Explaining the financial deepening of

transition economies

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Abstract

Many transition economies have undergone processes of financial deepening. This paper examines determinants of two common measures of financial depth: ratios to GDP of M2 and private sector credit. The sample is a panel of 19 countries. Private credit is found to increase with bank reform, securities reform, GDP growth; to diminish with privatisation and inflation. M2 increases with bank reform and growth, but this is largely due the increase in private credit; and diminishes with inflation. The declining state share of banking and reduced non-performing loans are more important than foreign bank ownership for expanding private credit.

Key Words: financial depth, transition, credit.
JEL codes: P30, P34, P52.

1. Introduction

Since the demise of communism many of the transition economies have undergone a process of financial deepening as indicated by increases in the ratio of various indicators of financial activity relative to GDP. There is a considerable empirical literature arguing that greater financial depth raises the long run rate of GDP growth. Theoretical models suggest that this effect is due to financial institutions and instruments lessening market frictions and information problems.

However, against these purported benefits must be set the worry that rapid expansions of finance following liberalisation have often preceded financial crises.

This paper examines the evolution of financial depth in 19 transition economies of Europe and the former Soviet Union[1]. Two indicators of financial depth are employed: the ratios to GDP of M2 and of credit to the private sector. As the latter measure excludes credit to the public sector it is expected to be a more appropriate measure of market driven deepening. A key question is how the determinants of financial depth differ according to the measure used. The explanatory variables include indicators of structural reform, inflation, GDP growth and the budget surplus.

The expectation is that reforms to finance, especially progress on securities provision, impact more on private credit than money holdings. It is also likely that private credit is more responsive to GDP as the public's willingness to borrow and banks willingness to lend increases with economic prospects. These effects are confirmed in the empirical analysis. In addition, though inflation reduces both measures of financial depth, the impact on the M2 measure is considerably greater.

2. Financial Sector Transition

The financial sectors of communist regimes were highly repressed. McKinnon (1973) defines financial repression as a set of qualitative and quantitative restrictions imposed by governments that prevent financial intermediaries from operating at full potential. In communist countries the main means of financial repression was direct government control. Typically the financial system consisted of a state owned savings banks with state owned banks supplying credit to particular economic sectors (see, for example, Bonin et al. 2005 for more detail). No other types of financial institutions were permitted. The rate of interest was maintained at (very) low levels on savings and had little role in centrally directed investment decisions.

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[1] The data set consists of Albania, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, FYR Macedonia, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine. Excluded due to insufficient data are: Armenia, Azerbaijan, Bosnia, Kyrgyzstan, Montenegro, Serbia, Tajikistan, Turkmenistan and Uzbekistan.

With the demise of central planning the financial sector had to cease being passive and become active to mobilise savings, allocate funds for investment and transform risk and maturity. In most countries a two-tier banking system was rapidly created by removing retail bank activities from the central bank. Further progress was then much slower for a number of reasons. Firstly, the purely technical issues of privatising banks, many of which held weak balance sheets. In addition, a prudential regulatory framework had to be created. But secondly, governments may have perceived advantages in maintaining some degree of financial repression to direct credit to certain industries as output and credit collapsed. Furthermore, in the face of worsening fiscal balances governments may be attracted to the increased seigniorage taxation associated with repressed finance.

Though financial reforms lagged reforms such as price and trade liberalisation, from the late 1990s progress accelerated. In some cases financial crises may have stimulated renewed effort[2]. For many countries the requirement to adopt EU regulations and legislation in order to accede to the union would have stimulated reform. Regardless of the motivation, reform has lead to changes within the financial sector that would be expected to increase financial depth. Cottarelli et al (2005) characterise the sequencing of bank reform as follows (1) the recognition that many loans to state owned enterprises should be written off, with the losses transferred to the tax payer; (2) the sale of banks, (3) increased lending to private enterprises[3]. Though they consider only the countries of Central Europe and the Baltic (CEB), the sequence carries over to a number of the countries of the Commonwealth of Independent States (CIS) and South East Europe, though with longer lags in the process. The liberalisation of banking and finance has brought about a number of significant changes to the sector that would be expected to significantly impact upon performance. These include:

Private ownership of banks.

Theoretical reasons for the superiority of privately owned banks follow from the general literature on privatisation, though the literature rarely focuses on financial firms (Clarke et al 2005). State

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[2]Though, arguably, the crisis of 1998 lead Russia to reverse reform
[3]Industry in transition economies depends more on banks than equity for outside financing (Berglof and Bolton 2002).

owned banks are likely to have different objectives to privately owned ones. For example, lending by state owned banks may be for 'social' or 'connected' rather than purely commercial motives. Furthermore, the monitoring of private banks is thought to be more effective than that of state owned banks, particularly via the stock market. La Porta et al (2002) report government ownership to be associated with slower growth of financial intermediation.

