

***Starting Positions, Reform Speed, and Economic
Outcomes in Transitioning Economies***

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Working Paper Number 280
January 2000

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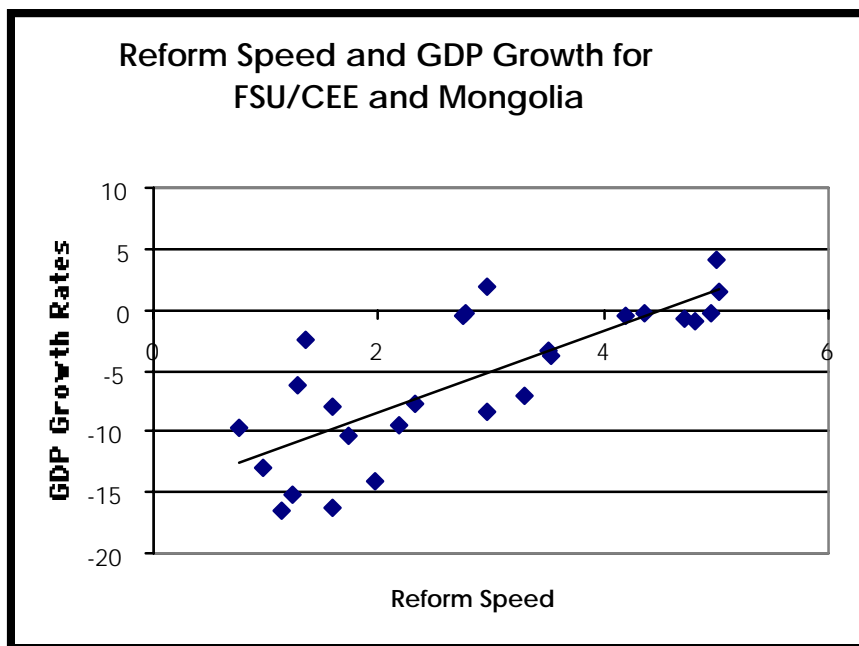
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Introduction

At the end of the 1980s and beginning of the 1990s 26 countries in Eastern Europe, the former Soviet Union and Mongolia initiated market reform policies. During the 1980's the average annual growth in real GDP for these countries was about 2.9%, while for the period 1990-1997, the average growth rate was -5.7% .¹ During the same period China was implementing a relatively slow and gradual policy of economic reform and their economy responded with very high real GDP growth. From these experiences it was commonly concluded that rapid economic reform led to (at least) a short-term economic decline and that the more gradual implementation of reforms is more appropriate for countries starting with a long legacy of central planning.

However, the above statistics and analysis ignore some interesting variations among the 26 CEE/FSU/Mongolian economies. The reform experience within this sample varies considerably from the rapid implementation observed in Slovenia and Poland to the very slow reforms observed in Belarus and Ukraine. And the results have



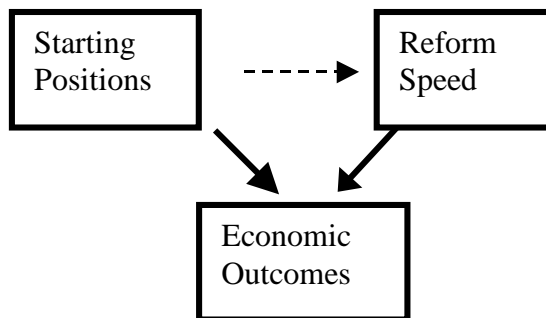
varied as well. Average real annual GDP growth (1990/1997) for Slovenia was 1.4%, for

¹ GDP growth rates are taken from the World Bank Development Reports for 1996 and 1997.

Poland 4.1% while for Belarus it was -6.1% and for Ukraine it was -13.1%. The World Bank has constructed indices of reform speed for these 26 transitioning economies and the relation between reform speed and economic growth rates, as shown in the above figure, is positive.² The conclusion drawn is that these countries all started with unfavorable “starting positions”, were about to suffer economic decline even with no change in economic policy, and those countries implementing more rapid market reforms suffered from less of a decline. One could point to the economic declines in Cuba and North Korea during this period as “control cases” of what would have happened if no economic reforms had been implemented.

With respect to China, the aggregate statistics conceal interesting internal variations. Within China there are large variations in economic outcomes, with the southern coastal provinces and special economic zones experiencing rapid growth, while some of the inland provinces are struggling with unemployment problems. If it is argued that economic reform policies have been uniformly implemented within China, then the inter-provincial variation in economic outcomes must derive from variations in their starting positions. However, it should also be recognized that economic reforms have not been uniformly implemented across China, and one can argue that the economic reforms have been implemented more rapidly in those provinces which have experienced faster economic growth.

