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A NOTE ON INITIAL CONDITIONS AND LIBERALIZATION DURING TRANSITION

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Abstract

This note examines recent literature incorporating indices of liberalization as explanatory variables of economic performance during the transition. While not questioning the policy recommendation that liberalization is best done quickly, we find that these indices are remiss in that they ignore the initial economic conditions of transition economies. We find that initial conditions are important variables in explaining variations in performance during the transition period. More significantly, we find that the commonly generated indices of liberalization correlate quite strongly with our measures of initial conditions, supporting the hypothesis that liberalization policies are endogenous to initial economic conditions. Our results are used to generate a relative index of reform progress that incorporates the initial conditions of an economy in transition. The relative index challenges some commonly held preconceptions about which transition economies are rapid reformers and which are slow reformers.

1. Introduction

Recently there has emerged in transition economics a literature relating economic performance to liberalization policies adopted during the transition. In this literature transition economies are ordered on an absolute scale as more or less "liberalized" based on their adoption, or lack thereof, of economic policies considered essential for completing the transition to a market economy.² The liberalization index (LI) is generated using various weights for each policy and is then used to explain variations in economic performance during transition, for example changes in output and inflation. Fast liberalizers, those with the highest rankings on the various LI scales are found to have quicker recovery in total output and lower average levels of inflation during the first few years following the initial date of liberalization. Our work finds that these indices tend to be highly correlated to reasonable measures of initial conditions (ICs), leading to the conclusion that liberalization is endogenous to initial conditions, a point first made by Ickes (1996), and that the rankings of reform progress based on an absolute scale are potentially misleading. In this paper we survey this literature, examine the robustness of the empirical work to the inclusion of proxies for

² De Melo et al (p.6) identifies three aspects of liberalization: Internal Liberalization, the liberalization of domestic prices and abolition of state trading monopolies, External Liberalization, the liberalization of foreign trade, and Private Sector Entry, which includes small and large scale privatization.
initial conditions, and develop a ranking of reform progress that conditions on the ICs, resulting in a
relative ranking of reform progress of transition economies.³

2. A Short Review of the Literature

Three significant works have been published in this literature in 1996, one of which formed the
basis for a significant fraction of the 1996 World Development Report. The first in this literature,
Sachs's (1996), regresses output levels in 1995 against the EBRD's index of liberalization, finding
that countries with the highest index of liberalization recovered from the "transition recession" most
quickly. Similarly, the background paper for the World Development Report of 1996 From Plan to
Market by deMelo, Denizer and Gelb estimates average growth in GDP as a function of the CLI
(cumulative index of liberalization), per capita income in 1989 (used to take into account "the
negative effects of more pervasive central planning and overindustrialization"), and a dummy
variable if the country is from an area subject to "regional tensions." They also examine the
relationship of inflation to CLI, drop in GDP, repressed inflation and regional tension. Both papers
reveal strong relationships between liberalization and performance (either inflation, output or both).

The third, and more careful, paper in this literature, by Aslund, Boone and Johnson (1996)
undertakes a similar exercise, relating economic performance and LI. They rightly reveal (page 232),
however, that the explanatory power of the CLI is "not robust under reasonable modifications," i.e.,
adding in war torn and former Soviet Union dummy variables dissolves the significance of the CLI
as an explanatory variable across all 26 transition economies. These authors do reveal a substantial
difference in the pattern between the former Soviet Union and Central Europe, leading to the
supposition that initial conditions matter in determining performance differences in the transition.

Table 1 (page 10) provides a direct comparison of the methods and basic results of the three
major studies referenced above.⁴ As can be seen from Table 1, although very different numeric
values were obtained on the liberalization index coefficient, t-values for these estimates are quite
similar and always statistically significant for the univariate regressions. Nevertheless, these three
papers do not attempt to incorporate or measure initial conditions for transition economies beyond
the simplistic inclusion of dummy variables for the former Soviet Union, or the inclusion of GNP in
1989.⁵ The dummy variable approach, however is unsatisfactory both theoretically and empirically
as great variation existed, and continues to exist, among republics of the former Soviet Union.

