the period because of their weak record on democratization and/or because they were hit by military conflicts (nevertheless, a similarly questionable commitment to democracy did not prevent Russia from remaining a major recipient of EBRD investments).

On average, the transition economies have received 0.4 percent of their GDP in EBRD investments each year. This appears rather meager compared with the 7.5 percent of GDP that the average less-developed country received in aid and loans during the last four decades (Doucouliagos and Paldam 2006a). There is substantial variation in the data, however. On the one hand, Belarus received only 0.12 percent of its GDP annually. On the other hand, Moldova received 0.94 percent of its GDP per year over the same period. Russia, despite being the largest recipient of EBRD funds in absolute volumes, received just marginally more in relative investments than Belarus (0.121 and 0.119 percent of GDP annually, respectively). The more advanced economies, most notably the Czech Republic, Poland, Hungary and Slovenia, received only modest relative investments (measured as percentage of their GDP, the Czech Republic received

<sup>4</sup>These countries are Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Serbia-Monte Negro, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

0.13, Poland 0.14, Slovenia 0.24 and Hungary 0.25 percent); Poland and Hungary appear large recipients in terms of absolute flows because of their relatively large economic size.

#### **IV. Methodology**

Our analysis is based on estimating a stylized version of the Solow model of growth, inspired by the influential work of Mankiw, Romer, and Weil (1992) and further extended into a panel-data framework by Islam (1995). In essence, this entails estimating a regression explaining economic growth (measured as log-change of output) by relating it to accumulation of physical capital and population growth (the Solow model predicts that technological progress and depreciation also play a role but in absence of reliable measures we follow the literature in replacing them with a constant term).

The Solow model is further augmented to account for three additional factors. First, we control for the countries' progress in implementing economic and political reforms. This reflects the specific nature of their development: the countries included in our analysis started off as tightly regulated centrally planned economies and autocracies and have been gradually (and with varying speed) progressing towards becoming market economies and democracies. While reforms, especially the economic ones, should in principle make the countries more efficient, they can have disruptive effects in the short term. The progress in implementing market-oriented reform is measured by the average of eight indicators compiled and published annually by the EBRD which focus on the following areas: price liberalization, trade and foreign exchange, competition policy, small-scale privatization, large-scale privatization, governance and enterprise restructuring, banking reform and interest-rate liberalization, and securities markets and non-bank financial institutions. The EBRD reports these indicators for each country and year as falling within the range between 1 (unreformed centrally-planned economy) and 4.33 (fully liberalized market economy). Furthermore, we also include an index of political liberalization measured as the average of the indexes of political rights and civil liberties reported by the Freedom House. The original Freedom House indexes range between 1 and 7, with higher values meaning less democracy. We use an inverted scale where 1 stands for complete absence of political freedoms and 7 stands for full democracy.

The second additional term is the investments by the EBRD in the country. This is expressed as (log of) the ratio of EBRD disbursements to the country's GDP (both measures in euros). We consider, alternatively, the total investment as well as its main sub-components: loans to the private and public sectors and equity stakes in the private sector.

Finally, we also include two lags of dummy variables indicating whether the country in question was involved in a military conflict during the given year.

The equation that we estimate takes therefore the following form:

$$\Delta y_{it} = \beta_1 s_{it}^K + \beta_2 (g_{it} + n_{it} + \delta_{it}) + \beta_3 r_{it} + \beta_4 d_{it} + \beta_5 w_t + \beta_6 w_{t-1} + \beta_7 s_{it}^{EBRD} + \mu_i + v_{it} \quad (1)$$

where all variables are in logs and (omitting country and time subscripts)  $y$  is output per person,  $s^K$  is the ratio of investment to GDP,  $n$  is population growth,  $g$  and  $\delta$  are technological progress and depreciation, respectively, and we proxy their sum with a constant term equal to 0.06,  $r$  and  $d$  are the average reform and democracy indexes, respectively,  $w$  is the war dummy (introduced contemporaneously and with one-year lag) and finally,  $s^{EBRD}$  is the variable of interest: the ratio of EBRD investment to GDP. We estimate this model with annual data for 1994-04 with country fixed effects ( $\mu$ ). If EBRD investments have a positive effect on growth, the estimate of  $\beta_7$  should be positive and significant. Furthermore, by comparing  $\beta_1$  and  $\beta_7$ , we can assess the relative productivity of EBRD investment and overall investment.