To bring some order to the analysis of the reform experiences of different countries it is useful to consider the relative impacts of “starting positions” versus “reform speed” in determining economic outcomes. The debate in the economics literature has polarized into two points of view.³



One viewpoint is that faster reforms lead to better economic outcomes, but because of unfavorable starting positions in some countries, the implementation of rapid economic reforms has led to negative economic outcomes. Countries like China had favorable starting positions and would have had even better economic outcomes had they implemented economic reforms more rapidly. According to this view point, gradualist reform strategies are realistically viewed as a hodgepodge of political compromises, are largely the result of rent seeking activities, and create vested interests who will stand in the way of needed reforms.

² The index was constructed in the background paper, de Melo et. al. for the 1996 World Development Report, From Plan to Market. For information on the construction of the Reform Speed index, see the data appendix for this paper and de Melo et. al. appendix “The Liberalization Index and How it Was Constructed”.

³ Here we borrow from Sachs and Woo who treat these two points of view extensively.

The second point of view also maintains the need for market reforms but argues that the reform experience is filled with problems of market failures stemming from monopolization, asymmetric information, imperfect property right enforcement and slow institutional development. Appropriate reform, according to this viewpoint is purposely slow, experimental, and Bayesian. Policy makers need to engineer adjustments midstream in response to problems as they appear. According to this view, the problems observed in Russia are more a result of the too rapid implementation of reform than it is a result of unfavorable starting positions.

So the debate boils down to the following question; what explains the variation in economic outcomes in transitioning economies; reform speed or starting positions? Of course the easy answer is that both reform speed and starting positions have significant effects on economic outcomes. It is simply an econometric problem to estimate the relative magnitudes of each effect. This paper will try to provide a clear framework for estimating this relationship. First we will construct a simple game theoretic model which is capable of providing a better description of what is meant by the term “starting position”. The model suggests an addition to the usual argument concerning the relative importance of reform speed and starting positions in that the model predicts that reform speed is endogenously determined and is itself a function of starting positions. The paper uses this framework as a guide to an empirical reexamination of the relationship between reform speed, starting positions, and economic outcomes. Empirical results are then presented and discussed.

A Heuristic Model

In this section we construct a simple model to examine the conditions affecting the speed at which market reforms are implemented. The simple conclusion is that reform speed will depend upon the country’s “background conditions” at the beginning of the reforms. But the existing discussion does not define which background conditions are likely to matter nor does it predict the direction of their effects. The model developed below lends some insight into what kinds of “background conditions” will lead to the more rapid implementation of market reforms.

Consider a simple two period game with two agents. The first agent is the incumbent decision-maker who must decide whether to implement market reforms and if so, at which speed. Here we will represent the speed at which market reforms are implemented by the variable z . For the moment, assume that the incumbent decision-maker has the preferences of a “reformer”. The utility of the reformer is only a function of the size of the economy (E), and the reformer thinks that more rapid economic reforms will lead to more rapid economic growth. That is $U_R = U_R [E(z)]$ with $\partial U_R / \partial E > 0$ and the reformer’s expectation is that $\partial E / \partial z > 0$. Thus reformers are called reformers because they only care about economic growth and they think that more rapid market reforms will lead to greater economic growth.

The second economic agent represents the reformists’ opposition. Like the reformists, the opposition also likes economic growth, think that reform stimulates growth, but dislikes the economic displacement that they think accompanies economic reform. $U_O = U_O [E(z), D(z,b)]$. The function $D(\bullet)$ is the oppositions’ estimate of the degree to which reform will cause economic displacement, in the form of the closing and downsizing of existing industries with the resulting increases in unemployment,

$\partial U_O/\partial D < 0$ and they estimate that $\partial D/\partial z > 0$ with $\partial^2 D/\partial z^2 > 0$. That is, faster economic reforms are believed to result in greater economic displacement, and at an increasing rate. Here the variable b measures “favorable background conditions” defined such that $\partial D/\partial b < 0$. Thus, for example, if the opposition believes that economic displacement is more of a problem for poor, older and rural people, a favorable background condition would be if the country’s population was relatively rich, young and urban.

