Money Can't Buy Me Growth
Making Change Happen in Post-communist Countries?[∇]

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Abstract

The European Bank for Reconstruction and Development (EBRD) was set up in 1991 with the aim to foster private sector development and 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.

Keywords: Reform, growth, transition, Solow model.

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1 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.[1]

Unlike accession-related programs and pre-accession aid, the EBRD mandate 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 is mandated only to be active in countries committed to democratic principles and, correspondingly, its involvement in some countries varies in response to domestic political developments.

The EBRD provides investment finance in the form of loans and equity stakes. Its funds are allocated to specific carefully selected investment projects 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. During the first eleven years of its existence, between 1994 and 2004, the EBRD has allocated over 20 billion euros, of which 56% was made up by loans to private firms, 23% by loans to target countries' governments[2] and 21% took the form of 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

[1] 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.

[2] Loans given to governments also can only be spent on specific investment projects approved by the EBRD, leaving essentially no discretion to the national government.

therefore be greater than suggested by the relatively modest size of its investment portfolio.

Although the EBRD is expected to be profit-motivated when making its investments, 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). In this respect, it is interesting to assess how well the EBRD has fared. 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 seen as sufficiently committed to democracy. Bosnia-Herzegovina and Serbia-Monte Negro, finally, were not on the EBRD target list for parts of the period because of their involvement in internal or external military conflicts.

This paper is, to the best of our knowledge, the first attempt at providing such assessment. Did those countries that benefited relatively 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 better institutions?

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 helps relieve financial market imperfections and lack of liquidity in emerging and transition economies. Foreign investors, whether private or public, generally put in place better system of corporate governance. Such practices can take hold and spread to domestic firms. An institution such as the EBRD, with its mandate prescribing that it is 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.

The EBRD can have a favorable effect on the destination countries of its investment also because it allocates its investment finance and attaches conditionality such as to encourage structural reforms, foster privatization and aid institutional change. Last but not least, a large part of EBRD funds went to support 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 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 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.

The results of our analysis suggest that the EBRD had little impact on economic growth in post-communist countries during the first eleven years that is has been in business. We find some evidence that loans to the private sector had a positive impact on growth. However, loans to the public sector and equity stakes in the private sector appear to have the opposite effect, thus possibly doing more harm than good. Where the EBRD was more successful is at encouraging structural reforms: countries that received more EBRD funds progressed further in terms of implementing market-oriented reforms. In this way, the EBRD would appear to encourage growth indirectly: its investments encourage reform which is in turn good for growth even though the direct effect is imperceptible.

The rest of the paper is structured in the following way:

2 Do Loans and Aid Payments Foster Growth?

The efforts of the EBRD to aid the post-communist transition can be measured 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,c,d). 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 a small positive effect of dubious significance 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, empirical 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 fare similarly badly, despite their different objectives (fighting poverty and fostering macroeconomic stability, respectively). Przeworski and Vreeland (2000) find that countries grow subject to an IMF stabilization program tend to see their growth accelerate subsequently but not faster than they would have grown without IMF involvement.

The impact of aid is no 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 type of measures.

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. Easterly (2002), merely points out that the financing-gap approach utilized by the World Bank to determine the need for aid in less developed countries has been motivated by the extensive-growth approach practiced in socialist countries. That approach delivered impressive growth rates during the 1950s but the World Bank continues applying it even though now the formerly socialist countries have become dependent on aid themselves – and even have a dedicated institution set up for them.[3]

In theory, at least, the EBRD should be able to do better than the World Bank and IMF. Its spending is very targeted: the EBRD finances specific investment projects that it selects itself 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 with rather low expectations on the role that the EBRD might play in engineering favorable growth and policy outcomes in post-communist countries.

[3] "The circle of irony closes. The communist economies had inspired the financing gap approach, the cold war inspired the filling of the gap with aid, and now the capitalist economies strive to fill the financing gap for the ex-communist economies." (Easterly, 2002, p. 37).

