

**CIRCUMSTANCE AND CHOICE: THE ROLE OF INITIAL CONDITIONS AND  
POLICIES IN TRANSITION ECONOMIES<sup>+</sup>**

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October 1997

<sup>+</sup>Data used but not included here can be obtained from Stoyan Tenev. We are grateful to Craig Burnside for valuable comments and suggestions. We also extend our thanks to William Easterly, Bert Hofman, Aart Kraay, Norman Loayza, Peter Murrell, Randi Ryterman, Jakob Svensson, Gunter Taube, Tefvik Yaprak, and other participants of the Macroeconomics and Growth seminar participants at the World Bank, and to seminar participants in the Transition Economies section of the European Economic Association meetings in Toulouse, September 1997, for their comments and suggestions. The usual disclaimer applies. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the World Bank Group, its Executive Directors, or the countries they represent.

## **I. INTRODUCTION**

The experience of countries in transition from a planned to a market oriented economy has varied greatly. The clearest differences are between the East Asian countries, China and Vietnam, and the countries of the Central and Eastern Europe (CEE) and the former Soviet Union (FSU). China and Vietnam have contained inflation and benefited from continued high growth in GDP since the beginning of their reforms, while all CEE and FSU countries have experienced large output declines, and most have experienced hyperinflation. But even in CEE and FSU, differences are marked. Some countries have lost over half of their GDP and growth performance in a number of countries is still poor, while others are growing strongly. Some are still suffering from high inflation while others have successfully reduced annual inflation to 50 percent or less. What are the main determinants of this divergence of outcomes across transition economies?

The literature on transition emphasizes the importance of different factors in different country groups. Many observers have, for example, noted that the inherited economic conditions, natural resources, histories, and institutions of transition countries were very different between CEE and FSU.<sup>1</sup> Drawing attention to these differences, they point out that the transition path of a given country will depend both on its initial conditions

and on the economic policies it chooses to implement. The empirical analysis, however, has largely focused on the effects of policies<sup>2</sup>. Several recent studies have emphasized the variability in policies and performance and have shown that government policies were key determinants of cross-country variation in growth and inflation<sup>3</sup>. The analysis shows that economies in CEE and FSU contracted strongly as major reforms were initiated but mostly resumed growth about two years later, after achieving price stability. The analysis also shows that delaying reforms does not prevent output declines, and success in controlling inflation has been positively related to reforms. These results suggest that the issue is not so much big-bang versus gradualism but one of achieving macroeconomic stability and quickly shifting factors of production to the most efficient use.

These findings have in turn focused attention on the determinants of policy choices in CEE and FSU countries. The emphasis has largely been on political transition, with little attention being given to the role of initial conditions as a key factor shaping the reform process and hence economic outcomes<sup>4</sup>. In particular, it is noted that there have been

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<sup>1</sup>See for example Fisher and Gelb (1991), Bruno (1992, 1993)

<sup>2</sup> A number of papers, Balcerowicz and Gelb (1996), de Melo, Denizer and Gelb (1996a), and Fischer, Sahay and Vegh (1996a,b) and Denizer (1997) do include one or two initial conditions in their analysis. However, these studies ignore other initial conditions and therefore may have failed to capture some important dimensions of the transition process.

<sup>3</sup> See Aslund, Boone and Johnson (1996), de Melo, Denizer and Gelb (1996a and b), de Melo and Gelb (1996), Fisher, Sahay and Vegh (1996a,b), Sachs (1996a), Selowski and Martin (1996), and Hernandez-Cata (1997). See Blanchard (1997), and Brixiova and Kiyotaki (1997) for theoretical aspects of transition.

<sup>4</sup>Ickes (1996) discusses some of the consequences of not including initial conditions in the analysis of reforms and performance in the context of transition. In his review of the transition process, Murrell(1996) points out that the degree of political change and liberalization seems to be related to initial conditions and war.

close links between political transition and intensity of reforms (Balcerowicz and Gelb 1995, Aslund 1995, De Melo, Denizer, and Gelb 1996, and Aslund, Boone, and Johnson 1996). Economic reform has been easier in countries where rapid and fundamental political change has taken place. In these countries, an initial period of “extraordinary politics” provided a window of opportunity for policy makers to push through decisive reforms. More recently, Shleifer (1997), comparing the performance of Russia and Poland, has pointed out the importance of political transition in determining the success of economic reforms.