³ Unfortunately, our data are limited to only 18 transition economies, so we are unable to order the liberalization
progress of eight transition economies.

⁴ The deMelo et al and Aslund et al papers examine the explanatory power of liberalization indices on a wide array
of performance measures. We focus on output in Table 1 because it permits comparison across all three major studies
in this literature.

⁵ This omission is aptly criticized by Ickes in his formal comments on their paper.
While the deMelo et al attempt to incorporate initial conditions through the inclusion of per capita levels of GNP in 1989 is an improvement over a dummy variable approach, it is highly unlikely that it is a good proxy for what the authors intend: distortions due to central planning and "overindustrialization." Rather, initial levels of per capita income are likely to proxy relative backwardness, and not those, mostly microeconomic, elements of transition economies that are thought to distinguish them from less developed countries.  

3. A Measure of Initial Conditions

An ideal proxy for initial conditions would capture the distortions alluded to in deMelo, and would do so in a parsimonious manner. As noted in earlier World Development Reports, significant gains in economic performance accrue when countries engage in international trade. These gains are not simply the static gains of Ricardian trade, but dynamic gains including the transfer of technology and human capital and the discipline of domestic monopolists. As implied by the descriptor "iron curtain," CPEs in the Soviet sphere were exceptionally isolated from the outside world, more so than their counterparts outside the rich industrialized countries of the West. By the 1970s, the isolation was eroding and East-West trade had increased to the point where it was beginning to have an impact on Central Europe, especially Poland and Hungary. If firms in these more open economies were subject to greater discipline and were the recipients of clearer economic signals through international trade, then we would expect firms in these economies to require less structural adjustment than their more autarkic counterparts in the former Soviet Union. As trade within the CMEA became increasingly tied to world prices in the mid to late 1980s, intra-CMEA trade was signalling relative scarcity and providing some discipline for domestic enterprises and ministries. We therefore favor the share of total exports as a fraction of GNP as a good proxy for distortions due to central planning and autarky.

We examine the explanatory power of three measures of initial conditions for two aspects of economic performance: output from 1989 to 1995 and average inflation during the first three years of transition. Initial conditions (IC) are proxied by the share of total exports of GDP/GNP in 1988 or 1989 (depending upon which years data were available) the level of GNP in 1987 and the share of 

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7 See, for example, the 1987 World Development Report.

8 The hardening of the terms of trade within the CMEA correlates with the aftermath of the debt crisis in the early 1980s and weak economic performance throughout the bloc in the decade of the 1980s.

9 Ideally, a disaggregated measure that captured the share of exports to the West, CMEA exports under valuta or hard currency terms, and share of exports under "soft currency" terms would be desirable. Unfortunately, such data are readily available for only a few transition economies. Data that are available indicate that countries with high (continued...)
agriculture in total GNP. The first variable is designed to capture "distortions due to central planning," while the latter two variables are added to capture relative backwardness and "reformability."  

4. Data and Results:

This section examines the explanatory power of ICs on economic performance among the European and FSU transition economies. We also examine the relationship of ICs to the liberalization indices. The data on economic performance during the transition were obtained from Tables 1, 2, 3, 6 and 8 in Aslund, Boone and Johnson. Indices of liberalization were obtained from EBRD and the World Development Report From Plan to Market and the deMelo et al background paper under the same title. The share of exports in GNP for the non FSU transition economies was obtained from various editions of the World Development Report.

For the FSU republics this variable was generated using data from three sources. The key set of figures were levels of foreign exports by republic as found in Brown and Belkindas (1993). Foreign exports were then divided by total Soviet GNP in 1988 times estimates of value added by republic. The value added estimates were obtained from the IMF, World Bank, EBRD Study of the Soviet Economy, and Soviet GNP in 1988 was from Narkhoz 1988 p. 5. Per capita levels of GNP as a fraction of the U.S. were obtained from the World Development Report 1996. Unfortunately, per capita GNP data were available for only 18 transition economies and therefore limit the comparability of some of our results. Data for share of GNP in agriculture were obtained from various World Development Reports, especially 1996, and A Study of the Soviet Economy, for the shares of exports to GNP traded both with the CMEA and also with the West. The best examples here are Hungary and Poland. The FSU tended towards the opposite extreme, trading relatively little with either the West or the CMEA.