3 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 loans and equity stakes in 27 post-communist countries.[4] Figure 1, capturing the evolution of its 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 the private sector: 11.4 billion euros, or 56.4 percent of the total. This was followed by loans to governments 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 slightly 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 the were stricken with 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. As argued above, 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 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.

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[4] 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.

4 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 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 on them we follow the literature in replacing them with a constant term). We utilize Islam's formulation and estimate the model with the level of per-capita output rather than the growth rate as the dependent variable while including lagged per-capita output among explanatory variables. The Solow model is further augmented for the purposes of this paper to account for two types of effects:

(a) countries' progress in implementing economic reforms to account for the specific nature of their growth performance caused by the on-going transition from central planning to a market economy;

(b) investments by the EBRD in the country.

The former are measured by the average of eight indicators of progress in transition compiled and published annually by the EBRD. These indicators are designed to measure the progress of post-communist countries in becoming fully-fledged market economies in 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 include inflation in most regression to account for the extent of macro-economic imbalance (although the main results remain unchanged when inflation is omitted).

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

The equation that we estimate takes therefore the following form:

$$y_{it} = \gamma y_{it-1} + \beta_1 s_{it}^{K} + \beta_2 \left(g_{it} + n_{it} + \delta_{it} \right) + \beta_3 \pi_{it} + \beta_4 r_{it} + \beta_5 s_{it}^{EBRD} + \mu_i + \nu_{it} \qquad (1)$$

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 δ are technological progress and depreciation, respectively, and we proxy their sum with a constant term equal to 0.06, π is the rate of inflation, r is the average reform index 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 (μ). If EBRD investments have a positive effect on growth, the estimate of β_5 should be positive and

significant. Furthermore, by comparing β_1 and β_5, 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 Pirtillä (2006) and Babetskii and Campos (2007). The latter are typically concerned with the role played by 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.

5 What Does 20 Billion Euros Buy in Eastern Europe?

5.1 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. The previous literature argues that progress in reforms should foster growth and macroeconomic imbalance (proxied here by inflation) should lower it. Finally, we expect EBRD investment to have a positive impact on economic growth.

Column (1) of Table 1 presents the results of our baseline model that corresponds to equation (1). Somewhat surprisingly, the Solow model appears a rather poor description of the patterns of growth in the post-communist countries: neither investment nor population growth affects growth significantly; investment even has the wrong sign. While surprising (and disappointing), this result, especially the one for investment, is frequently found in the growth-in-transition literature. The reform index, on the other hand, appears with a positive and strongly significant coefficient estimate, suggesting that faster progress in implementing market-oriented reforms indeed translates into faster growth. Finally, the EBRD investment appears with a positive sign but its significance falls below conventional levels.

In column (3) 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. Columns (5), (7) and (9) feature each of the three sub-components entered one at a time: again, only private-sector loans appear to improve growth although the significance level falls just below 5 percent now.

The estimate of the impact of market-oriented reforms, however, can be subject to an endogeneity bias: for example, countries that experience better economic performance are likely to be in a better position to implement far-reaching economic reforms. The positive coefficient reported above could be due to such bias. This could, in turn, affect also the estimated effect of EBRD investment. 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 follow Bruszt et al. (2007) in using contemporaneous democracy and political initial conditions. The latter measure the nature and intensity of dissident activity in the communist countries during 1985-89. Specifically, we use the number of dissident events (demonstrations, strikes, petitions, dissident publication activity, and the like) and the share of such events that were suppressed by the communist government. The first stage then relates the reform index to the average of civil liberties and political freedoms indexes reported annually by the Freedom House, a quadratic time trend, and dissident events and share of such events facing repression interacted with a quadratic trend:

$$r_{it} = \alpha_1 + \alpha_2 d_{it} + \alpha_3 t + \alpha_4 t^2 + \alpha_5 t e_{it} + \alpha_6 t^2 e_{it} + \alpha_7 t p_{it} + \alpha_8 t^2 p_{it} + \mu_i + \omega_{it} \qquad (2)$$

