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Linkages Between Political and Economic Reforms in Post-Communist Countries

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Abstract:

This paper analyses the interaction between the political and economic reforms undertaken in post-communist countries since the early 1990s. The empirical investigation uses panel data from 27 transition countries for the period 1991 to 2005. Democratisation has led to market economic reforms, while the extent of economic reforms has not had any discernable effect on political developments. Macroeconomic performance has had little or no effect on political and economic reforms, while wars and civil strife have held back both kinds of reforms. Initial conditions have played an important role regarding the outcome of the transition: large macroeconomic distortions and a low development level have produced less democratisation and fewer market economic reforms. The prospect of EU membership has reinforced democratisation but has slowed economic reforms in the applicant countries.

Keywords: transition, economic reform, political reform

JEL classification: O52, P24

1. Introduction

The communist countries were characterised by repressed political systems, with the communist party in a predominant role and economies based on government ownership of the means of production combined with some form of central planning. The transition process started when the communist parties lost their will – or ability – to retain their dominant roles, in many cases in connection with the break-up of multiethnic states.

The dual transition of political and economic structures has advanced very differently across the almost 30 countries emerging from the former Eastern Bloc. The Baltic and the Central European countries moved quickly to introduce

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1 This paper builds in part on previous research done with Rune Holmgaard Andersen. I would like to thank Aurelijus Dabusinskas, Jaanika Merikull and an anonymous referee of this journal for valuable comments on earlier drafts. All remaining errors are the author's responsibility. The views expressed are those of the author and do not necessarily represent those of the institutions to which he is affiliated. Address: Research Department, Bank of Estonia, Estonia pst 13, 15095 Tallinn, Estonia. Tel.: +372 6680926, fax +372 6311240, e-mail: karsten.staehr@epbe.ee.

democracy and market-based economies. These countries have become members of the European Union and have developed political and economic systems that do not differ fundamentally from those in the West European member states. At the other extreme, most of the Central Asian transition countries have retained authoritarian regimes and few market economic reforms have been implemented. Between these extremes there are groups of countries where the transition process is still unfolding. Many of the transition countries in the Balkan region have experienced civil war, with the result that political and economic reform was stunted for years. The core Slavic countries have seen both political and economic upheavals; since its financial collapse in 1998, Russia has moved towards more authoritarian rule and more state interference in the economy. The Caucasus region has proven volatile in both political and economic terms.

The "guided tour" above suggests that there has been no conflict between political and economic reforms in post-communist countries: countries with democratic systems have restructured their economies, while countries with authoritarian rule have retained a large degree of government interference in the economy.

At the beginning of the transition process in the early 1990s, it was by no means clear that political reforms would co-exist easily with market-based economic reforms. The Southeast Asian tiger economies as well as Chile in Latin America modernised their economies during decades of (semi-)authoritarian rule before eventually introducing democratic means of government (Armijo *et al.* 1994). A possible rationalisation of this pattern was that authoritarian governments could implement policies in the interest of the common good and withstand pressure from business and the public at large for preferential treatment. In this rendition there exists a trade-off or incompatibility between democratic rule and fundamental reforms of the economy with payoffs only occurring years into the future.

The finding that the transition economies have not followed the pattern in Southeast Asia and Latin America is now established in the literature (Bunce 2001). Democratic and economic reforms have not proven mutually exclusive in post-communist countries. The linkages and the dynamic interaction between democratisation on the one hand and economic reforms on the other hand have received much less attention, especially in the empirical literature, with Fidrmuc (2003) as a prime exception.

This paper sets out to investigate in some detail the links between democratisation and market economic reforms. The main topic of investigation is how political and economic reforms have affected each other over time; i.e. have political reforms led to economic reforms, have economic reforms led to political

reforms, or have both occurred? The second topic concerns other variables that help explain political and economic reforms. In particular, how do initial conditions, macroeconomic developments and institutional anchoring in the form of prospective EU membership affect the reform process?

The empirical analysis employs a panel of data from 27 transition countries for the period 1991 to 2005. The results from simple Granger causality tests, single-equation panel regressions with many covariates and panel data cointegration analyses are broadly in concurrence: democratisation has led to market economic reforms, while the extent of economic reforms has not had any discernable effect on political developments. Overall, political reforms are to a large extent autonomous in relation to economic reforms and macroeconomic developments in post-communist countries, while unfavourable initial conditions, civil strife and political isolation from the West have proven detrimental to political liberalisation. Market economic reforms have been aided by democratisation and favourable initial conditions, but have been held back by war and civil strife.

The paper extends the study by Fidrmuc (2003) in several directions: i) the sample endpoint is extended from 2000 to 2005; ii) additional control variables are employed; iii) the importance of initial conditions is assessed and tested explicitly; iv) the time series properties of the main variables are examined; v) possible econometric problems from an estimation of panels with lagged endogenous variables are addressed; vi) the results with respect to dynamic linkages between political and economic reforms are replicated using panel-based error-correction econometrics. The main contributions of this paper are to show the importance of initial conditions, the unimportance of macroeconomic variables and the robustness of the results with respect to the linkages between the two reform elements.

This paper is structured as follows. Section 2 briefly reviews the literature in the field. Section 3 gives an overview of the dual transition as captured by numerical indices for political and market economic reforms. Section 4 analyses the dynamic properties of the selected indices. Section 5 presents panel data models of the determinants of political and economic reforms respectively. Section 6 uses co-integration and error-correction analysis to assess in more detail the dynamics of the political and economic reforms. Section 7 concludes.

2. Literature Overview

The importance of the links between political and economic change has been acknowledged for centuries. The first writings within economics placed great emphasis on political economy issues (e.g. Ricardo 1817). Investigation of the links between political and economic organisation gained momentum after the

Second World War, partly motivated by decolonisation and the containment of communism. The modernisation theory was an important contribution with its claim of a positive correlation between democracy and economic modernisation (Lipset 1959).[2]

The third wave of democratisation set off in Southern Europe in the 1970s, moved to Latin America and Asia in the 1980s and culminated in post-communist countries in the 1990s (Diamond 1999, ch. 2). The third wave of democratisation brought renewed impetus to the field. The literature can be broadly divided into two camps, i.e. contributions that focus on possible tensions between democratisation and economic reform and contributions that argue that democratisation and economic reform are compatible (Bunce 2001).