Our approach thus combines the general growth literature with studies analyzing the specific case of post-communist transition such as Falcetti, Lysenko, and Sanfey (2006), Kim and Pirtilla (2006) and Babetskii and Campos (2007). The latter are typically concerned with the role played by the progress in economic reform (measured typically by the same progress in transition indicators that we use), trying to ascertain whether countries that implemented reforms more aggressively did in turn growth at higher growth rates. While we use a slightly different methodology, motivated more explicitly by the Solow model, our results are comparable to that literature. In addition, our results show whether investment spending by the EBRD helped foster growth in post-communist countries.

## V. What Does 20 Billion Euros Buy in Eastern Europe?

### A. Growth

The Solow model predicts not only the structure of our regression but also the signs of the explanatory variables: investment in physical capital is expected to increase per-capita growth while population growth is expected to lower it. Furthermore, the transition-specific literature argues that progress in reforms should foster growth: the reforms are thought to remove inefficiencies inherent to central planning and yield better economic policies. Finally, we expect EBRD investment to have a positive impact on economic growth. In particular, its effect should be similar to that of domestic investment or higher if EBRD investment is associated with transfer of modern technologies and better management techniques.

Column (1) of Table 1 presents the results of a baseline model that corresponds to Equation (1) with the EBRD investment omitted. Somewhat surprisingly, the Solow model appears a rather poor description of the pattern of growth in the post-communist countries: neither investment nor population growth affects growth significantly and investment even has the wrong sign. While surprising (and disappointing), these findings, especially the one for investment, are frequent in the growth-in-transition literature. A possible rationalization of this finding is that, at least for a part of the period included in our analysis, the post-communist countries are too far from behaving like standard market economies.

Countries affected by wars and military conflicts, not surprisingly, grow more slowly. The positive coefficient on the lagged war dummy, although not significant, indicates that the end of conflicts is followed by an acceleration of growth. The reform index appears with a positive and strongly significant coefficient, suggesting that faster progress in implementing market-oriented reforms indeed translates into faster growth. Democracy, on the other hand, appears to lower growth. Note, however, that this need not imply that democracy is bad for growth. Fidrmuc (2003) argues that democratization encourages economic liberalization so that its overall effect on growth, accounting for its indirect impact through economic liberalization, is positive.

Adding overall EBRD investment, in column (2), changes the regression results little. The impact of EBRD investment, although positive, does not appear significant. Hence, EBRD investment does