where (omitting subscripts) *d* stands for the democracy index, *t* is time measured so that *t*=0 in 1989, *e* stands for the average number of dissident events reported in the country during 1985-89 and *p* is the fraction of those events that were suppressed by the communist government. ω is the error term and μ_i is the country fixed effect. Interacting dissident events and government repression with the quadratic time trend allows us to estimate equation (2) with annual data and fixed effects despite controlling for (time-invariant) initial conditions. The level of political initial conditions is effectively captured by the country fixed effect and α_5-α_8 measure the time-varying effect of political initial conditions (allowing for the effect to strengthen or to decay as time passes). The first stage regression results are strongly significant. Importantly, when regressing growth as captured by equation (1) with the addition our instruments among explanatory variables, neither democracy nor political initial conditions appear to have a significant impact on transition countries' growth.

The results with the reform index instrumented in this way are reported in the even-numbered columns. Instrumenting strengthens the impact of reform, suggesting that the endogeneity bias leads to the true impact of reform on growth being underestimated. With respect to the effect of EBRD investment, the coefficient estimates are generally lower and none of them is significant. Hence, it appears that EBRD activities leave no mark on the recipient countries economic performance.

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 2, we therefore report results obtained while lagging the EBRD investment by one year. The results are very similar again: private-sector loans appear to improve growth performance but only when the reform index is not instrumented. Estimating the regressions by 2SLS makes this positive effect disappear. Moreover, when the reform index is instrumented, private-sector equity stakes now appear even to lower growth.

In Table 3, we report the results of a similar exercise but this time we effectively include all lags of EBRD investment by computing cumulative investment since 1994. Again, overall EBRD investment has a positive but insignificant effect on growth in column (1) and insignificant negative effect when the reform index is instrumented. Private-sector and public-sector loans appear with a positive and significant sign and the latter now remain significant even when we instrument the reform index.

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).

Finally, we note that not only the reform index but also EBRD investment may be endogenous in economic performance. This is because the EBRD may feel inclined to invest more in countries doing well as a vibrant economy offers more potential investment projects 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 constructs the reform index that we use in our regression 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). Table 4 reports the results.

From the results reported so far, this last set should be the one that is most likely to be robust to endogeneity or other possible biases. We find again that private-sector loans translate into higher growth. Public-sector loans and private-sector equity, however, now appear with negative coefficients. The effect of private-sector equity is significant while that of public-sector loans is just below the 5 percent significance level when introducing each subcomponent separately. Hence, it appears that although private-sector loans indeed are good for growth, public-sector loans and private equity stakes may in fact be doing more harm than good.

5.2 Reform

The stated objective of the EBRD emphasizes more building the market economy and democratic environment than fostering growth. Therefore, it is interesting to see also how EBRD investment fares on this criterion. Table 5 reports results obtained when regressing the (log of) reform index on EBRD investment or its sub-components, alongside the democracy index. Table 6 reports similar regression results for the democracy index. Both types of regressions again control for country fixed effects.

Overall EBRD investment is strongly correlated with faster progress in implementing market-oriented reforms and also with 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 when the country implements also 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 higher growth, it does encourage economic reform and democratization. Therefore, EBRD investment appears to have at least an indirect effect on growth, since we found above that progress in economic reform is a strong determinant of economic growth during transition.

5.3 Causality

So far, we considered only the effect of EBRD investment on growth, economic reform and democratization. It is, however, also 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 either directly or indirectly via economic reform, we implement a three-way causality test, involving EBRD investment, economic reform and growth. We include only one lag because of the relatively short time-series dimension entailed in our data. Table 7 reports the results.

We find that, as suggested above, economic reform indeed causes economic growth rather than the other way around. We also find that EBRD investment causes economic reform. Finally, EBRD investment does not cause growth, again 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.

5.4 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 use the residuals (including the country fixed effects) from regressions reported as columns (1) and (2) in Table 5 to construct two measures of *autonomous reform*. The resulting variables effectively measure the progress in market-oriented reform that cannot be attributed to the combined effect of EBRD investment and democratization (column 1) or to EBRD investment alone (column 2). Then, we re-estimate our growth regressions with the reform index replaced by the autonomous reform measures. Because by definition, autonomous reform is uncorrelated with EBRD investment, the coefficient estimated for the latter now captures its full (i.e. direct and indirect) effect on growth.