Bank privatisation used various means such as vouchers, management buy outs, public offers, and combinations of these. The state often maintained a strategic share, but as figure 1 shows that with the exceptions of Belarus and Moldova the state share is now typically very near to zero. Evidence from transition economies shows some improvement in bank performance, especially efficiency, as the extent of private ownership of banks increases. The effect, though, is strongest when the government fully relinquishes control; privatisation is to strategic investors; permits foreign ownership and increases competition (Bonin et al. 2005, Fries and Taci 2005).

Competition.

The main gains from privatisation could be increased competition. Claessens and Laeven (2004) find that competitiveness in banking is not related to the concentration of the sector. What they do find important is contestability, banking sectors are more competitive the greater the shares of foreign banks and the fewer the restrictions on entry and activity[4].

Foreign banks.

Hungary was first to permit foreign banks on a significant scale. As figure 1 shows foreign banks now dominate the sector in many countries, the exceptions are Belarus, Kazakhstan, Moldova, Russia, Ukraine and Slovenia. Levine (1996) suggests that foreign banks increase bank competition and enable the application of more modern techniques, thereby increasing the quality and availability of financial services. Other evidence shows that foreign banks reduce the likelihood of bank crises (for example, Demirguc-Kunt et al. 1998) and stabilise the banking sector during crisis

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[4] In a theoretical model Pyle (2002) shows that when formal contract enforcement is weak, diffused information can obstruct market development. The author was seeking to explain why in the 1990s private lending in Russia was low despite their being a very great many private banks (in excess of 2000).

episodes (for example, Detregiache and Gupta 2004)[5]. Claessens et al. (2001) find evidence consistent with the presence of foreign banks raising the efficiency of national banking sectors.

According to Cottarelli et al. (2005) financial deepening has advanced furthest in the CEB countries where privatisation, public sector retrenchment (crowding in) and financial market liberalisation started relatively early and advanced further. The privatisation of banks appears to be important, though this effect cannot be distinguished from that of foreign ownership. They find little evidence that capital inflows have been significant factors.

3. Estimation and data

The focus of this paper is on how financial reforms have influenced financial depth. Two measures of financial depth are employed as dependent variable. One is the ratio of bank deposits and currency (M2) to GDP; and the other is the ratio of private sector credit to GDP. The latter has the advantage of excluding lending to the public sector. Figure 2 plots these measures. Generally depth is greater as measured by M2 and the rate of deepening is faster for private sector credit. The CEB countries appear to be financially deeper than those of the CIS.

Cottarelli et al. (2005) model the equilibrium level of private sector credit to gauge whether the rate of financial development was consistent with convergence to 'normal' levels. The model is estimated on a panel of industrial and developing countries. The explanatory variables include the ratio of public debt to GDP, per capital real GDP, inflation (relative to a threshold), an index of overall liberalisation and an index of bank entry restrictions. The parameter estimates are then used to calculate the deviation of the level of financial depth from equilibrium for the CEB in 2002.

In the transition economies attention must be paid to the evolving policy environment. Indices of policy reform are taken from the indices provided by the EBRD. These take values (in intervals of 0.3) from 1 for unreformed to 4.3 for the standards of an advanced market economy.

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[5] Consistent with this line of evidence, Dinger (2009) finds that in transition economies the presence of foreign banks can smooth domestic money market volatility.

Two indices of financial liberalisation are used: bank reform (BK) and securities and non-bank reform (SEC). Figure 3 plots these indices. The general pattern to emerge is for financial reform to have been swifter and more consistent in the CEB compared to the CIS in which policy reversals are not uncommon. Generally bank reform leads. For reasons of parsimony and to gain efficiency, given the reform indices are strongly collinear, an overall index of financial reform (FIN) is employed, calculated as the simple mean of BK and SEC[6].

As the state of the macro-economy is likely to influence financial development the estimating equation incorporates the growth rate of GDP[7], rate of inflation, and the budget surplus[8]. In addition, to control for other reforms the regressions include an index of liberalisation (mean of price and trade liberalisation) and privatisation (the mean of small and large scale privatisation), these are plotted in figure 4.

The sample covers 1995 to 2005. The data used are annual, and taken from the EBRD. Many studies of the relationship between growth and finance use five year averages to reduce the influence of economic cycles to be able to focus on the long run relationship. For this dataset this would lead to a very significant reduction in the number of observations. Furthermore, as the issue is financial deepening over the transition, rather than in the long run, such a procedure is unnecessary. The model takes the form of equation 1.

$$deep_{i,t} = \alpha_0 + \alpha_1 deep_{i,\ t-1} + \alpha_2 in_{i,t} + \alpha_3 dgdp_{i,t-1} + \alpha_4 bsurp_{i,t-1} + \beta_1 fin_{i,t-1} + \beta_2 lib_{i,t-1} +$$
$$\beta_3 priv_{i,t-1} + \varphi_{i,t} + \varphi_i + \varphi_t \tag{1}$$

where, *deep* is the measure of financial depth (either M2 or private sector credit as ratios to GDP), *in* is the rate of inflation (measured in natural logarithms owing to extreme values), *bsurp* is the ratio of fiscal surplus to GDP, *dgdp* is the growth rate of real GDP, *fin* is an index of financial sector reforms, *lib* is an index of market liberalization, *priv* is an index of privatization, *t* denotes

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[6] The correlation of fin with the share of bank assets by the state owned is -0.42, and with foreign owned 0.62.
[7] Many studies use per capita GDP as a measure of welfare, however, as the focus of this paper is not on welfare issues the reduced sample size per capita GDP would impose is best avoided.
[8] For example, Berglof and Bolton (2002) point out that during the1990s high inflation lead to substantial

time, i denotes country, $\varphi_{i,t}$ is an idiosyncratic error term, φ_i is a time invariant error term and φ_t is a country invariant error term.