**TABLE 1**  
OLS AND 2SLS RESULTS WITH CONTEMPORANEOUS EBRD INVESTMENT

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Reform index	0.361	0.357	0.32	0.36	0.362	0.497	0.489	0.467	0.497	0.497
(log)	(0.039)**	(0.039)**	(0.041)**	(0.039)**	(0.039)**	(0.048)**	(0.048)**	(0.053)**	(0.048)**	(0.048)**
Democracy	-0.075	-0.079	-0.067	-0.073	-0.079	-0.074	-0.08	-0.071	-0.071	-0.082
index (log)	(0.028)**	(0.028)**	(0.028)*	(0.028)*	(0.028)**	(0.037)*	(0.037)*	(0.036)	(0.037)	(0.037)*
Investment/GDP	-0.028	-0.031	-0.032	-0.027	-0.032	-0.043	-0.046	-0.045	-0.043	-0.047
(log)	(0.015)	(0.015)*	(0.015)*	(0.015)	(0.015)*	(0.015)**	(0.015)**	(0.015)**	(0.015)**	(0.016)**
g + n + δ	-0.045	-0.038	-0.039	-0.048	-0.043	-0.057	-0.051	-0.053	-0.061	-0.055
(log)	(0.030)	(0.030)	(0.029)	(0.030)	(0.029)	(0.030)	(0.031)	(0.030)	(0.030)*	(0.030)
War dummy	-0.095	-0.086	-0.086	-0.095	-0.091	-0.076	-0.071	-0.073	-0.077	-0.074
	(0.026)**	(0.026)**	(0.025)**	(0.026)**	(0.026)**	(0.027)**	(0.027)**	(0.027)**	(0.027)**	(0.027)**
War dummy	0.012	0.018	0.015	0.011	0.015	0.042	0.045	0.041	0.042	0.044
(lag 1)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
EBRD Inv/GDP		0.005					0.004			
(log)		(0.003)					(0.003)			
Priv.debt/GDP			0.003					0.002		
(log)			(0.001)**					(0.001)		
Priv.equity/GDP				-0.001					-0.001	
(log)				(0.001)					(0.001)	
Pub.debt/GDP					0.002					0.002
(log)					(0.001)					(0.001)
Constant	-0.401	-0.349	-0.333	-0.426	-0.376	-0.603	-0.547	-0.553	-0.63	-0.571
	(0.106)**	(0.110)**	(0.107)**	(0.108)**	(0.106)**	(0.116)**	(0.121)**	(0.119)**	(0.118)**	(0.117)**
Observations	270	270	270	270	270	270	270	270	270	270
R-squared	0.39	0.40	0.41	0.40	0.40	0.36	0.37	0.38	0.37	0.37
Sargan-Hansen						0.84	1.37	1.21	0.64	2.99
(p-value)						(0.84)	(0.71)	(0.75)	(0.89)	(0.39)
F-stat reform						121.9	110.6	109.2	109.3	109.4
F-stat democr						62.3	56.2	57.1	56.1	56.0
	FE OLS	FE 2SLS								

Note: Significance levels: \*\* stands for 1% and \* is 5%. Dependent variable is log-change of output. Estimated with FE OLS and 2SLS. Columns (6)-(10) treat reform and democracy as endogenous. Instruments include quadratic time trend, lagged values of reform and democracy indexes and second lag of the war dummy. F-stat reform and F-stat democracy refer to the F-statistics for the respective first-stage regressions. See text for further details.

not seem to translate to faster growth. Nonetheless, the EBRD seems to fare better than domestic investors (recall that the coefficient estimated for overall investment is negative).

In columns (3)-(5), we replace total EBRD investment with its three sub-components: private-sector loans, private-sector equity stakes

and public-sector loans. Only private-sector loans (the most important category by volume of investment) has a positive and significant effect on growth. Hence, despite the insignificant result for the overall investment, it would appear that lending to private firms fosters growth in transition economies.

The coefficients on the impact of market-oriented reforms and democratization, however, can be subject to an endogeneity bias. For example, countries that experience better economic performance may be in a better position to implement far-reaching economic and political reforms. Alternatively, countries undergoing economic downturn may be compelled to implement far-reaching reform in order to stave off further deterioration of economic performance. In the former case, the effect of economic liberalization would be biased upwards while in the later case the bias is downwards. The positive coefficient for the effect of economic reform could be due to such a bias. This can, in turn, affect also the estimated effect of EBRD investment if it is correlated with progress in implementing reform. To remedy this problem, we need suitable instruments: such instruments should be correlated with the reform progress but not with the unexplained variation in economic growth in our regressions. We use lagged values of both economic liberalization and democratization indexes and the second lag of the war dummy, alongside a quadratic time trend.

The 2SLS results are reported in columns (6)-(10). The first stage regression results are strongly significant, as indicated by the high F-statistics reported at the bottom of each column, and the instruments are accepted also by the Sargan-Hansen statistic. Instrumenting strengthens the impact of reform: the coefficient estimate is increased by more than a half. This suggests that the endogeneity bias leads to the true impact of reform on growth being underestimated. This pattern would be consistent with countries postponing reform until they are forced to implement them by adverse economic performance — so that crises beget reform, as argued, *inter alia*, by Alesina and Drazen (1991). This stands in contrast with the argument made frequently in the growth-in-transition literature which suggests that the effect of economic reform is subject to an upwards bias (see for example, Krueger and Ciolko 1998; Heybey and Murrell 1999) and that the true effect of reform on growth is lower or not significant at all. Finally, the coefficient for democratization is not affected by using instruments, suggesting that it is free from endogeneity bias.