The results are very interesting (see Table 8). First, autonomous reform remains strongly significant, indicating that economic reform effort that cannot be attributed 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 1-5) and when it is regressed on EBRD investment

alone (columns 6-10). Second, overall EBRD investment is estimated to have a positive effect on growth but it is not significant. One of its subcomponents, private-sector loans, fares better: it is found to foster growth, again regardless of how is autonomous reform constructed. Public-sector loans and private equity, however, still appear to have no significant impact on growth.[5]

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. The only sub-component that appears productive in terms of generating growth, however, is loans to the private sector. While this is the largest category of EBRD spending, accounting for over one-half of the total, our findings imply that some 44 cents out of every euro that the EBRD spends have no impact on economic growth.

6 Conclusions

We explore the effects of EBRD investment on economic growth, progress in economic reform and democratization in post-communist countries. The EBRD has invested 20.2 billion euros in post-communist countries during the first eleven years it has been in business. We find that this investment did not buy much growth and prosperity for the post-communist countries. The evidence suggests that loans to private firms, accounting for slightly more than one-half of EBRD investment, may be fostering economic growth. In contrast, the rest of EBRD spending – loans to government and equity stakes in private firms – may be doing more harm than good.

Where the EBRD investment is more successful is at buying economic reform and political liberalization: the countries that benefited more from EBRD funds in turn tend to implement more market-oriented reforms and democratize faster. Given that economic reform translates into faster growth in the post-communist countries, EBRD investment is buying growth indirectly at least. However, even after accounting for this indirect effect, only slightly more than one-half of EBRD spending (private-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.

[5] Instrumenting autonomous reform leads again to a strengthening of the estimated effect of reform. Overall EBRD investment becomes significant but none of its sub-components is. These results are available upon request. We are concerned, however, that these regressions are *over-engineered*: the autonomous reform measures are obtained with a procedure akin to instrumenting and are then instrumented yet again. Therefore, the results must be taken with a grain of salt.

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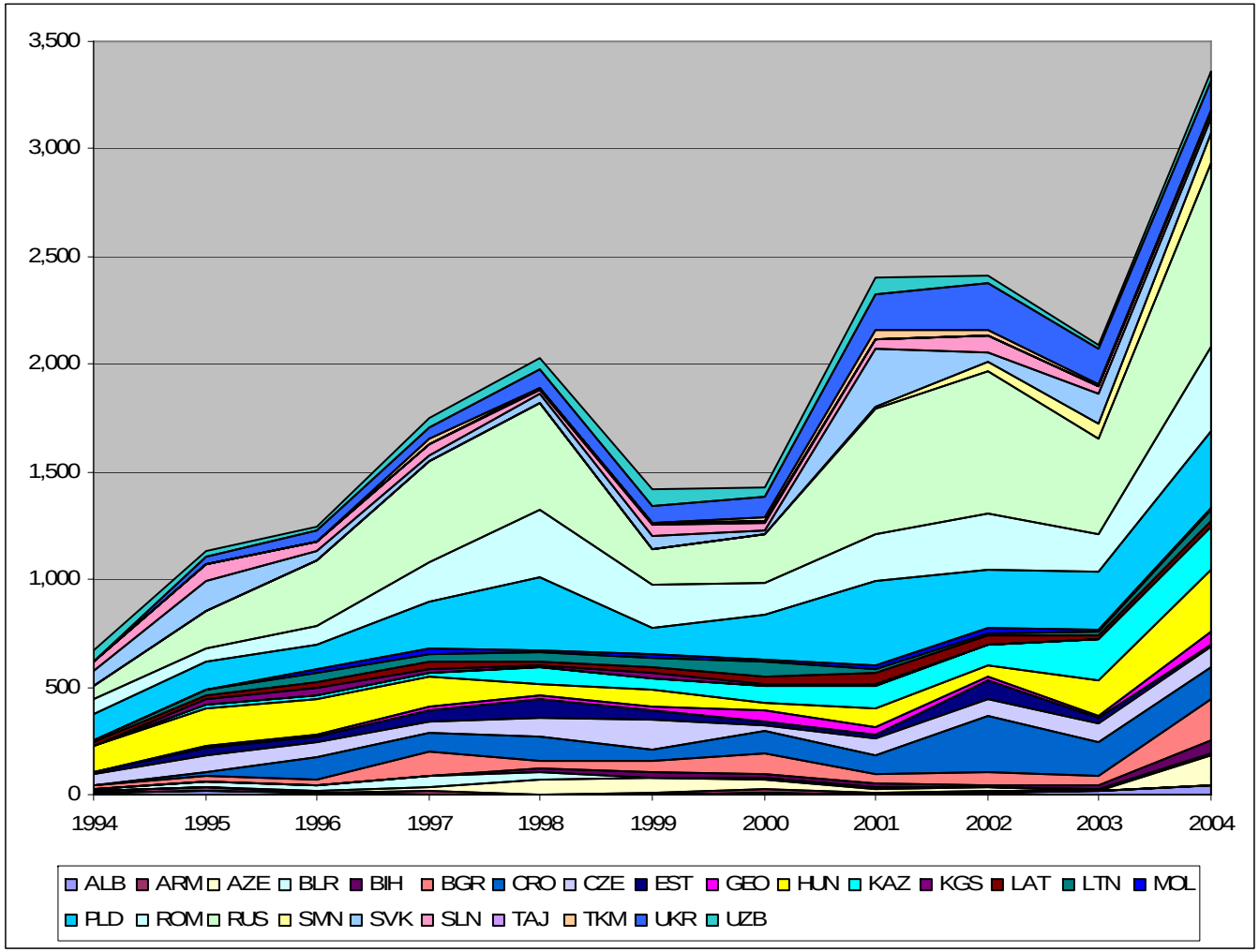
Figure 1 Evolution of EBRD Spending by Country and Time