10 Many potential variables exist to proxy initial conditions. Ickes (p.301) identifies share of agriculture in GDP as a potential proxy for initial conditions, which we include here. Others such as share of private sector before the transition, and indebtedness would be good potential variables; however data on the share of the private sector prior to 1990 are limited to 18 total observations, four of which do not overlap data for initial levels of GNP, resulting in a total of 14 useable data points for multiple regression analysis. The authors are unaware of data on indebtedness by FSU republic, which would leave us with a similarly small data set.

11 Restricting ourselves to the European and FSU transition economies follows the procedure in Sachs (1996) and Aslund, Boone and Johnson (1996), but differs from deMelo et al who include China and Vietnam in their analysis.

12 The three indices of liberalization correlate quite strongly and in the interest of brevity we confine our analysis to the index from deMelo et al.

13 Foreign exports were used rather than the much larger total exports that included trade between republics of the FSU because the latter were under direct control of planners in Moscow and would not capture the concept of relative competitiveness we are attempting to proxy.

14 This variable was used primarily in an attempt to replicate the deMelo paper; however, the World Development Report for 1996 provides no data GNP per capita in 1987 for Albania, Georgia, Turkmenistan, Macedonia, Croatia, Moldova or Slovakia. The deMelo paper seems to have access to additional data as they indicate a larger sample size than we do.
FSU republics. Following what is now established procedure, we also include a dummy variable for "war torn" countries of Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tadjikistan.¹⁵

The expected sign of share of exports is positive with respect to output from 1989 to 1995 and negative with respect to the log of inflation. High levels of initial per capita GNP (more advanced countries), according to relative backwardness, should lead to slower recovery, and should have a negative sign on the output variable. The sign of intitial GNP when used in as an explanatory variable with inflation is less clear. If more advanced countries have better developed financial institutions then they may be in a superior situation with resepect to controlling inflation, leading to an expectation of a negative relationship. A high share of agriculture in total GNP, as hypothesized in Ickes (1996), may allow for more stringent stabilization and restructuring in industry than in countries with lower shares in agriculture. Under either hypothesis agriculture should have the same negative sign as share of exports for the log of inflation, while its expected sign when used in the output regressions is less clear. If high shares of agriculture are correlated with relative backwardness, then the sign should be positive.

Table 2 (page 11) presents our basic results for changes in output from 1989 to 1995. Regression 1 in Table 2 is provided to allow comparison with the univariate results in Sachs. Regression 2, adds in the former Soviet Union and war-torn dummy variables, permitting comparison with the Aslund et al results with our more limited data set. Regression 3 incorporates our proxies for initial conditions, leaving in the war torn dummy variable and the CLI. As can be seen from comparing regressions 2 and 3, our index of initial conditions performs slightly better than the FSU dummy variable, suggesting that our index does capture some of the more salient differences between transition economies. Regression 4 removes the CLI, which leaves the basic relationship unchanged.

Evident from Table 2 is the decline in the significance of the coefficient estimate and explanatory power of the CLI as our measures of ICs are added. These results are quite similar to the Aslund et al result when the dummy variable for the ruble zone/former Soviet Union are added (regression 2), and it must be noted that the export share data and the FSU dummy variable are quite strongly correlated (rho = -.94). The FSU dummy variable and the share of export variable and are therefore performing similar functions statistically. The choice of specification must be based on economic theory. The theoretic case for the dummy variable, however powerful statistically, is dubious. Both initial levels of GNP and share of Agriculture had negative signs in the output regressions, although the agriculture variable was statistically zero.