Armijo *et al.* (1994) belong to the camp that is sceptical of a simultaneous implementation of political and economic reforms. Their main argument is that market economic reforms are likely to reduce production in the short term, and that economic hardship will undermine public support for further reforms (see also UNDP 1999). Based on experiences from Latin America and Southeast Asia, Armijo *et al.* (1994) suggest two possible solutions. One is an "economy first strategy", where economic reforms are implemented prior to democratic reforms. The other solution is a "policy first strategy", where democratic reforms predate economic reforms and the economic transformation is halted until democracy has consolidated and become robust.

The argumentation in Armija *et al.* (1994) and related work (see Bunce 2001) rest on the assumption that the electorate cast their votes based on short-term concerns and disregard their long-term interest. It is, however, possible to establish in rational choice models the argument that democracy leads to a *status quo bias* where socially beneficial reforms are postponed or abandoned altogether. Alesina & Drazen (1991) develop a model where *ex ante* uncertainty with respect to the distribution of the long-term gains from reforms leads to a war of attrition over the distribution of the short-term costs of reforms. The result is that economic reforms that benefit everybody in society do not gain electoral support and are postponed in a war of attrition.

Another example regards reforms that are potentially Pareto improving, but beneficial to parts of the electorate while harming others. *Ex ante* uncertainty of the distribution of winners and losers can lead the majority of the electorate to prefer the status quo and hence vote against potentially Pareto improving reforms

2 Acemoglu *et al.* (2005) cast doubt on this claim by showing that the correlation between income and democracy ceases to exist when adequate country-specific controls are included. This result is supported by the finding that *changes* in income and democracy during the period 1970-95 are uncorrelated in a sample including all countries that were independent in 1970.

(Fernandez & Rodrik 1991). This result holds even when the voters are risk neutral. Consider the case where a minority of voters knows for sure that they will gain from reforms, while the majority of voters *ex ante* are uncertain whether they individually will win or lose. To gain a majority for reforms, some of the uncertain voters must vote for reforms, but all uncertain voters may vote against them if the *expected* payoff from reforms for this group of voters is below the payoff from the status quo.

The status quo bias can be reduced or eliminated if there exists a credible mechanism or institution that redistributes parts of the winners' gains in order to compensate the losers. It has been argued that democracy may actually reduce public resistance to economic reforms with *ex ante* uncertainty because a democracy is inclusive: democratically elected decision-makers will take into account the welfare of a large part of the population and the voters may therefore expect that the losers of reform will be compensated, which again implies that they will not resist the reforms (Olson 1993).

A number of theories suggest that democratisation and economic reforms are compatible. Acemoglu & Robinson (2006) formalise several of the positions of the modernisation theory. Economic reforms leading to an advanced market economy will make it more difficult for the governing elite to repress the majority, partly because the market economy requires the involvement and active participation of the public. Repression will thus be disproportionately expensive in an advanced market economy and it is therefore beneficial for the elite to accept democratic rule. The upshot is that democratisation and market transformation will co-exist.

Related theories focus on the importance of formal institutions in a market economy (North 1990, Shleifer 1997). The state holds a central position in the transition process by setting the "rules of the game" and by redistributing resources in the economy. Individuals and firms have an incentive to engage in "rent seeking" through the bribery of politicians and officials or through less direct means of coercion of the decision-making process. Rent seeking is facilitated by an economy with large government intervention, and individuals and firms engaged in enriching themselves via rent seeking will therefore oppose market economic reforms. Democracy and public participation in the decision-making process will likely reduce the extent of corruption and rent seeking, as politicians and other officials are more likely to be exposed and punished for their misdeeds (Aslund 2002, ch. 9; EBRD 1999, ch. 5). This argumentation implies that democracy will weaken the powers of rent-seeking individuals and firms and hence facilitate market economic reforms.

The number of empirical studies using formal econometric methods to examine the linkages between political and economic reforms in post-communist

countries is limited. de Melo *et al.* (1996) is an early study which uses panel data to show that political and economic reforms are closely correlated in transition countries, although the authors do not attempt to uncover any causal links. They find that an absence of armed conflicts and an initial high development level advance democratic reform. Falcetti *et al.* (2005) use panel data for the period 1989-2003 and show that democracy is positively correlated with economic reform, although the correlation is strongest at the beginning of the transition process. They also do not attempt to establish the direction of causality.

Dethier *et al.* (1999) use panel data and also find that democratic reforms are positively correlated with economic reforms in post-communist countries. They show, however, that the relationship to a large extent stems from underlying factors like the countries' initial conditions. Countries that have undertaken democratic reforms have had favourable initial conditions, and the favourable initial conditions have also affected the economic transformation positively. They also show that foreign economic support is positively correlated with the extent of economic reform.

Fidrmuc (2003) uses panel data from 25 transition countries for the period 1990-2000 to examine how political and economic reforms interact. He finds that political reforms Granger cause economic reforms, but that the opposite is not the case. (Granger causality entails that the cause predates the effect and helps predict it.) This result is robust to the inclusion of a limited number of control variables.

Kwon (2004) shows using panel data that while economic reform has been unimportant for the development of democracy in post-communist countries, economic reform has tended to *impede* democratisation in Latin American countries. Kwon (2004) proceeds to show that within post-communist countries, economic reforms have contributed to democratisation in the countries that liberalised their economies at an early stage, but not in other transition countries. The sample sizes are, however, very small and few control variables are included.

Several empirical studies seek to incorporate explicitly voting behaviour and institutional factors of policy-making when analysing the pattern of political and economic reforms (see also the discussion in Bunce 2003). Kitschelt (2001) shows that initial conditions are important explanatory variables for economic reform in post-communist countries, while political institutions have played only a limited role.

Norgaard (2000, ch. 5) uses cross-sectional data and concludes that the extent of economic reforms is correlated with the countries' initial conditions, but not with measures of public support for economic reforms. Wykoff (2001) finds, using a sample of six transition countries, that the implemented economic reforms in large part reflect the voting of the public, which again is explained by initial

conditions. Kostadinova (2004) employs cross-sectional data on a wider set of post-communist countries and reaches similar conclusions. The initial conditions determining voting behaviour are the length of communist rule, the dominating religion and the (physical) distance from Western Europe.

Kim & Pirttila (2003) find that unemployment and inequality reduce the support of the population for further economic reforms. Their findings suggest that economic reforms that are beneficial in the long term but bring about economic hardship in the short term will not gain support from the electorate. In other words, democracy may reduce the likelihood of market-based economic reforms being carried out. Fidrmuc (2000) also finds that voters cast their vote for parties either supporting or opposing economic reforms in ways reflecting their individual economic situation.