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

Table 1 Baseline Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log GDP	0.899	0.872	0.896	0.861	0.884	0.876	0.893	0.878	0.893	0.862
(lagged)	(0.024)**	(0.032)**	(0.026)**	(0.035)**	(0.024)**	(0.031)**	(0.024)**	(0.032)**	(0.026)**	(0.035)**
Reform index	0.161	0.764	0.139	0.735	0.162	0.748	0.146	0.741	0.158	0.762
(log)	(0.046)**	(0.142)**	(0.046)**	(0.145)**	(0.045)**	(0.137)**	(0.046)**	(0.144)**	(0.046)**	(0.141)**
Investment/GDP	-0.022	-0.05	-0.026	-0.043	-0.02	-0.051	-0.025	-0.051	-0.023	-0.046
(log)	(0.014)	(0.020)*	(0.015)	(0.020)*	(0.014)	(0.020)**	(0.014)	(0.019)**	(0.015)	(0.020)*
Inflation	-0.024	0.007	-0.023	0.005	-0.025	0.007	-0.023	0.006	-0.025	0.007
(log)	(0.003)**	(0.008)	(0.003)**	(0.008)	(0.003)**	(0.008)	(0.003)**	(0.008)	(0.003)**	(0.008)
$g + n + \delta$	-0.022	-0.036	-0.024	-0.032	-0.026	-0.035	-0.019	-0.032	-0.023	-0.028
(log)	(0.028)	(0.037)	(0.028)	(0.037)	(0.028)	(0.037)	(0.028)	(0.037)	(0.028)	(0.037)
EBRD Inv/GDP	0.001	-0.004								
(log)	(0.003)	(0.003)								
Pub.debt/GDP			0.001	-0.001					0.000	-0.002
(log)			(0.001)	(0.001)					(0.001)	(0.001)
Priv.debt/GDP			0.002	-0.000			0.002	-0.001		
(log)			(0.001)*	(0.001)			(0.001)	(0.001)		
Priv.equity/GDP			-0.001	-0.001	-0.001	-0.001				
(log)			(0.001)	(0.001)	(0.001)	(0.001)				
Constant	0.779	0.122	0.718	0.259	0.799	0.104	0.764	0.110	0.741	0.227
	(0.246)**	(0.355)	(0.258)**	(0.353)	(0.244)**	(0.353)	(0.244)**	(0.351)	(0.260)**	(0.360)
Observations	261	261	261	261	261	261	261	261	261	261
R-squared	0.92	0.86	0.92	0.86	0.92	0.86	0.92	0.86	0.92	0.86
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS

Notes: Significance levels: ** stands for 1% and * is 5%. See text for further details.