Crucially, the estimated effect of EBRD investment tends to fall when using instrumental variables for economic reform and democratization: the coefficients are all lower and none of them remains significant. Hence, it appears now that EBRD activities leave no mark on the recipient countries' economic performance.

Empirical analyses with relatively short time-series dimension and large cross-section dimension (short T/large N panels) can produce biased estimates. This is more of an issue in cases with lagged dependent variable, nevertheless, our results can still be affected. Columns (1)-(4) of Table 2 therefore replicate the analysis using GMM (Arellano-Bond). The basic results remain unchanged. When the economic reform index is instrumented, neither the overall EBRD investment nor any of its subcomponents appear to have a significant impact on growth.

Burnside and Dollar (2000) argue that aid improves growth only when accompanied by sound economic policies. Hence, even if EBRD investment does not appear with a positive and significant sign on its own, an interactive term between EBRD investment and the reform index should be positive and significant. However, it is not (regression results are available upon request).

So far, we only considered the possibility of the reform index being endogenous. The EBRD investment, however, may be endogenous in economic performance as well. For example, the EBRD may feel inclined to invest more in countries doing well as a vibrant economy offers more potential investment opportunities to choose from. Or it may invest more in countries doing poorly in an effort to stoke up their economies. To complicate matters even more, the EBRD itself constructs the reform index that we use in our regressions and therefore the reform index and EBRD investment may be linked. To resolve these potential problems, we instrument both the reform index and EBRD investment (using the same instruments for both). Columns (5)-(8) of Table 2 report the regression results. The coefficients estimated for EBRD investment and its subcomponents fall further (and even become negative) but none of them is significant.

Finally, a possible explanation for the lack of any effect of EBRD investment (or its sub-components) on growth may be that it takes time for it to be reflected in higher growth. In Table 3, we pursue this possibility by regressing growth on lagged values of EBRD investment. The results are very similar again: private-sector loans appear to improve growth performance. Moreover, the effect persists

**TABLE 2**  
GMM RESULTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reform index	0.514	0.489	0.509	0.52	0.519	0.654	0.496	0.491
(log)	(0.056)**	(0.062)**	(0.055)**	(0.060)**	(0.062)**	(0.202)**	(0.063)**	(0.064)**
Democracy	-0.076	-0.068	-0.066	-0.097	-0.049	-0.088	-0.06	-0.062
index (log)	(0.059)	(0.060)	(0.062)	(0.059)	(0.076)	(0.072)	(0.066)	(0.063)
Investment/GDP	-0.047	-0.045	-0.043	-0.049	-0.034	-0.036	-0.042	-0.037
(log)	(0.015)**	(0.015)**	(0.015)**	(0.016)**	(0.019)	(0.020)	(0.015)**	(0.017)*
$g + n + \delta$	-0.044	-0.047	-0.057	-0.041	-0.077	-0.078	-0.066	-0.058
(log)	(0.024)	(0.026)	(0.027)*	(0.026)	(0.046)	(0.048)	(0.036)	(0.029)*
War dummy	-0.067	-0.069	-0.074	-0.078	-0.096	-0.093	-0.077	-0.079
	(0.043)	(0.042)	(0.043)	(0.043)	(0.054)	(0.057)	(0.044)	(0.043)
War dummy	0.045	0.042	0.041	0.035	0.027	0.044	0.039	0.037
lag 1	(0.028)	(0.027)	(0.027)	(0.028)	(0.036)	(0.034)	(0.028)	(0.029)
EBRD Inv/GDP	0.003				-0.015			
(log)	(0.005)				(0.019)			
Priv.debt/GDP		0.002				-0.009		
(log)		(0.002)				(0.013)		
Priv.equity/GDP			-0.002				-0.004	
(log)			(0.001)				(0.006)	
Pub.debt/GDP				0.002				-0.003
(log)				(0.002)				(0.003)
Observations	270	270	270	270	270	270	270	270
Centered R <sup>2</sup>	0.36	0.37	0.36	0.36	0.26	0.10	0.35	0.34
Hansen J-stat	1.39	1.29	0.58	3.57	0.09	0.05	0.36	0.09
(p-value)	(0.71)	(0.73)	(0.90)	(0.31)	(0.97)	(0.98)	(0.83)	(0.96)
F-stat reform	62.7	61.1	60.7	62.1	68.1	68.1	68.1	68.1
F-stat democ	27.0	27.7	26.9	25.5	29.2	29.2	29.2	29.2
F-stat EBRD					6.9	14.4	1.53	5.93
	FE GMM							