In sum, from a conceptual viewpoint democracy and market-based reforms can be in conflict as well as mutually compatible. The empirical evidence shows that the two types of reforms are positively correlated in post-communist countries, but the dynamic interaction of political and economic reforms is little-researched.

3. Reforms in Post-Communist Countries

In spite of all the Eastern bloc countries being governed by communist parties, there were substantial differences across their political and economic systems (Aslund 2002: ch. 2). After the fall of communism the politicians in power in all of the countries declared their intention to create a new social order based on democracy and market economic principles. It is outside the scope of this paper to provide even an overview of the ensuring dual transition; the complexities and variations across countries and time are simply too large. We instead present summary indices giving a broad picture of developments from the late 1980s until 2005. (See Appendix for sources and a detailed description of data.)

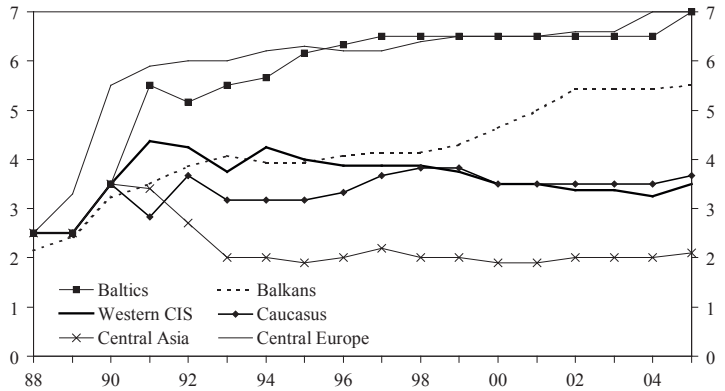
The independent think-tank "Freedom House" annually publishes two indexes depicting, respectively, political rights and civil liberties of the public in almost all countries in the world (Freedom House 2006). The two indices are closely correlated. We have constructed the index FH as 8 minus a simple average of the two Freedom House indexes. The FH index lies in the interval from 1 to 7. A higher index implies that democratic and civil rights are observed to a larger extent. According to Freedom House a country is "free" if its FH is in the interval 5-7, "partly free" if FH is in the interval 3-4.5 and "not free" if FH is in the interval 1-2.5.

To ease the presentation, we divide the 27 post-communist countries in our sample into 6 geographically demarcated regions:

- *Baltics* – Estonia, Latvia, Lithuania.
- *Central Europe* – Poland, the Czech Republic, Slovakia, Hungary, Slovenia.
- *Balkans* – Bosnia-Herzegovina, Croatia, Macedonia, Serbia and Montenegro, Albania, Bulgaria, Romania.
- *Western CIS* – Russia, Belarus, Ukraine, Moldova.
- *Caucasus* – Armenia, Azerbaijan, Georgia.
- *Central Asia* – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.

Figure 1 shows the dynamics of the FH index for each of the six country groups during the period 1988-2005. The Central European and Baltic country groups democratised quickly and had on average "free" political systems already at the end of 1991. Political reforms only gained momentum in the group of Balkan countries after the end of the Yugoslavian civil war at the beginning of the 21st century. The Central Asian countries have retained autocratic rule comparable to the level in the Soviet Union at the end of the 1980s. The groups of Western CIS countries and Caucasus countries are situated between these extremes. The increasingly authoritarian rule in Belarus and Russia is evidenced by a gradual lowering of the FH index for the group of Western CIS countries since 1994, only interrupted in 2005 when the democratisation following Ukraine's Orange Revolution lifted the index.

Figure 1: Democracy index FH for regional groups of post-communist countries, 1988-2005



Notes: FH is calculated as eight minus the average of indices for political rights and civil liberties. The minimum 1 indicates few democratic rights, while the maximum 7 indicates many democratic rights.
Source: Freedom House (2006), own calculations.

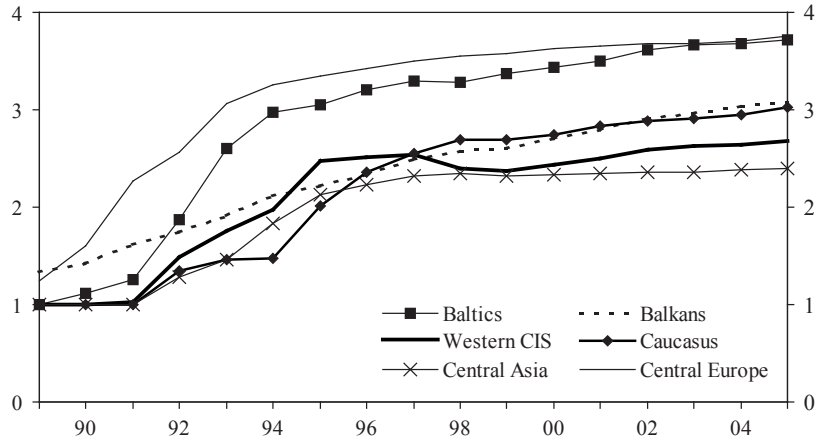
The countries emerging from the Eastern bloc commenced their economic reforms from different starting points in terms of development level, macroeconomic distortions, previous reform efforts and degrees of economic crisis (de Melo *et al.* 1996). Broad-based market economic reforms were initiated in January 1990 when Poland brought in a major reform package, followed the same year by countries emerging from Yugoslavia. Several Central European countries followed in 1991, while the countries emerging from the Soviet Union largely began their economic reforms in 1992 (Fischer & Sahay 2004).

The market reforms were to some degree inspired by the experience from Latin America, where many counties had implemented such reforms during the 1980s (Blanchard *et al.* 1991). A reform package customarily consisted of four main reform areas (Aslund 2000, ch. 5-8):

- Liberalisation of production, trade and prices.
- Inflation stabilisation.
- Privatisation of, respectively, small and large firms.
- Structural reforms, institution building and underpinning of markets.

Figure 2 shows – for each of the six country groups – an aggregate economic reform index, which has been labelled EBRD in recognition of the data source. The index is a simple average of eight indices capturing the extent of liberalisation, privatisation and structural reforms as reported in the annual *Transition Report* from the European Bank for Reconstruction and Development (see also Appendix). The minimum value 1 corresponds to a situation with no market reforms, while the maximum value 4.33 signifies that institutions and governance correspond to "best practice" levels in market economies. (Values above 4 are infrequent.)