Liberalization indices have also been used to explain variations in inflation among transition economies. We have attempted to reproduce these results using log of average inflation for the first

¹⁵ deMelo et al refer to this as "regional tension"
three years of transition.\footnote{Data are from Table 1 in Aslund et al. This transformation is similar to that employed by Aslund et al and appears to follow deMelo, although the latter does not provide specific information. Using the first three years following peak of transition, allows for different starting dates of transition economies.} Table 3 (page 12) demonstrates the explanatory power of the CLI in terms of average inflation, which is statistically significant under commonly accepted thresholds.\footnote{The sample of countries in Table 3 was restricted so the regressions would be directly comparable. As in regressions using output as the dependent variable, coefficient estimates on the liberalization index or the initial conditions variables are quite stable across various samples. The estimate on the war torn dummy variable is however significantly affected by the different samples as most of the countries eliminated due to data limitations are in the war-torn set.} Adding in our proxies for ICs, reduces the coefficient estimate on the CLI, but leaves it statistically negative and significant, as expected. This result supports the conclusion that price stabilization is attainable, to some degree, independent of initial conditions, a result we find quite plausible. The significance of the agriculture variable supports Ickes' supposition that agrarian economies would find stabilization relatively easier than their more industrialized counterparts.

In sum, CLI loses its explanatory power in terms of variations in output among transition economies when plausible proxies for initial conditions are added; however it does retain a significant fraction of its explanatory power for variations in average inflation.\footnote{Aslund et al also examines the effects of liberalization on unemployment and growth in the private sector. In the interest of brevity we do not report these results. We, as did Aslund et al, found that unemployment was positively correlated with CLI, contrary to expectation, and also our measure of initial conditions.} In addition, the superior explanatory power of the export share variable supports the notion that structural adjustment of transition economies is probably more important than relative backwardness as a characterization of their initial conditions.

More importantly, as originally hypothesized by Ickes, the CLI appears endogenous to initial conditions, especially export share in 1988/89, which is highly correlated to the CLI (rho=.75). These correlations hold across the commonly used indices of liberalization but are weakest for the EBRD index (rho=.58). The endogeneity of the CLI to initial conditions suggests that the empirical work to date relating liberalization to performance in the transition is suspect, and that the appropriate estimation technique is instrumental variables, which will eliminate the bias in the CLI coefficient. The actual IV estimates on the CLI are not especially revealing or new and in the interest of brevity they are not presented here. They do show a strong positive relationship between output change from 1989 to 1995 and the CLI, and a strong negative relationship between log of inflation in the first three years of transition and the CLI, as in previous work.

5 A Relative Index of Reform Progress

More interesting is utilization of stage 1 of the IV estimator to obtain a predicted index of liberalization based on initial conditions. Predicted liberalization may then be compared to the actual
index to reveal over and underachievers in the transition on a relative scale, respectively. On this scale Poland and the Baltic countries are significant overachievers liberalizing roughly one full point on the CLI above their predicted levels. Romania and Ukraine, and to a lesser degree Belorussia, are on the other side of the scale roughly a one full point behind predicted levels. Russia and the Czech and Slovak economies appear to have liberalized in a manner more or less in line with their initial conditions. Figure 1 (page 13) presents a graph of the actual CLI minus the predicted CLI for all countries for which data were available.

Orderings of reform progress conditional upon initial circumstances leads to slightly different ranking of countries in terms of their reform progress than orderings based on the CLI.\(^\text{19}\) Poland and Hungary retain their high positions; however the relative ranking of Poland moves far ahead of its peers. The highly regarded reforms in the Czech and Slovak Republics on the relative scale now appear average among transition economies, with little separating Russia and Slovakia.\(^\text{20}\) Equally surprising is the change in places between the Baltic countries and Romania based on the relative index, with the former moving right behind Poland into second, third and fourth places respectively, while the latter ranks last on our scale.

In other words, even though Romania reformed relatively quickly, its situation would appear to have allowed much more rapid liberalization than actually took place. The relative scale highlights the accomplishments of the Polish and Baltic countries, that in spite of relatively difficult circumstances, they were able to move more rapidly than initial conditions would appear to have warranted. The relative index leaves unaffected the poor showing of Belarus, Ukraine, Uzbekistan and Tajikistan, however.