The lagged dependent accounts for inertia, its presence requires estimation by the Blundell and Bond (1998) estimator for panel data with few observations in the time dimension. This procedure differences the data to remove country fixed effects (φ_i). With the exception of inflation the explanatory variables are lagged one period to allow for delayed responses. As agents experience inflation sooner than the other explanatory variables this variable is not lagged. To test robustness the equations are re-estimated with the inclusion of year dummies[9]. To gain more insight into the role of financial reform the equations are also estimated with FIN disaggregated, that is with the restriction of equal weights on BK and SEC relaxed.

4. Results

The results are reported in tables 1 and 2. The first two columns present results for using the aggregate financial reform index. The second two columns for when this index is disaggregated in the bank and securities components. With regard to the ratio of private credit to GDP (table 1) financial reforms have a statistically positive effect. Contrary to other research, for example Watchel (2001), there is evidence that lagged GDP growth increases financial depth. Privatisation and inflation[10] both reduce this measure of financial depth. These results are robust to the inclusion of year dummies.

Financial reforms have a less robust influence, though positive, on the ratio of M2 to GDP (table 2). The other reforms also have weak influences, positive in the case of liberalisation and negative for privatisation, but the parameters on fin, lib and priv are not statistically significant from zero. The growth parameter is of similar magnitude as for private credit. Inflation is found to reduce

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disintermediation hindering the development of finance. They also point out that fiscal deficits hamper financial development by diverting resources to the state and reducing economic stability.

[9] Initial estimations included both linear and quadratic trends. Neither trend was statistically significant and made no qualitative difference to the results reported below.

[10] This is consistent with Boyd et al. (2001)'s finding that inflation reduces financial depth measured either using M2 or

this measure of financial depth to a greater degree than credit.

Columns 3 and 4 of both tables can be used to test the validity of imposing equal weights on securities and bank reform. In the case of private credit, the imposition of equal weights is admissible. This restriction, however, is not admissible (at the 10% level) in the case of M2. Bank reform strongly raises this measure of depth, where-as the effect of securities reform is insignificant from zero. In the case of credit SEC and BK cannot jointly be excluded, even though in the presence of the year dummies BK is not statistically significant, but note that the point estimate is of similar magnitude to SEC.

A final issue to consider is the influence of the explanatory variables on 'public' money depth, calculated as the difference between M2 depth and private credit depth. When equation (1) is re-estimated using this variable as dependent (excluding year dummies) the coefficient on financial reform is estimated as -2.98 (prob=0.05)[11], and on inflation -0.98 (prob=0.03), other than the lagged dependent variable all other parameters are strongly insignificant from zero (the dgdp parameter is negative). When the financial reform variable is split it is securities rather than banks that accounts for the negative effect, the parameter on BK is 0.09 (prob=0.94), and on SEC is -2.73 (prob=0.02).

Robustness

The robustness of the findings is tested by re-estimating of equation (1) by the Arellano and Bond (1991) method and by splitting the sample. The Arellano and Bond makes little difference to the inferences regarding determinants of either private credit or M2. The sample is split into Western and Eastern sub-samples. For the western sub-sample the earlier inferences regarding the determinants of credit remain valid. This is true of the East except that inflation has an insignificant effect; in addition the effect of financial reforms is much greater than in the west. For M2 the differences are more marked with financial reforms having significantly positive effect in the East but not in the West, and inflation only having a significantly negative effect in the west, in neither region is gdp growth significant, though the point estimates are of similar magnitudes as for private

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private credit.

[11] Prob. Is the probability the parameter in question equals zero.

credit.

A further issue considered is whether the influence of financial reform still holds for other measures of bank reform. For this in equation 1 Fin was replaced by either the shares of bank assets that are privately owned, foreign owned and also proportion of non-performing loans, securities reform was alternately excluded from the regression[12]. The only statistically significant results were that state ownership and non-performing loans both diminish credit to the private sector but increase public money[13].

The possibility of interaction between financial reforms and gdp growth, inflation and the budget surplus was considered. The interaction was modelled by creating the variable $act_{i,t}$, where $act_{i,t} = fin_{i,t} \times Y_{i,t}$, and $Y_{i,t}$ is alternately gdp growth, inflation or budget surplus, $act_{i,t}$ is lagged one period and incorporated into equation 1. Equation 1 is then re-estimated (without year dummies) using M2, private credit and public money as dependent variables. The only statistically significant effect occurs for private credit, in which financial reform is found to increase the responsiveness to gdp growth (point estimate 0.13, prob. 0.01).