Figure 2: Aggregate economic reform index EBRD for regional groups of post-communist countries, 1989-2005



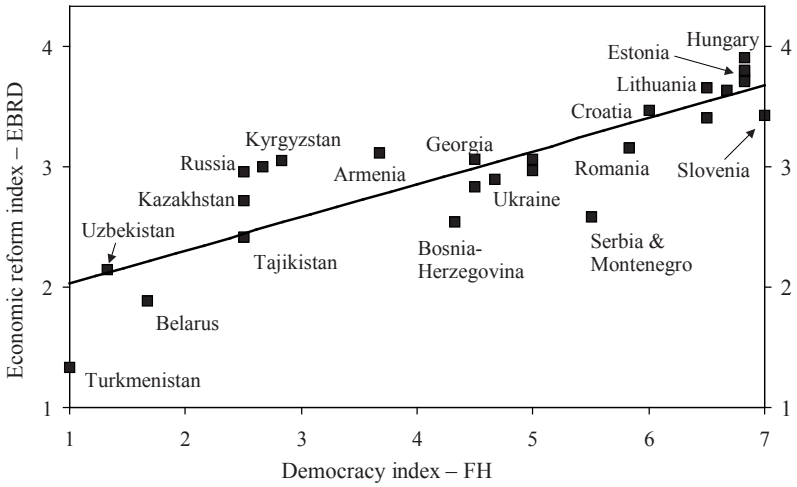
Notes: EBRD is an unweighted average of eight reform indices. The minimum 1 indicates no market reforms, while the maximum 4.33 indicates "best practice" in a market economy.
Source: EBRD (1994-2005), own calculations.

Already before the reform process began, there were countries with an aggregate economic reform index above 1, i.e. with some elements of market principles in the economy. The reform intensity in the Baltics and Central Europe has been markedly higher than in the other regions, especially in the beginning of the reform process. The index for Western CIS dived after the Russian financial crisis in 1998. The groups of countries comprising the Balkan and Caucasus regions have attained steady but relatively slow reform progress. The Central Asian group of countries have effectively not undertaken any market reforms since 1995.

In comparing Figures 1 and 2 it is apparent that the FH and EBRD indexes for the six country groups move together. In Figure 3 the 2003-05 average of the democracy index FH is plotted against the 2003-05 average of the aggregate economic reform index EBRD for each of the 27 transition countries.

There is a positive correlation between the levels of democracy and economic reform in the transition countries. It is noticeable, however, that among the countries which in 2003-05 had an average EBRD around 3, there were countries having a democracy index FH within the entire range from 2.5 to 6. Moreover, the pattern of correlation in Figure 3 does not yield information on causal linkages, i.e. whether democratisation leads to economic reforms, whether economic reform leads to democratisation, or whether underlying factors affect both variables.

Figure 3: Democracy and economic reform indices in 27 post-communist countries, 2003-05 averages of FH and EBRD



Sources: Freedom House (2006) and EBRD (1994-2005), own calculations.

4. Data Properties and Granger Causality Tests

We start our empirical investigation of the links between political and economic reforms by examining the time series properties of the main variables used in the empirical analysis. It is not clear from Figures 1 and 2 whether the democracy index FH and the economic reform index EBRD are stationary or unit root series. Formal testing is required to address this question.

We will in later regressions include variables for GDP change measured as a percentage change per year, GY. We will sometimes refer to this variable as economic growth, but the annual frequency and the short time span mean that the variable GY should be thought of as year-to-year changes in the production volume rather than any long-term growth trend. A variable depicting consumer price inflation is also included. The inflation rate was extremely high in many transition countries in the early and mid-1990s. We have therefore applied the logarithm to the percentage inflation rate (plus 100), and labelled the resulting inflation variable LΠ.

Table 1 shows a summary of five different panel unit root tests for the variables FH, EBRD, GY and LΠ. The tests are essentially standard multiple-series unit root tests that have been used on panel data structures. As frequently observed with panel unit root tests, the results of different tests are not in full accordance.

The overall result is that the null hypothesis of a unit root is rejected for all four variables, suggesting that the panel data series are stationary. In the cases of FH, EBRD and GY one or more of the tests are not able to reject the null hypothesis of a unit root.

Table 1: Panel unit tests, 27 transition countries, 1990–2005

	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)
	Levin Lin Chu[a)]	Breitung[a)]	Im Pesaran Shin[b)]	Augmented DF Fisher χ^{2} [b)]	Phillips Perron Fisher χ^{2} [b)]
FH	–15.73***	–1.12	–10.19***	428.6***	447.5***
	[0.000]	*[0.132]*	*[0.000]*	*[0.000]*	*[0.000]*
EBRD	–21.05***	1.35	–11.58***	152.8***	333.9***
	[0.000]	*[0.912]*	*[0.000]*	*[0.000]*	*[0.000]*
GY	-4.28***	-4.32***	-1.72***	70.1***	54.2
	[0.000]	*[0.000]*	*[0.042]*	*[0.068]*	[0.468]
LП	-18.58***	-4.21**	-12.12***	136.2***	125.9***
	[0.000]	*[0.037]*	*[0.000]*	*[0.000]*	*[0.000]*

Notes: The null hypothesis is that the series in the panel contain a unit root. Lag lengths for the Levin Lin Chu, the Breitung, the Im Pesaran Shin and the ADF Fisher χ^{2} test were selected automatically using the Schwarz Information Criterion. The bandwidths in the kernel estimations of the Levin Lin Chu and the Phillips Perron Fisher χ^{2} tests were chosen automatically using the Newey-West method. The test statistics follow an asymptotically normal distribution with the exception of the Fisher tests where the test statistic follows an asymptotic χ^{2}-distribution. The probability of the null hypothesis not being rejected is shown in square brackets below the coefficient estimate. ***, ** and * signifies, respectively, that the null hypothesis of a unit root is rejected at the 1%, 5% and 10% confidence level.

a) The test assumes a common unit root process across the countries.

b) The test assumes an individual unit root process for each country.

The relatively small number of observations along the time dimension and the well-known reliability problems of panel unit root tests may explain the somewhat mixed results. In the following analyses we will generally presume that FH and EBRD are stationary series, but also consider the consequences of the series having a unit root. The results in Table 1 are qualitatively unchanged if the sample is shortened by excluding the early transition years. Changes to the estimation methods, e.g. by setting lag lengths equal to 1, affect the results only marginally.