It has been difficult, however, to accommodate the experience of China and Vietnam within the above framework. The gradual reforms in these two countries compared to Eastern Europe were broadly consistent with the limited extent of political change<sup>5</sup>. Their economic performance, however, followed a pattern very different from the one observed in CEE and the FSU. While there are various interpretations of the Asian experience with transition, a prominent feature of these interpretations has been the attention paid to the role of initial conditions<sup>6</sup>. Initial conditions, and in particular structural characteristics such as surplus agricultural labor, have been often referred to as the primary causes of growth in socialist Asia<sup>7</sup>. Several studies have also recognized the role of initial conditions in

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<sup>5</sup> Vietnam went through a phase of rapid reform in 1989 in response to high inflation. In this regard, its experience is different from that of China.

<sup>6</sup> See for example the discussion in Sachs and Woo (1997) on the experimentalist and the convergence schools of thought in interpreting the Chinese Experience.

<sup>7</sup> See Parker, S., Gavin Tritt and Wing Thye Woo. (1997) Some

shaping Asia's reform strategy. Thomas and Wang (1997), for example, argue that "countries with relatively stable political and macroeconomic conditions usually feel no particular urgency to reform, so they can afford to conduct reforms in an evolutionary fashion, rather than risk political and economic chaos" and "China and most East Asian countries belong to this group".

But none of these studies has taken an integrated approach to explaining the transition experience. In particular, no systematic attempt has been made so far to look at the interaction of all factors, including initial conditions, political change and reforms, in a unified framework comprising CEE and FSU as well as China and Vietnam. This paper attempts to look at these broader interactions, but initially focuses on the role of initial conditions, which has been less emphasized in the literature.

The previous findings on policies and politics raise several important issues related to the role of initial conditions in transition economies. The first issue is: How important are initial conditions in the determination of policy choices? Related questions are: Is the large variation in policies mainly due to different rates of political change, as argued by many, and does this mean policy makers do not take into account initial conditions of their countries in formulating reform policies? Are there relevant economic, social, and

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Lessons Learned from Comparison of Transitions in Asia and Eastern Europe, in Woo W., Stephen Parker and Jeffrey Sachs (1997).

institutional circumstances that act as constraints or catalysts to reforms? For example, WDR 1996, notes that “countries’ characteristics--their unique advantages and disadvantages--influence what policies can be chosen and what leaders can accomplish”.

A second, related issue is: Through what channels might initial conditions affect policies? Do they directly influence their effectiveness and hence the policies being chosen? Murrell (1996), for instance, has observed that policies may have “become increasingly homogeneous overtime but outcomes have become more varied, suggesting that initial conditions greatly determine the effectiveness of policies”. If so, can slow reforms be viewed as a rational response to lower effectiveness of policies under unfavorable initial conditions?

A third, issue relates to the impact of initial conditions on performance. Assuming there is an indirect effect on performance through policy choices, do we observe in addition a strong direct effect of initial conditions on growth and inflation? If initial conditions have an independent effect on performance, how does this effect evolve over time and what is in general the time profile of the impact of initial conditions on the policies-performance relationship? Do we observe a diminution of the effect of initial conditions on policies and performance or is this effect magnified over time?

Given these questions, we analyze here the role of initial conditions and their interaction with policy choice and economic performance during the transition period in 28 countries. The nature of the problems addressed in this paper requires a sample which is consistent with respect to the beginning of transition for different countries. China’s shift

to more market-oriented economic policy started in 1978; Vietnam's reform program (*doi moi*) was launched in 1986; in Eastern Europe and Mongolia, and in the FSU, the major events that marked the revolutionary change in political and economic systems occurred in 1989-90 and 1991 respectively. The duration of transition in the FSU and our preference to work with a balanced sample constrain the length of the time series for these sub-groups of countries to five years. Our main sample therefore includes observations for the periods 1979-83 for China, 1987-91 for Vietnam, 1990-94 for Eastern Europe and Mongolia, and 1992-96 for the FSU.

In the next section, we discuss a range of initial conditions as well as some special factors that are thought to affect the transition experience. A total of 11 country-specific factors are considered as potentially important. Utilizing principal components analysis we derive and interpret main clusters of the full range of initial conditions. Two such clusters are used in subsequent multiple regression analysis. In section III, the focus is on whether these initial conditions, together with a political change variable, explain the choice of reform policy. We test for the impact of initial conditions on policy and performance over time. We then use the results from the regression equations to come up with estimates of the relative importance of initial conditions and policies in determining performance, as measured by growth and inflation. In this section we also study the time profile of output and inflation in transition economies taking initial conditions and policies into account. Section IV summarizes the main findings of the paper.