Note: Significance levels: \*\* stands for 1% and \* is 5%. Dependent variable is log-change of output. Estimated with fixed-effects GMM without including a constant. Columns (1)-(4) treat reform and democracy as endogenous while columns (5)-(8) treat reform, democracy and EBRD investment as endogenous. Instruments include quadratic time trend, lagged values of reform and democracy indexes and second lag of the war dummy. F-stat reform, F-stat democracy and F-stat EBRD refer to the F-statistics for the respective first-stage regressions. See text for further details.

**TABLE 3**  
GMM RESULTS WITH LAGGED EBRD INVESTMENT

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reform index	0.507	0.432	0.519	0.507	0.519	0.513	0.516	0.518
(log)	(0.062)**	(0.054)**	(0.058)**	(0.056)**	(0.064)**	(0.086)**	(0.059)**	(0.058)**
Democracy	-0.083	-0.074	-0.065	-0.086	-0.069	-0.07	-0.069	-0.066
index (log)	(0.059)	(0.054)	(0.062)	(0.059)	(0.061)	(0.060)	(0.061)	(0.063)
Investment/GDP	-0.044	-0.042	-0.042	-0.044	-0.043	-0.043	-0.043	-0.043
(log)	(0.015)**	(0.016)**	(0.015)**	(0.016)**	(0.015)**	(0.015)**	(0.016)**	(0.015)**
g + n + $\delta$	-0.053	-0.04	-0.055	-0.054	-0.053	-0.052	-0.053	-0.053
(log)	(0.027)	(0.025)	(0.027)*	(0.027)*	(0.027)	(0.028)	(0.028)	(0.027)*
War dummy	-0.071	-0.086	-0.071	-0.074	-0.072	-0.073	-0.072	-0.072
	(0.043)	(0.041)*	(0.042)	(0.043)	(0.042)	(0.043)	(0.043)	(0.042)
War dummy	0.04	0.039	0.042	0.045	0.042	0.042	0.042	0.04
lag 1	(0.027)	(0.027)	(0.027)	(0.028)	(0.027)	(0.027)	(0.027)	(0.028)
EBRD Inv/GDP	0.001				-0.000			
(log, lagged)	(0.002)				(0.002)			
Priv.debt/GDP		0.003				0.000		
(log, lagged)		(0.001)**				(0.003)		
Priv.equity/GDP			-0.001				-0.000	
(log, lagged)			(0.001)				(0.003)	
Pub.debt/GDP				0.001				-0.001
(log, lagged)				(0.002)				(0.002)
Observations	270	270	270	270	270	270	270	270
Centered R <sup>2</sup>	0.36	0.41	0.35	0.36	0.35	0.35	0.35	0.34
Hansen J-stat	1.62	2.85	0.93	2.31	0.85	0.89	0.86	0.67
(p-value)	(0.66)	(0.42)	(0.82)	(0.51)	(0.66)	(.64)	(0.65)	(0.72)
F-stat reform	65.5	60.1	63.9	68.5	68.1	68.1	68.1	68.1
F-stat democr	26.6	27.5	26.2	27.2	29.2	29.2	29.2	29.2
F-stat EBRD					20.9	33.3	10.1	24.3
	FE GMM							