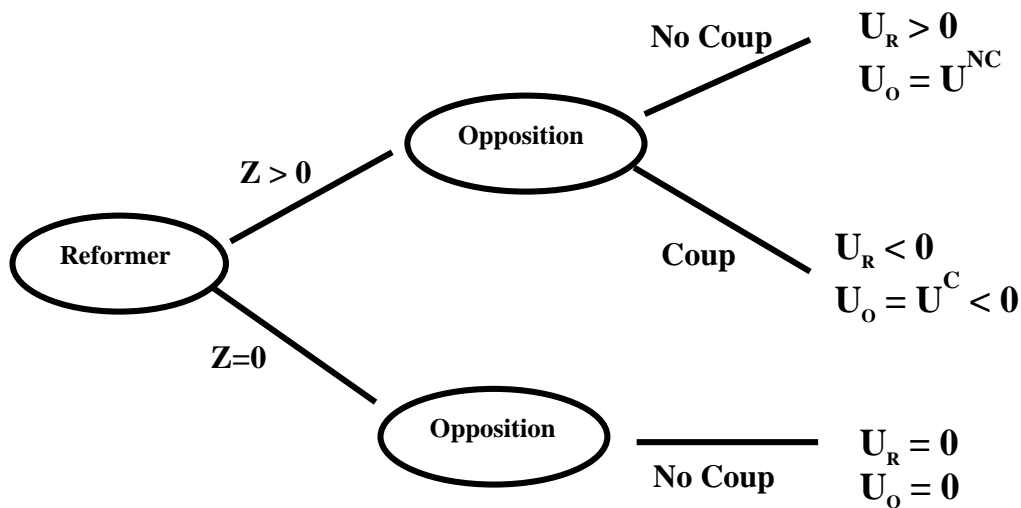


Figure 1

The reformers’ problem is to maximize reform speed z (and their forecast of economic growth) subject to the constraint that the opposition will estimate that the economic displacement will be too large, that they would be better off with no reform, and will successfully oppose (coup) the reformists. The problem can be represented in a simple two period extensive form game as represented in figure 1. In figure 1, the incumbent reformers have the first move and select a reform speed z recognizing that in period 2 the opposition will choose to replace the reformers (“coup”) or not (“no coup”). Payoffs are calibrated so that if there is no reform and no coup each agent has a utility of zero. It is assumed that if the reformers begin the reform and the opponents decide to “coup” the result is worse than the “no reform/no coup” result, so that payoffs for each are less than zero. If the reformers implement reforms ($z > 0$) and there is no coup; then $U_R = U_R([E(z)] > 0$.

Critical for the solution to the game is the payoff to the opposition if the reformers implement reforms and the opposition decides not to “coup”. The utility of the opposition will be $U^{nc} = U_O[E(z^*), D(z^*, b)]$ where z^* is the speed of the reforms implemented by the reformers. The opposition will decide “no coup” if $U^{NC} > U^C < 0$.

The reformers’ problem is to search for the highest level of reform speed, z , such that $U^{NC} > U^C$. That is, maximize reform speed (and expected economic growth) subject to maintaining the support of the opposition. This problem is illustrated in figure 2. The representation of U^{NC} (the utility of the opposition if there is reform and “no coup”) reflects the oppositions’ expectations that there are decreasing returns from reform speed

[$\partial E/\partial z > 0$ and $\partial^2 E/\partial z^2 < 0$]. It is also assumed that the opposition thinks that faster economic reforms cause displacement at an increasing rate, [i.e. that $\partial D/\partial z > 0$ and $\partial^2 D/\partial z^2 > 0$.] These assumptions give rise to the shape of U^{NC} in figure 2. In figure 2 z^* represents the solution of the game for the reformers. Z^* is the most rapid economic reforms possible without inducing the opposition to chose to ‘coup’. Since more favorable background conditions are defined so that economic displacement is less ($\partial D/\partial b < 0$) then more favorable background conditions increase the utility of the opposition if there is no coup and this allows the reformers to chose faster reform speeds. Thus given the assumptions of the agents in this model, the observed reform speed will be a function of the background conditions such that $\partial z^*/\partial b > 0$. Background conditions which will lead to more rapid economic reform are those conditions which would reduce the expected economic displacement of economic reform.