5. Conclusion

A broad range of financial reforms is found to be necessary to raise financial depth as measured by credit to the private sector. The significance of securities reform suggests that creditors are concerned about the risks they are undertaking. Of financial reforms, only that of banks significantly influences depth measured using M2. Securities reform is found to reduce a measure of M2 depth that excludes private credit.

There also marked differences in the effects of growth and inflation. Growth of GDP tends to increase credit to the private sector but not m2 once private credit has been excluded. This is consistent with greater prosperity raising demand for more sophisticated financial products.

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[12] The sample excludes Russia when State ownership is an explanatory variable. As the sample size in each case is somewhat smaller than when fin is used only the parameters on the variables that replaced fin will be reported.
[13] These effects are of similar magnitude, around about 0.04 in absolute values, probability values of 0.01 when private

Inflation diminishes depth measured by M2 to a greater extent than the credit measure.

State ownership of banks and non-performing loans tend to reduce credit to the private sector, but have a neutral effect on M2. Foreign ownership appears to be uncorrelated with financial depth. Overall, it appears that liberalising the financial sector stimulates credit to the private sector.

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crdit is dependent variable and 0.1 when public money is dependent.

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Table 1. Dependent variable private credit as % of GDP.

	1	2	3	4
Credit/GDP lagged	0.91*** (0.08)	0.89*** (0.09)	0.90*** (0.08)	0.89*** (0.09)
Fin lagged	4.10*** (1.53)	2.98** (1.46)		
Bk lagged			2.62** (1.22)	1.54 (1.25)
Sec lagged			1.88** (0.78)	1.82** (0.83)
Priv lagged	-1.84* (1.04)	-1.67 (1.09)	-1.69* (0.95)	-1.23 (1.07)
Lib lagged	-0.45 (1.81)	-0.31 (1.57)	-0.91 (1.75)	-0.75 (1.51)
Bsurp lagged	-0.15 (0.15)	0.09 (0.17)	0.16 (0.15)	0.11 (0.17)
Dgdp lagged	0.25** (0.10)	0.22* (0.11)	0.24** (0.09)	0.20* (0.11)
Log Inflation	-0.63* (0.32)	-0.61* (0.35)	-0.66** (0.32)	-0.70** (0.34)
Cons	2.02 (5.56)	2.26 (6.01)	2.64 (5.18)	2.63 (5.37)
Year dummies	No	yes	no	yes
Serial p. value	0.41	0.38	0.42	0.38
NObs	206	206	206	206
Wald	524.90	2271.56	797.85	34960.96
exclusion	n/a	n/a	0.02	0.05
equality	n/a	n/a	0.62	0.85

Notes:
Serial corr. tests the null hypothesis of no second order correlation.
Wald tests the null that the explanatory variables do not jointly explain the dependent variable.
Equality tests if the parameters on BK and SEC are equal. Exclusion tests the joint significance of BK and SEC from zero.
Numbers in brackets are robust standard errors.
***, **, * indicate statistically different to zero at, respectively, 1%, 5% or 10% level.