Note: Significance levels: \*\* stands for 1% and \* is 5%. Dependent variable is log-change of output. Estimated with fixed-effects GMM without including a constant. Columns (1)-(4) treat reform and democracy as endogenous while columns (5)-(8) treat reform, democracy and lagged EBRD investment as endogenous. Instruments include quadratic time trend, lagged values of reform and democracy indexes and second lag of the war dummy. F-stat reform, F-stat democracy and F-stat EBRD refer to the F-statistics for the respective first-stage regressions. See text for further details.

also when the reform and democratization indexes are instrumented.<sup>5</sup> Overall EBRD investment and the remaining subcomponents are not significant, however. Furthermore, even the significant effect of private-sector loans disappears when lagged EBRD investment is also

<sup>5</sup> The second lag of EBRD investment is not significant when entered alongside the first lag.

**TABLE 4**  
EFFECT OF EBRD INVESTMENT ON REFORM INDEX

	(1)	(2)	(3)	(4)	(5)
Democracy idx	0.216		0.227	0.267	0.248
(log)	(0.049)**		(0.043)**	(0.050)**	(0.050)**
EBRD Inv/GDP	0.019	0.024			
(log)	(0.005)**	(0.004)**			
Priv.debt/GDP			0.011		
(log)			(0.001)**		
Priv.equity/GDP				0.000	
(log)				(0.001)	
Pub.debt/GDP					0.004
(log)					(0.002)*
Constant	0.748	1.055	0.75	0.647	0.704
	(0.070)**	(0.010)**	(0.061)**	(0.071)**	(0.072)**
Observations	275	275	275	275	275
R-squared	0.16	0.10	0.32	0.11	0.12
	FE OLS				

Note: Significance levels: \*\* stands for 1% and \* is 5%. The dependent variable is the (log of) reform index. See text for further details.

instrumented.

In summary, the results reported so far show little evidence that EBRD investment helps foster growth in post-communist countries. At best, only loans to finance private-sector projects may have a positive impact, which possibly arrives with a short delay. However, even that effect disappears when both reform indexes and EBRD investment are instrumented to remove possible endogeneity bias.

### *B. Reform*

The stated objectives of the EBRD put more emphasis on helping build the market economy and democratic environment than on fostering growth. Therefore, it is interesting to see how the EBRD fares on this criterion. Do countries that receive more EBRD funds in turn proceed faster in implementing market-oriented reform? Table 4 reports results obtained when regressing the (log of) reform index on EBRD investment or its sub-components, alongside the democracy index (the latter is included in line with the finding of

**TABLE 5**  
EFFECT OF EBRD INVESTMENT ON DEMOCRATIZATION

	(1)	(2)	(3)	(4)
EBRD Inv/GDP (log)	0.024 (0.006)**			
Priv.debt/GDP (log)		0.003 (0.002)		
Priv.equity/GDP (log)			0.003 (0.002)	
Pub.debt/GDP (log)				0.006 (0.002)**
Constant	1.418 (0.012)**	1.394 (0.011)**	1.402 (0.016)**	1.427 (0.018)**
Observations	275	275	275	275
R-squared	0.06	0.01	0.01	0.03
	FE OLS	FE OLS	FE OLS	FE OLS

Note: Significance levels: \*\* stands for 1% and \* is 5%. The dependent variable is the (log of) democracy index. See text for further details.

Fidrmuc 2003, who argues democratization encourages liberalization). Table 6 reports similar regression results for the democracy index. Both types of regressions again control for country fixed effects.

Overall EBRD investment appears to have a strong impact on progress in implementing market-oriented reforms and also on democratization (although the explanatory power for the latter is lower). When looking at sub-components, we find that private and public-sector loans foster economic reform and public-sector loans foster democratization. Private equity stakes do not appear to play any role in either economic reform or democratization.

Market-oriented reforms proceed faster in those countries that undertake also wide-ranging political liberalization. We do not include economic reform in the regressions for democracy in line with Fidrmuc's (2003) finding that the causality runs from democratization to economic reform rather than the other way around. The results for the relationship between EBRD investments and economic reform, nevertheless, are essentially the same when the democracy index is omitted (see column 2; further results are available upon request).