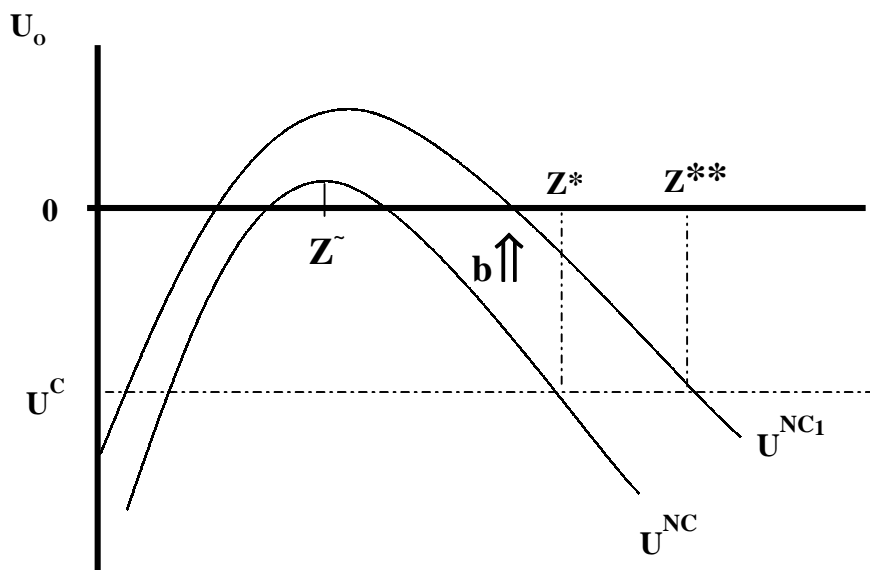


Figure 2

The model developed above assumes that the reformers are the incumbents with the first mover advantage. It is interesting to compare the results to a model where the so-called ‘‘opposition’’ is the incumbent. In this model, if the ‘‘opposition’’ had the first move the chosen reform speed will be slower than in the case where the reformers are the incumbents. In figure 2, the solution where the opposition has the first move will be something like Z^{\sim} . Thus the prediction is that reform speed will be a function of both background conditions and the nature of the incumbent decision-makers.

Empirical Specification

The existing discussion of the determination of economic outcomes in transitioning economies uses the following empirical framework.

$$(1) \quad \text{Outcomes}_i = \alpha_0 + \alpha_1(\text{Starting Positions})_i + \alpha_2(\text{Reform Speed})_i + \epsilon_i$$

The economic outcomes in country i are a function of its starting position and reform speed. Estimates of the parameters α_1 and α_2 are interpreted to tell us something about the relative magnitude of starting positions and reform speed in determining economic outcomes.

One example of this approach can be found in the research underlying the World Bank's 1996 Development Report, From Plan to Market. de Melo et. al. present the following empirical results:

$$(2) \quad \text{AVGR} = -9.1 + 2.6\text{CLI} - .54\text{PCY} - 6.5\text{WAR} \quad R^2 = .65$$

(5.4) (4.7) (1.9) (4.8)

The estimated results of (2) are based on a sample of 26 CEE and FSU countries and Mongolia over the period 1989-94. T statistics are in parentheses. The variables are defined as:⁴

AVGR	average real GDP growth 1989-94
CLI	Cumulative Liberalization Index, an index constructed by the World Bank to measure the speed of economic reform
PCY	1989 per capita income
WAR	dummy variable = 1 if country experienced "War" during this period

The interpretation offered for the results reported in (2) are that 1989 per capital income (PCY) measures the countries' starting position in the sense that it "allow(s) for the negative effect of more pervasive central planning and over industrialization in the more highly developed CEE and FSU economies." But the main conclusion is that controlling for starting positions and war, reform speed "has a positive effect on output chances in the CEE/FSU within the overall context of a 'transitional recession.'"⁵

The game theoretic model developed above suggests an alternative empirical specification. Since reform speed itself is predicted to be a function of starting positions, the specification used in (1) will generate biased estimates. Modeling the process so that reform speed is endogenous suggests that at the bottom of all outcomes lie the starting positions. Nonetheless we can consider the experiment where two countries with the same starting positions have random variations in reform speed unrelated to their starting positions and then measure the degree to which these unexplained variations in reform speed affect economic outcomes.

The suggested estimation procedure is then a two step process. The first step is to estimate the reform speed equation in (3).

$$(3) \quad \text{Reform Speed}_i = \beta_0 + \beta_1(\text{Starting Positions})_i + v_i$$

From the estimates of (3) estimates of v_i , (v_i^*), are obtained which are the estimates of variations in reform speed unrelated to starting positions. This estimate is then used as an independent variable in the estimation of (4).

⁴ Data, variable descriptions, and sources are included in the data appendix.