Table 2 Lagged EBRD Investment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log GDP	0.910	0.889	0.906	0.891	0.905	0.889	0.904	0.895	0.914	0.895
(lagged)	(0.021)**	(0.025)**	(0.022)**	(0.024)**	(0.021)**	(0.024)**	(0.021)**	(0.023)**	(0.022)**	(0.024)**
Reform index	0.158	0.521	0.154	0.476	0.185	0.533	0.150	0.455	0.165	0.493
(log)	(0.047)**	(0.111)**	(0.045)**	(0.102)**	(0.045)**	(0.099)**	(0.045)**	(0.100)**	(0.044)**	(0.097)**
Investment/GDP	-0.024	-0.039	-0.023	-0.036	-0.022	-0.038	-0.024	-0.039	-0.025	-0.040
(log)	(0.013)	(0.016)*	(0.013)	(0.015)*	(0.014)	(0.016)*	(0.013)	(0.015)**	(0.013)	(0.015)**
Inflation	-0.022	-0.008	-0.020	-0.006	-0.023	-0.006	-0.021	-0.008	-0.022	-0.006
(log)	(0.003)**	(0.005)	(0.003)**	(0.005)	(0.003)**	(0.006)	(0.003)**	(0.005)	(0.003)**	(0.005)
$g + n + \delta$	-0.018	-0.027	-0.019	-0.029	-0.021	-0.032	-0.012	-0.023	-0.021	-0.025
(log)	(0.027)	(0.030)	(0.027)	(0.030)	(0.027)	(0.031)	(0.027)	(0.030)	(0.027)	(0.030)
EBRD Inv/GDP	0.001	-0.001								
(log)	(0.001)	(0.001)								
Pub.debt/GDP			0.001	0.001					0.001	0.000
(log)			(0.001)	(0.001)					(0.001)	(0.001)
Priv.debt/GDP			0.002	0.001			0.002	0.000		
(log)			(0.001)**	(0.001)			(0.001)*	(0.001)		
Priv.equity/GDP			-0.002	-0.002	0.000	-0.002				
(log)			(0.001)*	(0.001)*	(0.001)	(0.001)*				
Constant	0.606	0.314	0.638	0.332	0.612	0.275	0.685	0.350	0.553	0.293
	(0.221)**	(0.259)	(0.224)**	(0.261)	(0.222)**	(0.260)	(0.221)**	(0.259)	(0.224)**	(0.256)
Observations	280	280	280	280	280	280	280	280	280	280
R-squared	0.93		0.94		0.93		0.94		0.93	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS

Notes: Significance levels: ** stands for 1% and * is 5%. See text for further details.