Table 2. Dependent variable M2 as % of GDP

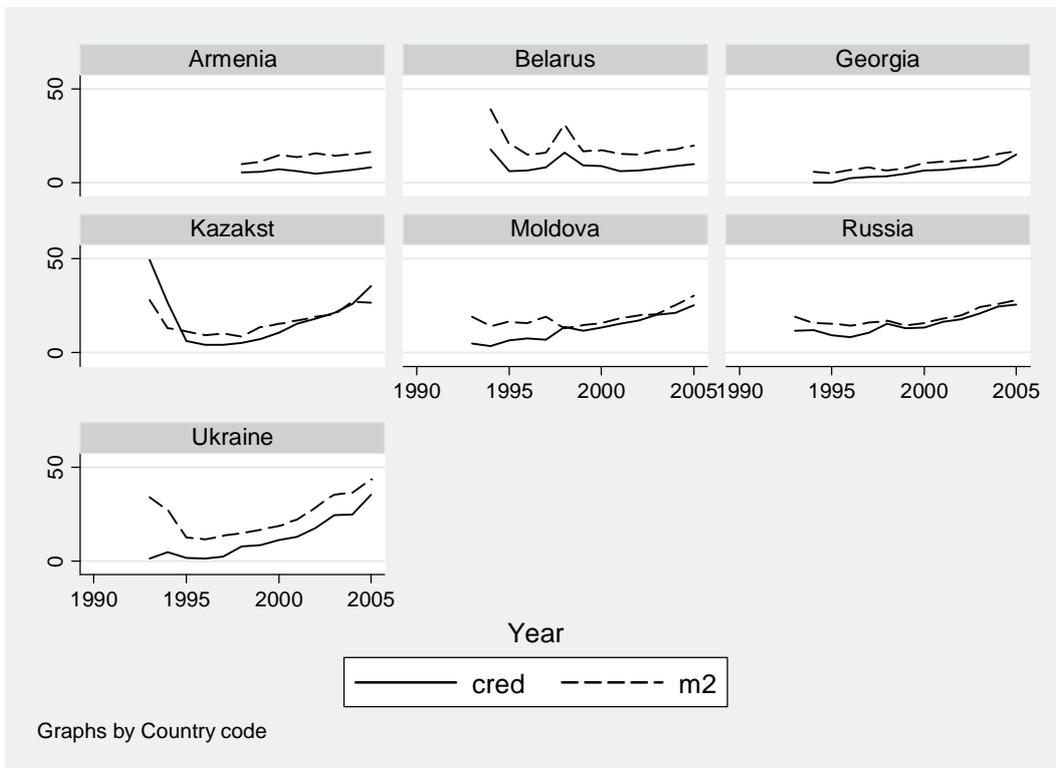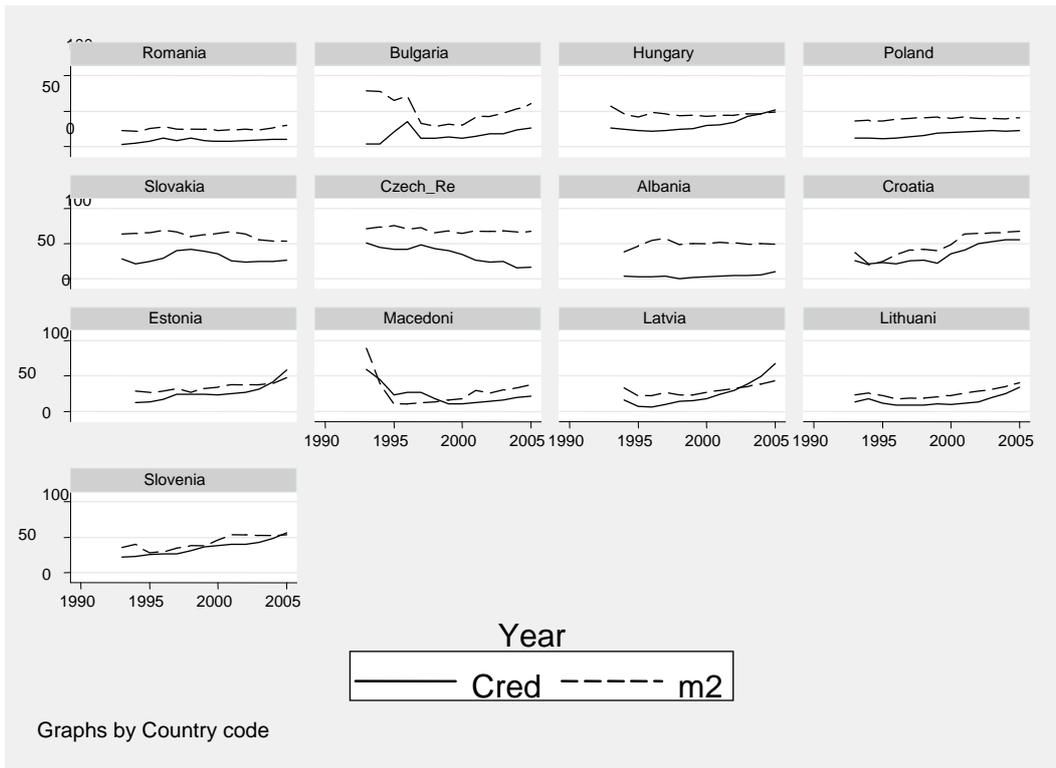|	1	2	3	4
M2/GDP lagged	0.77*** (0.06)	0.77*** (0.05)	0.79*** (0.05)	0.79*** (0.05)
Fin lagged	2.71 (1.73)	2.48 (1.86)		
Bk lagged			3.33** (1.52)	2.91** (1.49)
Sec lagged			-0.29 (1.31)	-0.21 (0.23)
Priv lagged	-1.28 (1.30)	-0.19 (1.84)	-1.51 (1.24)	-0.88 (1.70)
Lib lagged	1.06 (1.34)	0.42 (1.39)	0.19 (1.61)	-0.06 (1.71)
Bsurp lagged	0.02 (0.14)	-0.03 (0.13)	0.02 (0.15)	0.004 (0.15)
Dgdp lagged	0.22* (0.12)	0.22* (0.13)	0.22* (0.13)	0.20 (0.13)
Log Inflation	-1.35*** (0.29)	-1.61*** (0.39)	-1.36*** (0.29)	-1.61*** (0.42)
Cons	4.30 (3.58)	4.81 (3.71)	6.16 (4.17)	6.22 (4.13)
Year dummies	no	yes	no	yes
Serial p. value	0.49	0.38	0.46	0.36
NObs	206	206	206	206
Wald	1387.75	29259.04	1676.76	13000
exclusion			0.09	0.14
equality			0.10	0.11