⁵⁵ de Melo et. al. page.7.

$$(4) \quad \text{Outcomes}_i = \alpha_0 + \alpha_1(\text{Starting Positions})_i + \alpha_2(\text{v}_i^*) + \varepsilon_i$$

Results of Estimation

Table 1 contains the results of estimation of equations (3) and (4). The sample contains 26 countries from the FSU, Mongolia, and CEE. For the estimation of the reform speed equation (3), two exogenous variables were used to measure favorable starting positions; life expectancy at the beginning of the reforms (LE) and the proportion of the population in agriculture at the start of reforms (%AGR). Life expectancy is meant to proxy for the general well being of the population. It is generally thought that the agricultural sector is capable of a quicker response to market reforms than manufacturing installed under central planning, so countries with high proportions of their population in the agricultural sector are thought to have a more favorable starting position. A third variable, REFORMIST is a dummy variable taking on a value of 1 if the government was “reformist” at the onset of reforms and 0 if not. From the theoretical model developed above, reform speeds will be faster when the first mover is has “reformist” preferences. To measure whether the initial governments were reformist or not, we make use of Katratnycky’s Index of Political Freedom and (arbitrarily) classify the ten politically “freest” countries as having “reformist” governments. In the estimation of equation (3) REFORM SPEED is measured by the World Bank’s normalized market liberalization index. The construction of this index by Word Bank researchers to measure the number of “Poland – equivalent number of reform years”.⁶

⁶ See De Melo et. al , pages 5,6, and appendix, “The Liberalization Index and How it Was Constructed”.

Table 1

	Dependent Variables		
	Reform Speed	Growth	Rate
	(1)	(2)	(3)
Intercept	-17.84 (-2.79)	-100.82 (-3.67)	-37.66 (-1.39)
Life Expectancy	0.29 (-3.25)	1.39 -3.61	0.29 -0.73
% Agriculture	(-.01) (-.38)	-0.01 (-.09)	0.13 -1.89
Reformist	1.66 (3.87)	-	-
Residual Reform	-	3.93 -4.53	-
War	-	-7.97 (-4.29)	-5.23 (-3.04)
Reform Speed	-	-	3.43 -5.53
Number of Observations	26	26	26
Adjusted R²	0.59	0.63	0.69

t statistics in parentheses.

Estimation of the reform speed equation Results shown in column 1 of Table 1) supports the hypothesis that reform speed depends on certain starting positions. In particular, reform speed is faster in countries with higher life expectancies and “reformist” governments. Reform speed is not significantly related to the proportion of the labor force in agriculture.

The residual from the estimated reform speed equation, (residual reform speed = actual reform speed – predicted reform speed), is used as an explanatory variable in the estimation of (4). Results of this estimation are shown in column 2 of Table 1. In the estimation of (4) the dependent variable is the average GROWTH RATE in real GDP 1990-97. In addition to the starting positions, (life expectancy and % agriculture) a dummy variable, War, is included. War equals 1 if the country experienced a war during this period and zero if not. This variable was constructed by Melo et. al. . Results from the estimation support the hypotheses that starting positions (especially life expectancy)

are significant in explaining economic outcomes. Results confirm that war retards economic growth. Of greater interest here is the effect of economic reform speed on average economic growth rates. Recall that the estimated reform residual is used since this residual is unrelated to variables measuring the starting positions.⁷ Thus the estimated regression coefficient for the independent variable “Residual Reform” measures the effect of variations in reform speed which are independent of the measured starting position. This estimated coefficient, 3.93 in Table 1, is large and statistically significant. The estimated elasticity of economic growth rate with respect to reform speed, evaluated at variable means, is 1.97.

It’s interesting to question whether the two step estimation approach suggested in this paper leads to different empirical results than the simpler one step approach suggested by equation (1). Equation (1) was estimated using this sample, and the results are presented in the last column of Table 1. Using this empirical approach for this sample would support the conclusion that starting positions are statistically insignificant. The large changes in the estimated parameters suggest that the results are sensitive to specification. Since the results are sensitive to specification, and since theory would suggest that reform speed is a function of starting positions, then the “two step” procedure represented by (3) and (4) is the preferred specification.

Concluding Remarks⁸

This paper developed a simple game theoretic framework for deriving the result that the speed of economic reform observed in transitioning economies will be a function of the position of these countries at the beginning of the reforms. Specifically, starting positions which reduce the economic displacement resulting from market reforms will allow policy makers to implement faster reforms. The reforms will also be faster if the initial incumbent policy makers have reformist preferences. Estimation of the model supports the idea that reform speed is endogenous and that countries with favorable starting positions and reformist governments implemented reforms more rapidly.