Table 3 Cumulative EBRD Investment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log GDP	0.889	0.872	0.898	0.881	0.876	0.868	0.883	0.885	0.899	0.889
(lagged)	(0.024)**	(0.032)**	(0.023)**	(0.029)**	(0.025)**	(0.031)**	(0.023)**	(0.032)**	(0.022)**	(0.028)**
Reform index	0.161	0.764	0.062	0.602	0.163	0.675	0.097	0.805	0.114	0.619
(log)	(0.046)**	(0.142)**	(0.048)	(0.156)**	(0.045)**	(0.119)**	(0.049)*	(0.199)**	(0.043)**	(0.136)**
Investment/GDP	-0.022	-0.050	-0.016	-0.040	-0.021	-0.048	-0.021	-0.053	-0.016	-0.044
(log)	(0.014)	(0.020)*	(0.013)	(0.017)*	(0.014)	(0.018)**	(0.014)	(0.021)*	(0.013)	(0.018)*
Inflation	-0.024	0.007	-0.016	0.003	-0.022	0.005	-0.022	0.005	-0.017	0.006
(log)	(0.003)**	(0.008)	(0.003)**	(0.007)	(0.004)**	(0.007)	(0.003)**	(0.009)	(0.003)**	(0.007)
$g + n + \delta$	-0.022	-0.036	-0.016	-0.022	-0.013	-0.020	-0.015	-0.038	-0.019	-0.027
(log)	(0.028)	(0.037)	(0.026)	(0.032)	(0.028)	(0.035)	(0.028)	(0.039)	(0.026)	(0.033)
EBRD Inv/GDP	0.001	-0.004								
(log)	(0.003)	(0.003)								
Pub.debt/GDP			0.006	0.004					0.006	0.006
(log)			(0.001)**	(0.001)**					(0.001)**	(0.002)*
Priv.debt/GDP			0.003	-0.003			0.003	-0.003		
(log)			(0.001)*	(0.002)			(0.001)**	(0.002)		
Priv.equity/GDP			-0.001	0.003	0.003	0.003				
(log)			(0.002)	(0.002)	(0.002)	(0.002)				
Constant	0.779	0.122	0.814	0.296	0.912	0.317	0.917	-0.032	0.744	0.180
	(0.246)**	(0.355)	(0.236)**	(0.326)	(0.253)**	(0.338)	(0.248)**	(0.420)	(0.228)**	(0.320)
Observations	261	261	261	261	261	261	261	261	261	261
R-squared	0.92		0.93		0.92		0.92		0.93	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS

Notes: Significance levels: ** stands for 1% and * is 5%. See text for further details.

Table 4 EBRD Investment and Reform Index Instrumented

	(1)	(2)	(3)	(4)	(5)
Log GDP	0.782	0.818	0.806	0.935	0.814
(lagged)	(0.070)**	(0.089)**	(0.064)**	(0.041)**	(0.048)**
Reform index	0.818	0.408	0.535	0.302	0.562
(log)	(0.245)**	(0.223)*	(0.204)**	(0.148)	(0.117)**
Investment/GDP	-0.003	-0.032	-0.008	-0.072	-0.013
(log)	(0.033)	(0.042)	(0.036)	(0.026)**	(0.023)
Inflation	-0.004	0.011	-0.007	0.005	-0.006
(log)	(0.010)	(0.016)	(0.012)	(0.009)	(0.006)
$g + n + \delta$	-0.098	-0.033	-0.107	0.008	-0.016
(log)	(0.064)	(0.094)	(0.073)	(0.045)	(0.035)
EBRD Inv/GDP	-0.052				
(log)	(0.027)				
Pub.debt/GDP		-0.006			-0.006
(log)		(0.009)			(0.003)
Priv.debt/GDP		0.018		0.015	
(log)		(0.011)		(0.006)*	
Priv.equity/GDP		-0.017	-0.024		
(log)		(0.013)	(0.010)*		
Constant	0.677	0.891	0.655	0.494	0.926
	(0.504)	(0.854)	(0.611)	(0.367)	(0.425)*
Observations	261	261	261	261	261
R-squared					
	2SLS	2SLS	2SLS	2SLS	2SLS

Notes: Significance levels: ** stands for 1% and * is 5%. See text for further details.

Table 5 Effect of EBRD Investment on Reform Index

	(1)	(2)	(3)	(4)	(5)	(6)
EBRD Inv/GDP	0.019	0.024				
(log)	(0.005)**	(0.004)**				
Democracy idx	0.216		0.221	0.227	0.267	0.248
(log)	(0.049)**		(0.043)**	(0.043)**	(0.050)**	(0.050)**
Pub.debt/GDP			0.003			0.004
(log)			(0.002)			(0.002)*
Priv.equity/GDP			-0.002		0.000	
(log)			(0.001)		(0.001)	
Priv.debt/GDP			0.011	0.011		
(log)			(0.001)**	(0.001)**		
Constant	0.748	1.055	0.761	0.75	0.647	0.704
	(0.070)**	(0.010)**	(0.065)**	(0.061)**	(0.071)**	(0.072)**
Observations	275	275	275	275	275	275
R-squared	0.16	0.10	0.34	0.32	0.11	0.12
	OLS	OLS	OLS	OLS	OLS	OLS