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Notes, see table 1.
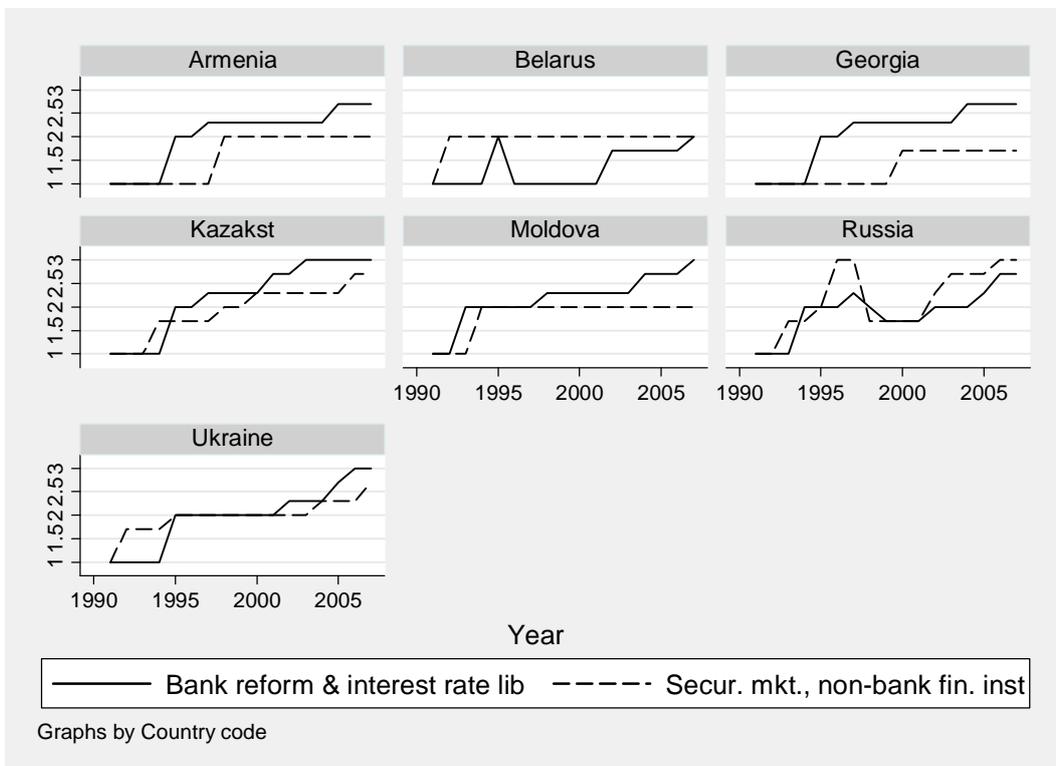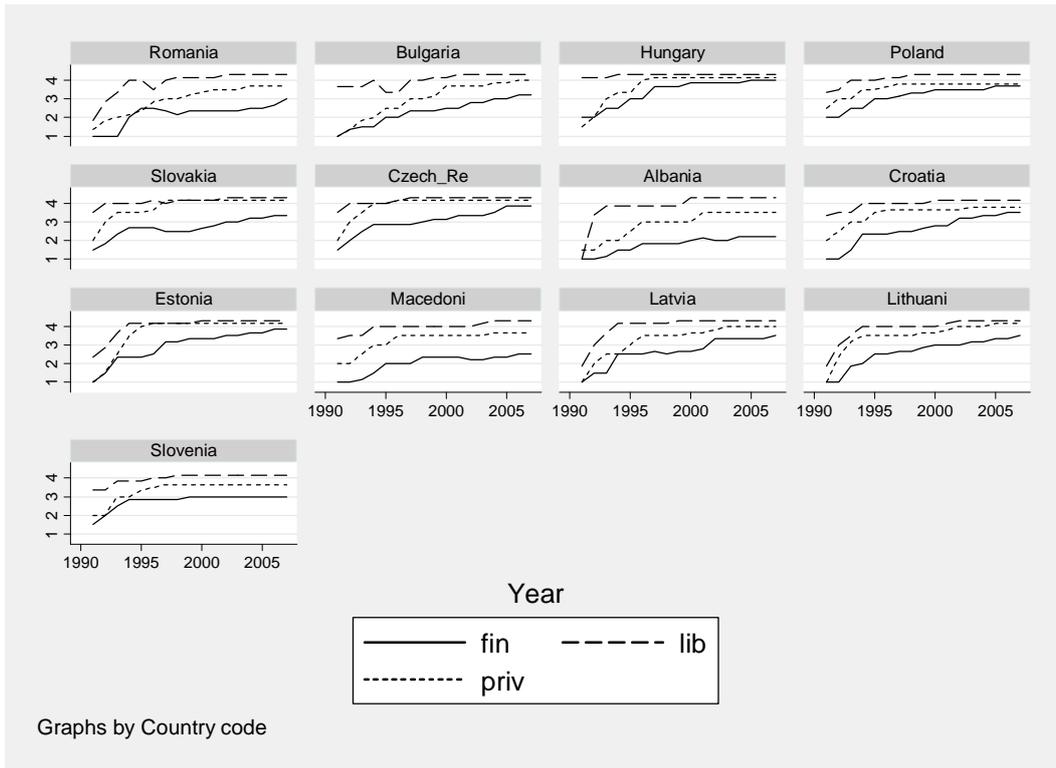
Figure 1. State and Foreign Ownership of Banks.