The existing empirical literature investigating the relative effects of reform speed and starting positions on economic growth suffer from misspecification. Since reform speed is a function of starting positions, empirical studies ignoring this relationship in their specification will have biased estimates. The empirical work presented in this paper develops an estimate of variations in reform speed which is independent of the measured starting positions. Using this measure of variations in reform speed it was found that both starting positions and reform speed affect economic growth rates. In particular, the magnitude of increases in reform speed on economic growth rates was large.

Like all studies in this area, this study has its own problems. The number of observations is necessarily small, some of the variables are measured subjectively, and theory provides only a suggestion of the types of variables which measure the starting positions of economies. Critically, the interpretation of v_i^* from equation (3) will always be subject to the criticism that some significant starting position variables have been omitted from the estimation. Despite these limitations it is still desirable to close the gap between theoretical and empirical models. The aim of this paper was to provide a simple

⁷⁷ The simple correlation coefficients for the estimated reform residual and the variables Life Expectancy and % Agriculture are approximately zero.

and theoretically valid alternative to the estimation techniques appearing elsewhere in the literature.

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Data Appendix

Country	Reform Speed	Life Expectancy	% Labor Agriculture	Reformist	GDP Growth	War	Reform Residual
Slovenia	5.02	73.2	6	1	1.4	0	0.084422087
Poland	5	70.9	27	1	4.1	0	0.891729826
Hungary	4.96	69.3	15	1	-0.2	0	1.221593143
Czech	4.36	72.4	11	1	-0.2	0	-0.305628701
Slovak	4.19	71.2	12	1	-0.6	0	-0.120942528
Bulgaria	3.5	71	13	1	-3.3	0	-0.745387442
Estonia	3.54	69.6	14	1	-3.8	0	-0.292875052
Lithuania	3.29	70	18	1	-7.1	0	-0.627612013
Latvia	2.96	68.8	16	1	-8.5	0	-0.626112445
Romania	2.78	69.8	24	0	-0.3	0	0.626750357
Albania	2.96	72.5	55	0	1.8	0	0.265691347
Russia	2.32	67.2	14	0	-7.7	0	0.841202498
Kyrgyz	2.19	67.9	32	0	-9.5	0	0.647930371
Moldova	1.96	67.7	33	0	-14.1	0	0.483485457
Kazakhstan	1.58	69	22	0	-7.9	0	-0.35740251
Uzbekistan	1.34	69.3	34	0	-2.4	0	-0.591395414
Turkmenistan	0.76	65.8	37	0	-9.6	0	-0.136250004
Croatia	4.81	72.9	16	0	-1	1	1.698613039
Macedonia	4.73	72.1	21	0	-0.8	1	1.888562251
Armenia	1.74	70.5	18	0	-10.3	1	-0.662014615
Georgia	1.59	72.6	26	0	-16.3	1	-1.357358949
Azerbaijan	1.24	69.8	31	0	-15.1	1	-0.859147563
Tajikistan	1.15	68.1	41	0	-16.4	1	-0.38033603
Belarus	1.29	69.8	20	0	-6.1	0	-0.894165117
Ukraine	0.97	69.8	20	0	-13.1	0	-1.214165117
Mongolia	2.74	64.5	32	1	-0.6	0	0.520813125

Reform Speed: This is the “Normalized Liberalization Index” as reported in “From Plan to Market”, de Melo et al. (World Bank 1996).

Life Expectancy: Life expectancy, in years, 1991-1993, from the World Bank Development Report, From Plan to Market, (World Bank, 1996), page 172.

% Labor Agriculture: Per cent of labor force in agriculture, 1990, , from the World Bank Development Report, From Plan to Market, (World Bank, 1996), page 194.

Reformist: Derived from the “Political Freedom Index” in De Melo et al (which in turn was derived from Karatnycky’s index of political freedom. A dummy variable = 1 if the Political Freedom index was greater than or equal to 5.0 and 0 if less than 5.00.

GDP Growth: Average growth rate in real GDP 1990-1997. Taken from World Bank web site data.

War: Variable constructed by De Melo et al to include those countries experiencing major internal conflicts during 1989-1994. War = 1 if major conflict and 0 if not.

Reform Residual: Calculated from the estimation reported in column (1) of table 1.

Reform Residual = Actual Reform Speed – Predicted Reform Speed.