6. Conclusion:

Our results support the hypothesis that liberalization rates of transition economies are quite possibly endogenous to their initial conditions, as proxied by late 1980s values in the share of exports in GNP, the share of GNP in agriculture and the level of GNP. This result suggests that more outwardly oriented and agrarian economies found the costs of liberalization lower and the benefits higher than their more autarkic, industrialized counterparts. Faced with this situation, liberalization was a relatively easy choice for these economies.

The theoretic argument raised by Aslund et al and also in Johnson (1996) that liberalizing reforms are complimentary is compelling and also consistent with pre-transition literature on the


\(^{20}\) Note, that the relative index is based on the residuals of the regression from the first stage of the IV estimator and therefore the index sums to zero. As seen in Figure 1 Slovakia, is only slightly away from the average of transition economies.
"unreformability" of central planning.\textsuperscript{21} Nevertheless, assessing reform progress based solely on an absolute scale of liberalization appears unjustified. Much additional work needs to be done on the relationship of liberalization policy to initial conditions, and this note is intended as a first, and admittedly crude, step in this direction. Most important is to investigate why some countries with relatively good initial conditions, such as Ukraine and Romania, moved relatively slowly with respect to liberalization, while others liberalized faster than their initial conditions would seem to have allowed, notably here are the cases of Poland and the Baltic countries.\textsuperscript{22} Our supposition is that political differences play a key role in explaining these "residuals", and the index of political freedom in deMelo Table 11 does explain roughly 20 percent of the variations in the index with the correct sign. More detailed analysis of this topic remains necessary, however.

\textit{References:}


\textsuperscript{21} Both Hewett (1988) and Ericson (1991) seem to make the case for complimentarity of reform policies.

\textsuperscript{22} Using stage 1 of the two stage estimator, it is possible to obtain a predicted index of liberalization which may then be compared to the actual index to reveal the over and undersachievers respectively. On this scale Poland and the Baltic countries are significant overachievers liberalizing roughly one full point on the CLI above their predicted levels. Romania and Ukraine, and to a lesser degree Belorussia are on the other side of the scale roughly a full point behind predicted levels.


<table>
<thead>
<tr>
<th>Paper</th>
<th>Dependent Variable</th>
<th>Index of Liberalization</th>
<th>Estimate on Liberalizationa</th>
<th>Control Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sachs</td>
<td>Growth in 1995</td>
<td>EBRD&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.77 (4.84)</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>Growth (1989-95)</td>
<td></td>
<td>0.62 (3.74)</td>
<td></td>
</tr>
<tr>
<td>Aslund&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Growth in 1995</td>
<td>CLI&lt;sup&gt;d&lt;/sup&gt;</td>
<td>3.5, 3.3&lt;sup&gt;e&lt;/sup&gt; (4.4, 2.4)</td>
<td>Dummy variables for Former Soviet Union and War-torn countries.</td>
</tr>
<tr>
<td></td>
<td>Growth (1989-95)</td>
<td></td>
<td>0.13, 0.0&lt;sup&gt;e&lt;/sup&gt; (4.33, 0.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unemployment</td>
<td>CLI&lt;sup&gt;d&lt;/sup&gt;</td>
<td>4.3, 1.7 (6.1, 1.7)</td>
<td></td>
</tr>
<tr>
<td>deMelo</td>
<td>Average Growth</td>
<td>CLI&lt;sup&gt;d&lt;/sup&gt;</td>
<td>2.6 (4.7)</td>
<td>Per Capita income 1989 and Regional Tension</td>
</tr>
<tr>
<td></td>
<td>(1989-94)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inflation (91-94)</td>
<td>Log(CLI&lt;sup&gt;d&lt;/sup&gt;)</td>
<td>0.88 (2.3)</td>
<td>Log drop in output, repressed inflation</td>
</tr>
</tbody>
</table>

<sup>a</sup> As the indices of liberalization vary widely direct comparisons of numeric values are meaningless. More useful are comparisons of t-values given in parentheses.

<sup>b</sup>European Bank of Reconstruction and Development's index of liberalization.
<sup>c</sup>The Aslund paper examines the explanatory effect of variables besides CLI. These results are not presented here.
<sup>d</sup>Cumulative liberalization index as described in deMelo et al pp. 5-7.
<sup>e</sup>The first value for the Aslund et al estimates excludes the control dummies while the second value is the estimate including both dummy variables.
Table 2: Explaining Variations in Output Growth from 1989-95:

Dependent Variable is index of output in 1995, where 1989=100.