Graphs by Country code
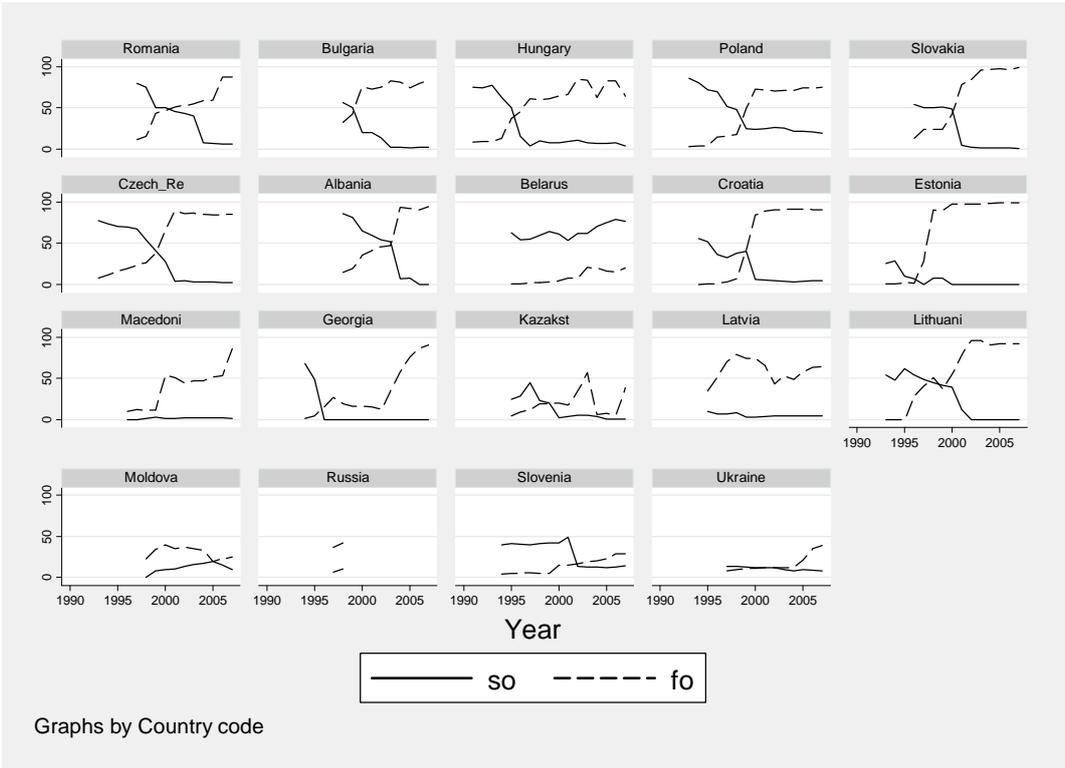
Figure 2. Measures of financial depth. Private sector credit (cred) and M2 relative to GDP