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

Table 6 Effect of EBRD Investment on Democratization

	(1)	(2)	(3)	(4)	(5)
EBRD Inv/GDP	0.024				
(log)	(0.006)**				
Pub.debt/GDP		0.006			0.006
(log)		(0.002)*			(0.002)**
Priv.equity/GDP		0.002		0.003	
(log)		(0.002)		(0.002)	
Priv.debt/GDP		0.002	0.003		
(log)		(0.002)	(0.002)		
Constant	1.418	1.444	1.394	1.402	1.427
	(0.012)**	(0.022)**	(0.011)**	(0.016)**	(0.018)**
Observations	275	275	275	275	275
R-squared	0.06	0.04	0.01	0.01	0.03
	OLS	OLS	OLS	OLS	OLS

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

Table 7 Simple Three-Way Granger Causality

	(1) EBRD Inv (log)	(2) Reform (log)	(3) Growth (%)
EBRD Inv/GDP	0.077	0.003	0.065
(log, lagged)	(0.024)**	(0.001)**	(0.080)
Reform index	0.550	0.317	7.489
(log, lagged)	(0.409)	(0.016)**	(1.358)**
Growth	0.022	-0.001	0.362
(%, lagged)	(0.015)	(0.001)	(0.048)**
Constant	-0.898	1.268	8.368
	(0.303)**	(0.012)**	(1.245)**
Observations	274	299	298
R-squared	0.17	0.79	0.53

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

Table 8 Full Effect of EBRD Investment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log GDP	0.889	0.9	0.88	0.888	0.896	0.889	0.899	0.879	0.888	0.895
(lagged)	(0.024)**	(0.026)**	(0.024)**	(0.024)**	(0.026)**	(0.024)**	(0.026)**	(0.024)**	(0.024)**	(0.026)**
Aut. Reform 1	0.177	0.139	0.143	0.144	0.156					
(log)	(0.048)**	(0.046)**	(0.046)**	(0.046)**	(0.046)**					
Aut. Reform 2						0.161	0.129	0.131	0.134	0.141
(log)						(0.046)**	(0.044)**	(0.044)**	(0.044)**	(0.044)**
Investment/GDP	-0.022	-0.027	-0.015	-0.022	-0.023	-0.022	-0.027	-0.015	-0.022	-0.022
(log)	(0.014)	(0.015)	(0.014)	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.014)	(0.015)
Inflation	-0.024	-0.024	-0.027	-0.024	-0.026	-0.024	-0.024	-0.027	-0.024	-0.026
(log)	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**
$g + n + \delta$	-0.021	-0.028	-0.029	-0.022	-0.029	-0.022	-0.028	-0.029	-0.022	-0.029
(log)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
EBRD Inv/GDP	0.005					0.004				
(log)	(0.003)					(0.003)				
Priv.debt/GDP		0.002		0.002			0.002		0.002	
(log)		(0.001)*		(0.001)*			(0.001)*		(0.001)*	
Priv.equity/GDP		-0.001	-0.001				-0.001	-0.001		
(log)		(0.001)	(0.001)				(0.001)	(0.001)		
Pub.debt/GDP		0.001			0.001		0.001			0.001
(log)		(0.001)			(0.001)		(0.001)			(0.001)
Constant	1.046	0.952	1.08	1.052	0.978	1.048	0.957	1.081	1.052	0.984
	(0.229)**	(0.237)**	(0.229)**	(0.227)**	(0.240)**	(0.229)**	(0.238)**	(0.230)**	(0.228)**	(0.241)**
Observations	261	261	261	261	261	261	261	261	261	261
R-squared	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS

Notes: Significance levels: ** stands for 1% and * is 5%. See text for further details. Aut. Reform 1 and 2 are measures of autonomous reform constructed as the residual from regressions reported columns (1) and (2) of Table 5, respectively. See text for further details.