Standard caveats on data problems, which are especially severe in transition

economies, apply to conclusions drawn here. These problems include difficulties in estimating deflators; difficulties in deriving consistent measures of trade and balance of payments over time; over-reporting of output at the beginning of transition and under-reporting of output as transition and private sector development proceed<sup>8</sup>. With this in mind, conclusions are drawn with modesty.

## **II. INITIAL CONDITIONS, CLUSTERS AND OTHER FACTORS AFFECTING TRANSITION**

### **II.1 Transition and Initial Conditions**

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<sup>8</sup> Kaufman and Kaliberda (1996) and Johnson, Kaufman, and Shleifer (1997) provide an interesting analysis of the size of unofficial economy in transition economies.

Despite a common legacy of planning, the transition economies started out under different circumstances. There were substantial differences in terms of the initial level of development, macroeconomic distortions, integration into the trading system of the socialist countries, extent of prior reforms etc. In Eastern Europe, the beginning of the transition process was marked by a wave of largely peaceful political revolutions in 1989, accompanied by an economic shock from the breakdown of the CMEA trading arrangements. For the FSU republics, the collapse of the Soviet Union in 1991 was the defining political and economic event, as a result of which these countries gained their independence and began their transition to market economies. Reforms in China and Vietnam started earlier, but without a radical political change. Drawing on the literature and our own earlier work on transition, we identify 11 variables, summarized in Tables 1 and 2, to characterize the initial conditions of transition economies just prior to their shift towards market-oriented development--1978 for China, 1986 for Vietnam, 1989 for Eastern Europe, and 1989-91 for FSU and Mongolia. In Table 1, we group indicators for initial levels of development, resources and growth. Table 2 presents variables reflecting initial macroeconomic distortions and institutional characteristics of the transition economies.<sup>9</sup>

As shown in Table 1, transition countries span a considerable range of development. Income levels (**INC**), measured in 1989 US\$ but reflecting purchasing power

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<sup>9</sup>Other historical and cultural factors can be expected to affect a society's success in managing transition, but no attempt is made here to capture these.

parity incomes in the base year, ranged from \$800 in China to over \$ 9000 in Slovenia.

Per capita income for China is widely debated but at the start of its transition was perhaps half that of Albania. Social indicators roughly followed income levels; life expectancy ranged between 61 and 75 years and infant mortality rates, from 8 to 66.

Urbanization (**URBAN**) is another proxy for level of development. Its cross-country distribution closely mirrors that of income levels, with lower income countries being on average more rural.

Industrialization is another indicator of development, but overindustrialization--or industrial distortion (**INDIST**)--was common in socialist countries. It is defined here as the difference between the actual share of industry in GDP and the share predicted by the regression analysis in Chenery and Syrquin (1989).<sup>10</sup> Industrial shares were often high because trade, financial services, and business and consumer services were typically repressed in socialist countries.<sup>11</sup> In 1989, only Hungary, Slovenia and Croatia had service shares of 50 percent of GDP, a typical level for upper middle-income countries. Bulgaria, Romania, Czechoslovakia (especially Slovakia), Armenia and Poland had industrial shares of over 50 percent of GDP; Russia, and countries in the north-eastern part of the FSU were close to this level. In Vietnam in mid-80s, agriculture accounted for a larger, and industry for a smaller, GDP share. Three indicators of resources and

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<sup>10</sup>The high share of industry in China (in contrast to its low level of urbanization) is partly due to extremely low prices in agriculture relative to industry.

<sup>11</sup>Services were suppressed in communist countries partly for ideological reasons that held non-material output to be “unproductive.” See Easterly, de Melo, and Ofer 1994 for econometric estimates of the gap in actual and expected

growth are considered. The richness of natural resources (**RICH**) differs significantly among transition countries, as indicated by the rough characterization in Table 1. At first sight, resources make the transition easier but this may not be so<sup>12</sup>. The resource rich countries of Central Asia, for example, have to surmount enormous production and logistical problems (pipeline transit rights) before realizing their oil and gas potential. In some cases, the availability of potentially exportable energy resources may permit governments to delay reform (Azerbaijan, and Turkmenistan). On the other hand, for energy importers, the break up of the CMEA and the USSR has entailed a large terms of trade shock, leading to growing external indebtedness.