To explore the time series properties further and to commence the testing of linkages between political and economic reforms, Table 2 presents tests for Granger causality between FH and EBRD using different samples. FH(–1) ⇏

EBRD signifies the null hypothesis that the variable FH does not Granger cause the variable EBRD, i.e. that the lagged value of FH does not help explain EBRD beyond a lag of EBRD. Correspondingly, EBRD(–1) ⇏ FH means that EBRD does not Granger cause FH. The tests are carried out using one period lags to conserve degrees of freedom, but the results are qualitatively similar if two lags are used.

Table 2: Granger causality tests, 27 transition countries, 1991–2005

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)
	91-05	91-97	98-05	91-91	92-92
FH(–1) ⇏ EBRD	106.80***	41.56***	23.27***	32.34***	17.88***
	[0.000]	*[0.000]*	*[0.000]*	*[0.000]*	*[0.000]*
EBRD(–1) ⇏ FH	0.08	0.52	0.56	0.06	2.09
	[0.783]	*[0.474]*	*[0.453]*	*[0.806]*	*[0.161]*
ΔFH(–1) ⇏ ΔEBRD	66.18***	31.23***	7.40***	75.10***	9.26***
	[0.000]	*[0.000]*	*[0.007]*	*[0.000]*	*[0.006]*
ΔEBRD(–1) ⇏ ΔFH	0.13	0.21	0.02	0.01	0.04
	[0.723]	*[0.650]*	*[0.897]*	*[0.942]*	*[0.853]*
Observations	405	189	216	27	27

Notes: The null hypothesis is that the preceding variable does not Granger cause the following variable. The lag length is one period. The test statistics follows an *F*-distribution. The probability of the null hypothesis not being rejected is shown in square brackets below the coefficient estimate. ***, ** and * signifies, respectively, that the null hypothesis is rejected at the 1%, 5% and 10% confidence level.

The null hypothesis that the democracy index does not Granger cause the economic reform index is strongly rejected regardless of the sample, while the hypothesis that the economic reform index does not cause the democracy level cannot be rejected. We also examined Granger causation for the time differenced variables ΔFH and ΔEBRD and attained qualitatively similar results: changes in the level of democracy Granger cause changes in the level of economic reform, while changes in economic reform have no impact on changes in the democracy index.

To conclude, the Granger causality tests suggest that democratic reform is a precursor for economic reforms, while economic reforms do not affect the democratic situation in a similar way. These results are not only driven by the rapid changes taking place in Central and Eastern European countries in the early stages of the transition, but also hold at later stages of transition, i.e. 1998–2005.

Economic reforms establishing market-economic relations have been no guarantee against a democratic setback in the transition countries.

5. Panel Data Estimations

This section expands on the results from the Granger causality tests by including a number of covariates and by modelling the reform indices explicitly using panel data econometrics.

We employ a number of covariates. The output growth rate GY and the logarithmic inflation rate LΠ vary a great deal, especially during the early stages of transition. A dummy variable, WAR, takes the value 1 for years in which a country has been exposed to war or civil strife and is otherwise 0. The variable EUAPP takes the value 1 starting from the year a country has applied for EU membership and until the end of the sample, and is otherwise 0. A time trend TT increases linearly from 1 in 1989 to 17 in 2005.

Two time-invariant variables denote the initial conditions of the countries at the onset of the transition process, i.e. around 1990. The variables are composite indices constructed by de Melo *et al.* (2001) using principal component analysis to derive common factors of a large number of variables, *inter alia* income level, urbanisation, natural resource endowment, years under communist rule and administrative experience. The variable INIDL reflects the country's initial industrial, urbanisation and development levels. The variable INIMD reflects the initial macroeconomic distortions and the extent of unfamiliarity with market economic processes. INIDL and INIMD have no observations for Bosnia-Herzegovina and Serbia and Montenegro and these two countries do not appear in the following estimations. A third time-invariant variable, DUDST, measures the distance in 1000 km from Düsseldorf in Germany to the capital of the post-communist country. The variable is sometimes used as a proxy for the extent of cultural and economic closeness to Western Europe (Fischer & Sahay 2004).

Table 3 shows panel data estimations where, respectively, FH and EBRD are regressed on lags of the two variables and the covariates discussed above. Columns (3.1) and (3.2) present the estimation results on models where the time-invariant variables are estimated using pooled OLS.

Table 3. Panel estimation of democracy (FH) and economic reforms (EBRD)

	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)	(3.6)
	FH	EBRD	FH	EBRD	FH	EBRD
FH(–1)	0.78***	0.068***	0.57***	0.053**	0.50***	0.11***
	(0.051)	*(0.013)*	*(0.054)*	(0.016	(0.169)	(0.024)
EBRD(–1)	0.042	0.85***	0.049	0.61**	–0.16	0.86***
	(0.073)	*(0.033)*	*(0.149)*	*(0.061)*	*(0.211)*	*(0.034)*
GY(–1)	–0.0065	–0.0018	–0.0020	–0.0005	0.011	0.00002
	(0.0040)	*(0.0015)*	*(0.0040)*	*(0.0014)*	*(0.0145)*	*(0.0026)*
LП(–1)	–0.107**	0.050***	–0.035	0.021	–0.025	0.078***
	(0.054)	(0.016)	(0.060)	(0.014)	(0.125)	(0.024)
WAR	–0.42***	–0.17***	–0.64***	–0.19***	0.007	–0.24**
	(0.162)	*(0.043)*	*(0.156)*	*(0.038)*	*(0.551)*	*(0.102)*
EUAPP	0.17**	–0.13***	0.34***	–0.13***	0.25	–0.16***
	(0.080)	*(0.028)*	*(0.115)*	*(0.043)*	*(0.378)*	*(0.0445)*
INIDL	0.15**	0.056***	..	..	..	..
	(0.058)	(0.019)				
INIMD	–0.11***	–0.063***	..	..	..	..
	(0.043)	(0.017)				
DUDST	–0.090**	0.040***	..	..	..	..
	(0.044)	*(0.013)*				
TT	–0.018**	0.0018	..	..	..	..
	(0.0090)	*(0.0030)*				
Constant	1.80	–0.12	..	..	..	..
	(0.456)	*(0.11)*				
Country dummies	No	No	Yes	Yes	..	..
Year dummies	No	No	Yes	Yes	No	No
Method	OLS	OLS	OLS/FE	OLS/FE	GMM AB[a)]	GMM AB[a)]
Time sample	91-05	91-05	91-05	91-05	91-05	91-05
R^2	0.93	0.96	0.95	0.98	..	..