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>Regression 1</th>
<th>Regression 2</th>
<th>Regression 3</th>
<th>Regression 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>32.06</td>
<td>84.83</td>
<td>51.97</td>
<td>73.70</td>
</tr>
<tr>
<td></td>
<td>(3.87)a</td>
<td>(5.65)</td>
<td>(6.52)</td>
<td>(2.87)</td>
</tr>
<tr>
<td>CLI</td>
<td>10.55</td>
<td>-0.22</td>
<td>4.01</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(3.81)</td>
<td>(-0.06)</td>
<td>(1.18)</td>
<td>-</td>
</tr>
<tr>
<td>War Torn Dummyb</td>
<td>-14.58</td>
<td>-10.80</td>
<td>-16.15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.80)</td>
<td>(-1.37)</td>
<td>(-2.02)</td>
<td></td>
</tr>
<tr>
<td>FSU Dummy</td>
<td>-32.07</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.53)</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Export Share 1989</td>
<td>91.49</td>
<td>109.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.22)</td>
<td>(2.83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of Agriculture 1988</td>
<td>-24.61</td>
<td>-30.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.45)</td>
<td>(-0.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNP per capita 1987</td>
<td>-89.27</td>
<td>-76.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.02)</td>
<td>(-1.79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.44</td>
<td>0.69</td>
<td>0.71</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Sample size: 18 18 18 18

\[a\] t-values in parentheses
\[b\] War Torn dummy equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan.
\[c\] Excludes Albania, Croatia, Georgia, Macedonia, Moldova, and Turkmenistan due to absence of data on GNP in 1987.
Table 3: Explaining variations in Average Inflation:

Dependent Variable is log of average Inflation during first three years of transition.

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>Regression 1</th>
<th>Regression 2</th>
<th>Regression 3</th>
<th>Regression 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.26</td>
<td>8.97</td>
<td>-0.68</td>
<td>10.72</td>
</tr>
<tr>
<td></td>
<td>(19.22)</td>
<td>(18.57)</td>
<td>(-0.31)</td>
<td>(9.2)</td>
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<tr>
<td>CLI</td>
<td>-0.87</td>
<td>-0.41</td>
<td>-0.39</td>
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<td>(-6.08)</td>
<td>(-2.02)</td>
<td>(-3.32)</td>
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<td>War Torn Dummy&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>0.34</td>
<td>-0.08</td>
<td>0.18</td>
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<td>(0.71)</td>
<td>(-0.29)</td>
<td>(0.51)</td>
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<td>FSU Dummy</td>
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<tr>
<td></td>
<td></td>
<td>(2.70)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export Share 1989</td>
<td></td>
<td></td>
<td>-10.27</td>
<td>-12.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-7.24)</td>
<td>(-6.86)</td>
</tr>
<tr>
<td>Share of Agriculture 1988</td>
<td></td>
<td></td>
<td>-7.78</td>
<td>-7.19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-4.12)</td>
<td>(-2.87)</td>
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<tr>
<td>GNP per capita 1987</td>
<td></td>
<td></td>
<td>-0.04</td>
<td>-0.06</td>
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<td></td>
<td></td>
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<td>(-2.79)</td>
<td>(-2.81)</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.68</td>
<td>0.76</td>
<td>0.92</td>
<td>0.87</td>
</tr>
</tbody>
</table>

Sample size: 18, 18, 18, 18

<sup>a</sup> t-values in parentheses

<sup>b</sup> War Torn dummy equals 1 for Armenia, Azerbaijan, Croatia, Georgia, Macedonia and Tajikistan.

<sup>c</sup> Excludes Albania, Croatia, Georgia, Macedonia, Moldova, and Turkmenistan due to absence of data on GNP in 1987. Regression 3 is was run with identical data to regressions 1 and 2 in order to facilitate comparisons between them.
Figure 1: A Relative Ranking of Reform Progress