Location (**LOCAT**), defined as geographical proximity to thriving market economies, may be especially important during transition because it facilitates the import of market institutions and the adjustment of trade patterns. Moreno and Trehan (1997), for example, show that even in the case of market economies, location is an important determinant of growth and that this correlation reflects more than common shocks. Countries from Central Europe and the Baltics may have benefited from better access to Western markets as well as stronger incentives to adopt the institutional framework of the European Union because of prospective membership. China and Vietnam are close to some of the most rapidly growing market economies in the world. At the other end of the spectrum are

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levels of services in Russia and other former Soviet states.

<sup>12</sup> See Sachs and Warner (1996) for a recent discussion of the effects of natural resources on growth.

the remote landlocked countries from Central Asia and the Transcaucasus, with essential connections routed through Russia. We use a dummy variable to indicate that a particular country has a thriving market economy as a neighbor.

Reported prior economic growth rates (**PRGR**) in CEE and FSU during the second half of the 1980s were mostly positive, with mildly negative rates found in Romania and Slovenia. Growth tended to be higher in the poorer countries (Mongolia, Moldova, Kyrgyzstan, and Turkmenistan, plus Vietnam and China). This is included as an initial condition because it has been observed that growth in the earlier stages of socialist accumulation is higher and that countries found themselves at different stages of this process at the beginning of transition. The more mature countries were experiencing stagnation, if not declining growth, whereas poorer countries were still benefiting from higher growth.

Variables reflecting initial economic distortions and institutional characteristics are shown in Table 2. Open inflation was chronic only in Poland and the Yugoslav Republics in 1989, but repressed inflation (**REPR**), in the form of a monetary overhang, was high in most of CEE and the FSU. The indicator of repressed inflation used in Table 2 is the increase in deflated wages less the change in real GDP from 1987 through 1990; this suggests that the strongest inflationary pressures in CEE were in Bulgaria, Romania, and Poland and the weakest were in Czechoslovakia and Hungary<sup>13</sup>. Repressed inflation was

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<sup>13</sup>Direct estimates of money overhang are difficult to obtain because of difficulty of estimating the underlying voluntary money demand functions.

highest, however, in the FSU, where upward pressures on prices mounted after 1987, propelled by *glasnost* and diminishing Union control over the Republics. Macroeconomic imbalances were quite severe in Vietnam in the mid 80s, but China began its reforms at the end of the 70s without a monetary overhang.

Reflecting the desire of authorities to create a regionally interdependent communist economy, trade shares in GDP (**TDEP**) were high for most CEE and FSU countries and trade flows were concentrated within the CMEA area. Compared to the counterfactuals generated by gravity models (Winters and Wang 1994), trade flows within the area were especially large for the smaller republics of the USSR, while trade outside the area was very small. The breakdown of the CMEA and the collapse of the USSR therefore caused tremendous disruption in the international trade and payments of these countries. CEE countries were less dependent on CMEA trade than FSU countries, and hence suffered somewhat less from disruption. The effects of disruption also depended partly on location; some countries could benefit from cross-border trade with rich neighbors, while others were not so fortunate. China had long left the Soviet orbit, but Vietnam was still part of the CMEA and felt the effect of its collapse.

A final measure of economic distortion is the black market exchange rate premium (**BLMKT**). A high black market exchange rate premium is an indicator of expectations of depreciation and/or foreign exchange rationing. A high differential between the official and the free exchange rate can also be interpreted as a distortionary tax on exports and subsidy on imports (Easterly, 1994). It stimulates the diversion of resources from the

official to the informal sector, a process which is often associated with consumption of real resources in directly unproductive activities. Black market premia were especially high in FSU, Mongolia, Bulgaria, Romania, and Vietnam. They were relatively modest in countries that had some previous experience with reforms like Hungary and the former Yugoslav republics of Croatia, Macedonia, and Slovenia. The black market premium in Czech and Slovak republics was high according to international standards, but low compared to the average for transition countries. China also began reforms with a relatively low level of distortions in its foreign exchange market.

Table 2 also includes two variables reflecting initial institutional characteristics of the transition economies. **(STATE)** is a categorical variable differentiating among countries that were independent states prior to 1989 (value of 2); members of decentralized states like the former Yugoslav republics or core countries of centralized federal states like the USSR (value of 1); and new nation states (value of 0). These last needed to build national institutions --including systems of democratic representation, justice, and security as well as economic institutions such as a central bank and customs bureau -- while confronting economic changes.<sup>14</sup> The non-Baltic FSU, in particular, lacked national institutions; until recently, these former Soviet republics were territories in a highly centralized political union, characterized also by a brain drain from the periphery to the center. New nation states arising from the former Yugoslavia and former Czechoslovakia

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<sup>14</sup>Recent cross-country growth studies emphasized the importance of institutional/political variables. See Alesina (1997), and Knack and Keefer (1995) for examples.

were not faced with such serious problems, as the federal systems in these countries gave substantial powers and responsibilities to the constituent republics. Furthermore, the historical ties and the political affiliation of CEE countries with Western Europe have given them a clear sense of direction lacked by the new nation states of the FSU.