Notes: Bosnia-Herzegovina and Serbia and Montenegro are excluded because of a lack of data. White's robust standard errors are shown in brackets below the coefficient estimates. ***, ** and * signifies, respectively, that the null hypothesis of the coefficient being equal to 0 is rejected at the 1%, 5% and 10% confidence level.

[a)] The instruments are lagged values of levels of the dependent variable expanding over time as additional predetermined values become available.

It follows from (3.1) that the extent of democratisation FH exhibits substantial autocorrelation, but does *not* depend on lagged values of the economic reform index EBRD. Among the macroeconomic variables only the inflation rate is significant; higher inflation tends to bring about less democratic rule.[3] The variable for civil strife attains a negative and highly significant coefficient estimate, as would be expected. EU application leads to more democratisation. The Copenhagen criteria for EU expansion stipulate that member countries attain democratic governance; the estimation results suggest that the requirement has had the intended effect and strengthened democracy in applicant countries. The further away the capital is from Düsseldorf, the less democracy is present in the country. We have tried to include separate dummies for the six country groups defined in Section 3. The only significant regional dummy is the one for the Central Asian countries, which attains a negative coefficient (not shown), while the variable DUDST meanwhile changes sign. In other words, the negative relation between the distance to Düsseldorf and democracy relates mainly to the Central Asian countries. The variables depicting the countries' initial conditions are both significant. An initial high development level is positively correlated with political liberalisation, while macroeconomic and administrative distortions have led to less reform.

Column (3.2) shows that the extent of economic reforms, EBRD, also exhibits substantial persistence, but the lagged FH index enters positively and is highly significant. Higher inflation appears to speed up economic reform while economic growth has no effect. Civil strife slows down economic reforms. Application to the EU reduces the level of economic reform as measured by EBRD. This result appears at first glance paradoxical as the Copenhagen criteria also stipulate that membership requires a functioning market economy. Still, large parts of the EU *acquis communitaire* involve increased regulation and more administrative decision-making. It has been argued that EU membership could lead to increased bureaucracy and impede market-conforming economic reform (Gacs 1999, IMF 2000). Our results would support such a view, although it should be remarked that the coefficient is relatively sensitive to changes in the sample.

The coefficient to the distance to Düsseldorf is significant and positive. This suggests that the slow economic reform progress in e.g. the Central Asian countries is *not* the result of the geographical or cultural distance to Western Europe *per se*. This finding is confirmed when the six regional dummies are included (not shown). The regional dummy for the Balkan countries is the only one attaining significance (at the 5%-level) and the coefficient to DUDST is still positive and significant.

3 Economic growth does not appear to have fostered democracy. This result is consistent with the findings in Acemoglu et al. (2005).

The results in (3.1)–(3.2) are robust to a number of specification changes of the panel model. i) The impact of the initial conditions may weaken over time. We have experimented with versions of the estimations in which the initial conditions INIDL and INIMD were replaced as covariates by INIDL·(20 – TT) and INIMD·(20 – TT). Overall, the results (not shown) were little changed, but the new covariates were less precisely estimated. ii) The two macroeconomic variables GY and LΠ are correlated (with a correlation coefficient equal to –0.47 for the sample 1991–2005). Dropping GY(–1) leads the coefficients to LΠ(–1) to be more precisely estimated; dropping LΠ(–1) has no effect on the coefficient to GY(–1) in the FH equation, but makes the coefficient to GY(–1) significant in the EBRD equation. iii) Changes of the sample reveal that the main results survive estimations using even very short samples, but the significance levels – and occasionally also the signs – of especially the macroeconomic variables change with the sample size. The EBRD equation is much more robust to sample shortening than the FH equation.

As a further robustness check, we repeated the estimations but with both country and time specific effects (and with the time-invariant variables removed to avoid perfect collinearity). The results are shown in Columns (3.3)-(3.4). As expected, the autoregressive coefficients drop somewhat, but otherwise the estimated coefficients and standard errors change relatively little with the exception of the coefficients to the lagged inflation, which are now insignificant. The latter result suggests that the inflation variable, which peaked in the early transition phase in most countries, essentially picked up time-dependent variation and otherwise possesses little explanatory power.

Panel data estimations with lagged dependent variables generally imply that OLS estimates will be inconsistent. A number of alternative estimation methods have been suggested, although none are ideal in datasets with few observations (Judson & Owen 1999). Columns (3.5)-(3.6) show the results using the Arellano-Bond one-step estimator. The regression is time-differenced to eliminate country-specific effects and then estimated by GMM using as instruments lagged *levels* of the dependent variable expanding over time as new predetermined values become available. Column (3.5) has only one significant variable, *viz.* the lagged dependent variable. The unsatisfactory statistical properties are likely the result of the lagged levels of the discrete FH index being poor instruments in the GMM estimation. Comparing the results in Column (3.6) with those in (3.4) it follows that using the GMM Arellano-Bond method has only little effect in this case.

The overall picture from the panel data estimations is that it is possible to estimate dynamic panel models explaining a large part of the variation in FH and EBRD. Most or all of the coefficients to the covariates introduced have intuitive

interpretations. Overall, the estimations suggest that initial conditions play an important role in the choice of political and economic reforms in post-communist countries. Civil strife sets back reform, while among the macroeconomic variables only inflation plays a role and the effect is concentrated on the early parts of the sample. Democratisation is an important catalyst for economic reforms, while economic reforms appear to have no effect on the policy reform process.

6. Cointegration and Adjustment

We argued in Section 4 that the time series properties of the panel variables FH and EBRD were difficult to ascertain. Moreover, Figure 3 suggests that the two variables are closely correlated at least during the later stages of transition. To provide additional robustness checks of the analyses above and to ensure that information in the data on the dynamic properties is fully utilised, we seek in this section to estimate a "long-term" cointegrating relationship between FH and EBRD and the adjustment process towards this "long-term" relationship.

The first step entails finding the number of cointegrating vectors between FH and EBRD using the Johansen procedure. In a model with constants in the cointegrating and the adjustment equations, a Trace test clearly rejects the hypothesis that there are no cointegrating vectors (Trace statistic is 84.1 with a 5% critical value equal to 15.5), but the test cannot reject that there is at most one integrating vector (Trace statistic is 1.16 with a 5% critical value equal to 3.84).[4] The Maximum Eigenvalue test also produces the result that there is one cointegrating vector.