Year

Cred ----- m2

Graphs by Country code

Year

cred ----- m2

Graphs by Country code

Figure 3. Bank reform and securities reform

Graphs by Country code

Graphs by Country code
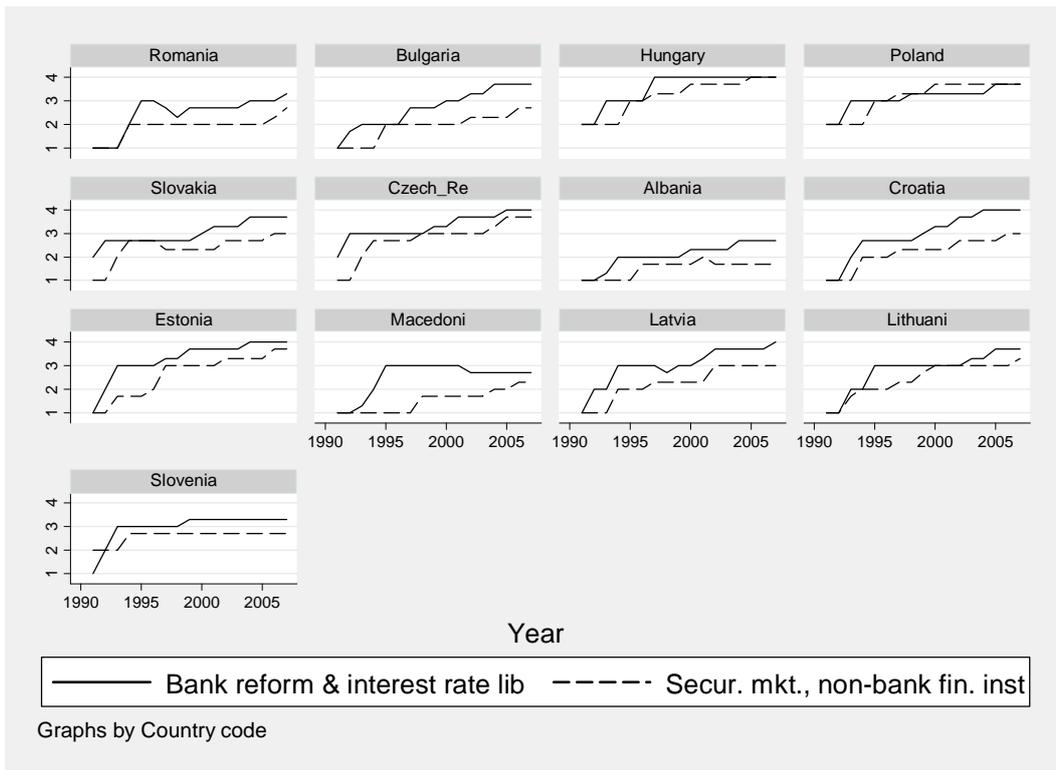
Figure 4. Financial reform (fin), Liberalisation (lib) and Privatisation (priv)

Graphs by Country code

Graphs by Country code
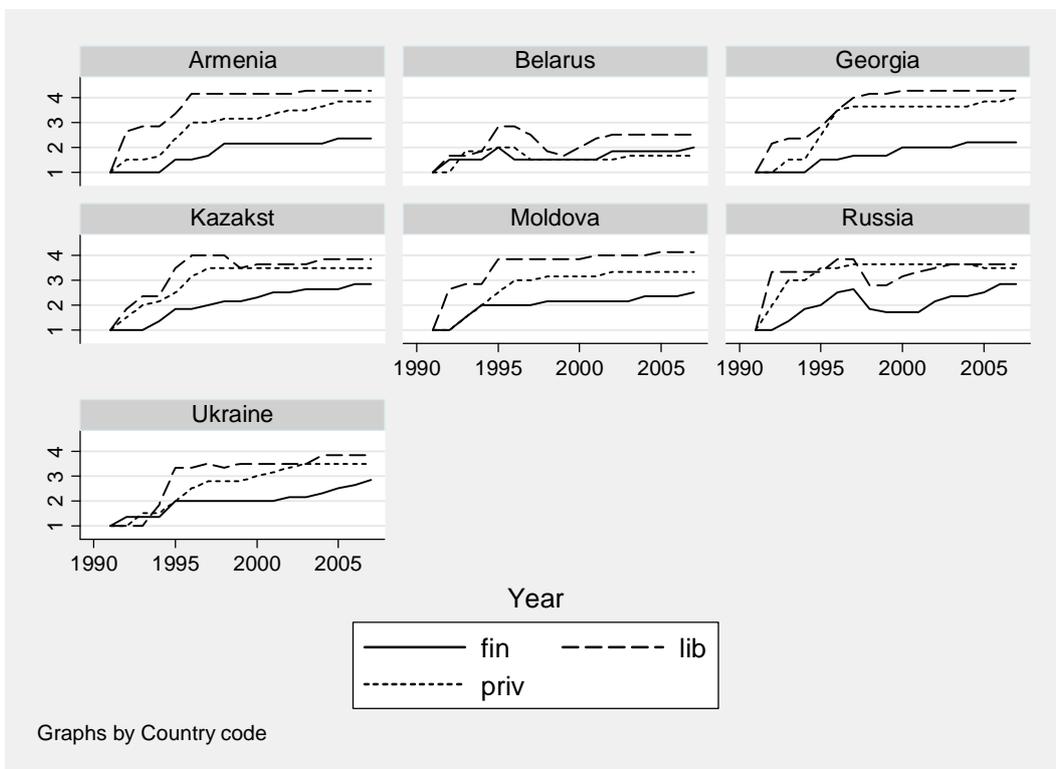
Appendix. Data Definitions and Sources

All data are taken from the European Bank for Reconstruction and Development.

Credit/GDP is credit to the private sector as % of GDP.

M2/GDP is M2 as a % of GDP.

In is the log of consumer price inflation.

Lib=(PL+TRA)/2

Fin=(BK+SEC)/2

Priv=(LSP+SSP)/2

PL is an index of price liberalization.

TRA is an index of trade regime liberalization.

BK is an index of the liberalization of banking and interest rates.

SEC is an index of securities and non-bank financial institutions.

LSP is an index of the privatization of large enterprises.

SSP is an index of the privatization of small enterprises.

The indices range from 1 for unreformed to 4.3 for standards of a market economy.

Bsurp is the ratio of the fiscal surplus to GDP.

Dgdp is the growth rate of real GDP.