These results suggest that while EBRD investment does not translate into faster growth, it does encourage economic reform and

**TABLE 6**  
THREE-WAY GRANGER CAUSALITY

	(1)	(2)	(3)
	EBRD Inv (log)	Reform (log)	Growth (log-change)
EBRD Inv/GDP (log, lagged)	0.107 (0.029)**	0.004 (0.001)*	0.002 (0.001)
Reform index (log, lagged)	0.411 (0.366)	0.311 (0.017)**	0.088 (0.016)**
Growth (log-change lagged)	2.164 (1.195)	-0.071 (0.056)	0.265 (0.053)**
Constant	-5.043 (0.263)**	1.279 (0.012)**	0.104 (0.011)**
Observations	272	272	271
R-squared	0.20	0.78	0.49

Note: Significance levels: \*\* stands for 1% and \* is 5%. The dependent variable is indicated in the column heading. See text for further details.

to a lesser extent, democratization. Therefore, EBRD investment may at least have an indirect effect on growth: given that we found that progress in economic reform is a strong determinant of economic growth during transition, EBRD investment fosters economic reform which in turn improves growth performance.

### C. Causality

So far, we discussed only the presumed effect of EBRD investment on growth, economic reform and democratization. It is, however, equally possible that the causality runs in the opposite direction and that EBRD investment responds to rather than affects economic performance or reform. This can be resolved with a simple Granger causality check. Because of the possibility that EBRD investment may affect growth not only directly but also indirectly *via* economic reform, we implement a three-way causality test: with EBRD investment, economic reform and growth. We include only one lag because of the relatively short time-series dimension entailed in our data. Table 6 reports the results.

We find that, as suggested above, economic reform indeed causes economic growth rather than the other way around: lagged economic

reform is a significant determinant of economic growth while lagged growth has no significant impact on economic reform. We also find that EBRD investment causes economic reform. Finally, EBRD investment does not cause growth, which is in line with our findings reported earlier. Hence, EBRD activities encourage economic reform but only affect growth indirectly, if at all.

These results are confirmed by a series of similar two-way causality checks (those results are not reported here but are available upon request). We find that EBRD investment causes reform and that there is a two-way relationship between EBRD investment and growth. Nevertheless, the causal link from EBRD investment to growth is presumably due to the impact of EBRD investment on economic reform which is not accounted for in the two-way causality version of the test.

#### *D. Direct vs Indirect Effect on Growth*

To disentangle the direct *vs* indirect effect of EBRD investment on growth, we replicate the procedure utilized by Fidrmuc (2003). Specifically, we denote the residuals (including the country fixed effects) from regressions reported as columns (1) and (2) in Table 4 as two alternative measures of autonomous reform. These effectively measure the progress in market-oriented reform that cannot be attributed to the combined effect of EBRD investment and democratization (Table 4 column 1) or to EBRD investment alone (Table 4 column 2). Then, we re-estimate our growth regressions with the reform index replaced by these autonomous reform measures. Because, by construction, autonomous reform is uncorrelated with EBRD investment, the coefficient estimated for the EBRD investment now captures its full (*i.e.*, direct and indirect) effect on growth.

The results, reported in Table 7, are very interesting. First, autonomous reform is always strongly significant, suggesting that economic reform effort that is orthogonal to EBRD activities helps accelerate growth. This is the case both when the autonomous reform variable is constructed as the residual from regressing the reform index on EBRD investment and democracy (columns 1-4) and when it is regressed on EBRD investment alone (columns 5-8).

Second, overall EBRD investment now indeed seems to have a positive and significant effect on growth. And two of its subcomponents, private-sector and public-sector loans, are found to foster growth as well,