Table 4 shows the different results of joint estimation of the cointegrating relationship and the error correcting dynamics for FH and EBRD. Columns (4.1)-(4.2) give the results when no exogenous variables beyond constants are included. Notice that in this sparsely parameterised VECM, the cointegrating relation assumes homogeneity across the cross-sectional dimension as it exhibits the same slope coefficient and the same constant for all countries in the sample. The coefficient to FH(–1) in the cointegrating equation is normalised to 1; the coefficient to EBRD(–1) is estimated very precisely to –3.07 and the constant is 3.33.

4 The critical values are valid for a system without exogenous variables.

Table 4. Cointegration and error correction of FH and EBRD

	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)	(4.6)
Cointegration						
FH(–1)	1.00		1.00		1.00	
EBRD(–1)	–3.07***		–2.37***		–2.47***	
	(0.211)		*(0.227)*		*(0.232)*	
Constant	3.33		1.57		1.82	
Error correction	ΔFH	ΔEBRD	ΔFH	ΔEBRD	ΔFH	ΔEBRD
EC[a)]	–0.014	0.047***	0.0059	0.063***	–0.011	0.064***
	(0.0157)	*(0.0047)*	*(0.0219)*	*(0.0066)*	*(0.0221)*	*(0.0066)*
ΔFH(–1)	0.053	0.043***	0.021	0.028*	0.0002	0.018
	(0.0454)	*(0.014)*	*(0.0492)*	*(0.0148)*	*(0.0493)*	*(0.0148)*
ΔEBRD(–1)	–0.0022	0.22***	–0.051	0.18***	–0.15	0.15***
	(0.134)	*(0.0404)*	*(0.136)*	*(0.0409)*	*(0.138*	*(0.0413)*
ΔGY(–1)	..	..	0.00067	–0.00023	–0.0007	–0.0002
			(0.0038)	*(0.0011)*	*(0.0037)*	*(0.0011)*
ΔLΠ(–1)	..	..	–0.0077	–0.0019	–0.064	–0.0031
			(0.0440)	*(0.0013)*	*(0.0435)*	*(0.0130)*
WAR	..	..	–0.28**	–0.10***	–0.28**	–0.12***
			(0.118)	*(0.0353)*	*(0.116)*	*(0.0349)*
EUAPP	..	..	–0.0022	–0.079***	–0.19**	–0.107***
			(0.0590)	(0.0177)	(0.077)	(0.0231)
INIDL	..	..	..	..	0.069	0.049**
					(0.0563)	*(0.0169)*
INIMD	..	..	..	..	–0.063	–0.049***
					(0.0448)	*(0.0134)*
DUDST	..	..	..	..	–0.036	0.036***
					(0.0358)	*(0.0107)*
Constant	0.058*	0.094***	0.087**	0.13***	0.23**	0.060***
	(0.0331)	*(0.0100)*	*(0.0417)*	*(0.0125)*	*(0.0922)*	*(0.0276)*
Country dummies	No	No	No	No	No	No
Year dummies	No	No	No	No	No	No
Method	VECM	VECM	VECM	VECM	VECM	VECM
Time sample	91-05	91-05	91-05	91-05	91-05	91-05
R^2	0.004	0.39	0.03	0.41	0.07	0.44

Notes: Bosnia-Herzegovina and Serbia and Montenegro are excluded. Standard errors are shown in brackets below the coefficient estimates. ***, ** and * signifies, respectively, that the null hypothesis of the coefficient being equal to 0 is rejected at the 1%, 5% and 10% confidence level.

a) The error correction term, EC, is found from the cointegrating relationship as EC = FH(–1) + α·EBRD(–1) + *Constant*, where α is the estimated coefficient to EBRD and *Constant* is the constant term from the cointegration relationship.

The "short-term" error correction specifications are estimated using time-differenced variables, except for the error correction term EC. The Δ-operator denotes the time difference so e.g. ΔFH = FH – FH(–1). The error correction estimation in Column (4.1) shows that there is no feedback from the "long-term" disequilibrium to short-term changes in FH; overall, the equation has little or no explanatory power. A disequilibrium, however, affects the short-term adjustment of EBRD. A positive EC – resulting from much democratisation and/or little economic reform – leads to more economic reform. ΔEBRD also depends positively on ΔFH(–1) and ΔEBRD(–1). It should be noted that the homogenous cointegration in combination with the absence of country-specific dummies implies that EBRD adjusts so that the *same* long-term relationship holds for all countries. Overall, the picture from applying the Johansen methodology corresponds closely to the findings in sections 4 and 5. Political liberalisation affects economic reform positively, while the reverse causality is small or non-existent.

The somewhat inconclusive results with respect to the integration order of GY and LΠ complicate the inclusion of these variables as covariates. Columns (4.3)-(4.4) show the results when GY and LΠ in *time-differenced form* are added to the previous system along with the dummy variables WAR and EUAPP. The dynamics of the system are unchanged and the only covariates attaining statistical significance are the conflict dummy and the EU application dummy for EBRD. The macroeconomic variables appear unimportant. The coefficients to the EU application dummy attain the signs found previously (Table 3), but the estimated coefficients are insignificant.

We have checked the robustness of the results in (4.3)-(4.4) by including the two macroeconomic variables GY and LΠ without taking time differences, but the variables remain insignificant in both equations and the overall effect on the system is small. We have also included dummies for country-specific effects in the error-correcting specification; it is generally difficult to attain reasonable coefficient estimates in the long-term specification unless the first two or three years of the estimation sample are left out.

The findings above suggest that country-specific effects could be of importance. We have therefore added three time-invariant variables – INIDL, INIMD and DUDST – to the system in (4.3)-(4.4). Columns (4.5)-(4.6) show that the overall dynamic structure of the system is unchanged. As before, macroeconomic variables are unimportant, while the coefficients to the WAR and EUAPP dummies are significant. The time-invariant variables are not significant in the ΔFH equation (although they enter with the previously found sign pattern); the time-invariant variables enter significantly and with the usual signs in the ΔEBRD regression.

It may be useful to assess the implications of the point estimate of the coefficient to EBRD in the long-term cointegrating relationship in Columns (4.5)-(4.6). First, the estimated slope is close to the slope of the straight line inserted in Figure 3. Second, FH lies within the interval 1 to 7, while EBRD lies within the interval 1 to 4.33. It thus seems reasonable that an increase in FH requires a substantially smaller increase in EBRD to restore "long-term equilibrium". Third, if a country with initially severe political repression (FH around 1) introduces comprehensive democracy and FH increases by 5, then the economic reform index EBRD would have to increase by approximately 2 to restore equilibrium in the long term. In other words, the long-term equilibrium suggests that democratisation and the creation of a market economy are closely connected.

The cointegration analysis confirmed previous findings with respect to the short-term adjustment dynamics: that political liberalisation is an important force behind market-based economic reforms, while economic reforms have little impact on political developments. It is possible to obtain a measure of the quantitative importance of the political transformation on economic reforms over time. Assume for concreteness that FH is increased from 1 to 6 in one year. A simulation of the system in (4.5)-(4.6) suggests that such a political change, *ceteris paribus*, increases the economic reform index EBRD by approximately 1.2 points after 5 years and 1.6 points after 10 years. Using the system in (4.3)-(4.4), the effect is somewhat larger. In conclusion, political liberalisation affects economic reforms in a significant way, in both statistical and numerical terms.

It should be underscored that the results to some extent rest on the sample comprising the entire post-communism period. This is not very surprising in light of the rapid changes in post-communist countries. Starting the estimation in later years tends to lower the estimated coefficient to EC and/or increase the estimated coefficient to $\Delta FH(-1)$ in (4.3), with the result that EBRD is less autonomously determined. Still, the overall result remains that EBRD react to disequilibria more than FH does.

We have treated the growth rate GY as exogenous when estimating the systems of FH and EBRD. This followed from preliminary analyses where GY was also incorporated into the cointegration vector as an endogenous variable. We found, however, that GY does *not* cointegrate with any of the other two variables in the system (but – possibly – with itself, i.e. GY is stationary). This is consistent with the fact that the GY series is highly fluctuating and likely to be imprecisely measured: growth in the transition countries was disrupted by the collapse of central planning and control, the break-up of the Soviet Union and Yugoslavia and the erection of trade barriers. The large drops in official registered output in the early phases of the transition process are likely overstated (Aslund 2002: 135-140,

Campos & Coricelli 2002). Similarly, incorporating the logarithmic inflation rate LΠ into the cointegrating vector did not prove successful, and the variable has been treated as exogenous with respect to the variables entering the analysed regression models.

7. Final Comments

The collapse of communism and central planning and the challenges stemming from the dual transition have put the spotlight on possible linkages between political change and economic reform. Knowledge concerning the interplay of political and economic transformation may increase our understanding of ongoing developments in many post-communist countries.

In the early 1990s, experiences from Southeast Asia and Latin America suggested that post-communist countries could have difficulty combining liberal democratic rule and fundamental economic restructuring. This concern was emphasised by theoretical work focusing on public preferences under *ex ante* uncertainty. Evidence from the 1990s proved these concerns unjustified: post-communist countries that introduced democratic rule and civil rights also reformed their economies most thoroughly.

This paper has analysed the dual transition and its dynamics in more detail, with broadly similar conclusions across different econometric methods. Democratisation has preceded market reform, while market reforms do not appear to have affected political developments to any major extent. Macroeconomic performance has only affected political and economic reforms marginally if at all. The most likely effect would be one from high inflation to reduced political freedom, but the effect is imprecisely estimated and unstable over time. Wars and civil strife have an unambiguously negative effect on both political freedoms and economic reforms. The prospect of EU membership appears to have reinforced democratisation, but possibly slowed down economic reforms in applicant countries.

Initial conditions have played a major role in the outcome of the transition. Countries that started with a low level of development have generally retained authoritarian means of government rule and have also introduced few market economic reforms. Likewise, countries are more likely to have undertaken little political and economic reform if they had large macroeconomic distortions in the pre-reform planned economy and were unfamiliar with a market economic system. On the other hand, geography *per se* appears to have played only a minor role in the observed pattern of political and economic reform.

As all empirical investigation in this area, this analysis in this paper is constrained by the short sample, widespread data problems and frequently

changing political and economic fault lines. Still, the main conclusions appear robust and the econometric evidence fits the overall picture of the dual transition well. The westernmost post-communist countries had the most favourable starting points and pursued both political and economic reforms in a process where political reforms added momentum to the economic reform process. The Central Asian republics had less favourable starting points and have remained "trapped" in a state with few political and economic reforms. The remaining post-communist countries in the Balkans, Western CIS and the Caucasus started out with "intermediate" initial conditions. In these countries shocks to internal or external concord and possibly also to economic stability have had a large effect on the implementation of the reforms comprising the dual transition.

Appendix: Variable Description and Data Sources

DUDST — Distance in 1000 km from capital to Düsseldorf, Germany; time-invariant. Source: Fischer & Sahay (2004) corrected and supplemented with data from http://www.timeanddate.com/worldclock/.

EBRD — Aggregate economic reform index, average of 8 indices for: (1) price liberalisation, (2) liberalisation of foreign trade and exchange, (3) small scale privatisation, (4) large scale privatisation, (5) enterprise restructuring, (6) competition policy, (7) reform of banking and interest rate determination, (8) reforms of securities markets and non-bank financial institutions. Source: EBRD (2006).

EUAPP — Dummy variable equal to 1 from the year of EU application; otherwise 0. Source: http://europa.eu/pol/enlarg/index_en.htm.

FH — Index increasing in political rights and civil liberties; calculated as 8 minus the average of the indices for political rights and civil liberties. FH of the Soviet Union is used for the Baltics, Western CIS, Caucasus and Central Asia for 1989-91. FH for Czechoslovakia is used for the Czech Republic and Slovakia for 1989-92. FH for Serbia and Montenegro is used for Slovenia (1988-90), Croatia (1988-90), Bosnia-Herzegovina and Macedonia (1988-91). Source: Freedom House (2006).

GY — Economic growth, % per year. Source: EBRD (2006); selected early observations from EBRD (1994-2000).

INIDL	Index capturing the initial extent of (over-) industrialisation, urbanisation and development level; time-invariant. Source: de Melo et al. (2001); data for Bosnia-Herzegovina and Serbia and Montenegro are missing.
INIMD	Index capturing the initial macroeconomic distortions and the unfamiliarity with market economic processes of the administration and the public; time-invariant. Source: de Melo et al. (2001); data for Bosnia-Herzegovina and Serbia and Montenegro missing.
LΠ	Logarithm to the annual inflation rate in % plus 100. Source: EBRD (2006); selected early observations from EBRD (1994-2000); missing observations for 1989-90 for some ex-Soviet countries have been replaced by corresponding values for Russia; a missing observation for Croatia for 1989 has been replaced by the corresponding value for Serbia and Montenegro.
WAR	Dummy variable equal to 1 for years in which a country has witnessed war or civil strife, otherwise 0. Source: Own coding based on http://www.crisisgroup. org/home/ and http://www.onwar.com/aced/chrono/.

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