**TABLE 7**  
FULL EFFECT OF EBRD INVESTMENT

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Aut. Reform	0.357	0.201	0.213	0.262	0.357	0.2	0.211	0.261
(log)	(0.039)**	(0.034)**	(0.037)**	(0.037)**	(0.039)**	(0.034)**	(0.037)**	(0.037)**
Democracy	-0.038	-0.022	-0.029	-0.036	-0.079	-0.044	-0.054	-0.065
index (log)	(0.028)	(0.029)	(0.030)	(0.030)	(0.028)**	(0.029)	(0.030)	(0.030)*
Investment/GDP	-0.031	-0.018	-0.001	-0.016	-0.031	-0.018	-0.001	-0.016
(log)	(0.015)*	(0.015)	(0.015)	(0.015)	(0.015)*	(0.015)	(0.015)	(0.015)
$g + n + \delta$	-0.038	-0.041	-0.046	-0.05	-0.038	-0.041	-0.046	-0.05
(log)	(0.030)	(0.031)	(0.033)	(0.032)	(0.030)	(0.031)	(0.033)	(0.032)
War dummy	-0.086	-0.108	-0.133	-0.124	-0.086	-0.108	-0.133	-0.124
	(0.026)**	(0.026)**	(0.027)**	(0.027)**	(0.026)**	(0.026)**	(0.027)**	(0.027)**
War dummy	0.018	-0.016	-0.035	-0.021	0.018	-0.016	-0.036	-0.022
lag 1	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.022)	(0.023)	(0.022)
EBRD Inv/GDP	0.026				0.026			
(log, lagged)	(0.004)**				(0.004)**			
Priv.debt/GDP		0.007				0.007		
(log, lagged)		(0.001)**				(0.001)**		
Priv.equity/GDP			0.000				0.000	
(log, lagged)			(0.001)				(0.001)	
Pub.debt/GDP				0.006				0.006
(log, lagged)				(0.002)**				(0.002)**
Constant	0.085	-0.027	-0.055	-0.022	0.142	0.006	-0.021	0.02
	-0.096	-0.097	-0.104	-0.1	-0.096	-0.096	-0.104	-0.099
Observations	270	270	270	270	270	270	270	270
R <sup>2</sup>	0.40	0.36	0.28	0.32	0.40	0.36	0.28	0.32
	FE OLS							

Note: Significance levels: \*\* stands for 1% and \* is 5%. Dependent variable is log-change of output. Estimated with fixed-effects OLS. Autonomous reform is estimated as the residual from regression (1) Table 4 in columns (1)-(4) and as residual from regression (2) Table 4 in columns (5)-(8). See text for further details.

again regardless of how is autonomous reform constructed. Private equity, however, still appear to have no significant impact on growth.

These results are obtained without instrumenting autonomous reform. We are concerned, however, that attempting to instrument autonomous reform would result in an analysis that is over-engineered: autonomous reform itself is using a procedure akin to instrumenting

and then would be instrumented yet again.

These results therefore confirm that although EBRD investment does not affect growth in post-communist countries directly, it has had an indirect positive impact on their growth patterns. Two sub-components appears productive in terms of generating growth: loans to the private and public sector. Together, these account for nearly 80 percent of EBRD spending. With 79 eurocents out of every euro being conducive to growth, albeit indirectly, the EBRD turns out to play a clearly positive role in the post-communist countries economic development.

## **VI. Conclusions**

We explore the impact of EBRD investment on economic growth, progress in economic reform and democratization in 25 post-communist countries between 1994 and 2004, the first eleven years since EBRD's inception. During this period, the EBRD has invested 20.2 billion euros in the post-communist countries. We find that this investment did not buy much growth for the post-communist countries directly. The evidence suggests that loans to private firms, accounting for slightly more than one-half of EBRD investment, may be fostering economic growth — but even this effect is of dubious statistical significance and disappears when we account for the possible endogeneity of EBRD investment.

Nevertheless, the EBRD investment is more successful is at buying economic reform and to a lesser extent, political liberalization: the countries that benefited more from EBRD funds in turn tend to implement more market-oriented reforms and they democratize faster. Given that economic reform translates into faster growth in the post-communist countries, EBRD investment is buying growth indirectly at least. After accounting for this indirect effect, nearly 80 percent of EBRD spending (private-sector and public-sector loans) appears productive in generating economic growth.

Our further research will seek to investigate whether spending by the EBRD augments or crowds out domestic investment, consider the effect of EBRD investment in individual sectors of the economy, and extend the analysis to consider the impact of EBRD engagement on institutional environment in post-communist countries.

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