Another institutional variable, "market memory" (**MARMEM**), captures the lack of familiarity of the non-Baltic FSU with market institutions. While this is related to the STATE variable discussed above, it is likely that MARMEM has a separate influence on the reform process, particularly on the ability of societies to deal with the disequilibria of the transition.<sup>15</sup> Not having a single generation in the society with prior experience of the workings of market economy could provide a basis for adopting a wait and see approach to reforms or for reverting repeatedly to old ways of doing things. In fact, both types of reform outcomes have been observed in certain FSU countries, and policies that could be regarded as "a clean break with the past" have been more difficult to adopt and the unwillingness of some non-Baltic FSU countries to leave the ruble zone until Russia forced them to do so, versus the Baltic countries' decision to leave the ruble zone quickly could partly reflect the importance of prior experience with a market based system. If transition is viewed as a process of large scale institutional change, then this variable

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<sup>15</sup>While Schultz (1975) uses the concept of the ability to deal with disequilibria in a market economy context, it is also highly relevant in the transition context. The ability of transition economies to reallocate resources toward their best use and to establish institutions to that end has been a major determinant of transition patterns. On this see WDR (1996).

could be very important (Dewatripont and Roland 1997).<sup>16</sup> We use the number of years under central planning as proxy for this variable.

## **II.2 Initial Conditions Clusters**

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<sup>16</sup>The experience of market-based law, for example, was never lost in CEE:WDR 1996.

Initial condition variables (ICVs) can be used individually in regression equations, but interpretation of any individual coefficient is only meaningful when everything else is held constant. Moreover, ICVs are often related and they exert their effect jointly, so that the individual approach suffers from the omitted variables problem and results estimated coefficients that are biased. An alternative approach is to include all ICVs in the same equation, but the fact that there are 11 of these variables, some possibly correlated with each other, makes this less useful. In order to reduce the dimensionality of the ICVs and to deal with multicollinearity, we rely on the method of principal components.<sup>17</sup>

For the initial conditions identified earlier, the first two principal components account for most of the variation. While it is always difficult to interpret principal components, in this case they seem to have consistent interpretations that are robust to a sensitivity analysis whereby principal components have been derived for modified sets of initial conditions. In all cases, the first two components explain between 64 percent and 75 percent of the variability of the initial conditions. Hence, in the subsequent analysis we will use only the first two principal components. They are presented in Table 3 and interpreted as follows:

**PRIN1:** The most important cluster has high positive correlations, or loadings, for economic distortions (TDEP, REPR, BLMKT) as well as for MARMEM. The weights for these variables given in the eigenvector suggest that PRIN1 might largely be interpreted as an index of the degree of macroeconomic distortions at the beginning of transition and

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<sup>17</sup> For a thorough description of this technique see Dunteman (1989).

a measure of unfamiliarity with market processes. With liberalization these distortions would translate into shocks to the economy and can therefore be viewed as a measure of the intensity of transitory shocks when controlling for the level of liberalization. Loadings are somewhat lower, for the negatively signed STATE and LOCAT variables although the corresponding weights in the eigenvector are still sizeable. Countries with higher scores on trade dependence, black market exchange premium, repressed inflation and market memory and with lower values for STATE, and LOCAT will tend to have higher values for PRIN1.

**PRIN2:** The second most important cluster has high positive loadings for *per capita* income (INC), urbanization (URBAN), and over-industrialization (INDIST) and might therefore be interpreted as an index of the overall level of development, incorporating the so-called “socialist development overhang”. For brevity, we will call this component “overindustrialization”. Poor but resource-rich countries tended to grow faster prior to transition, so PRIN2 has also high negative loadings for resources and prior growth (RICH, PRGR). PRIN2 might therefore be interpreted as reflecting a cluster of higher income, resource poor countries that reached diminishing returns to investment and ran out of steam before reforms began because of structural distortions reflected in overindustrialization. It is, in fact, the case that growth slowed noticeably in the richer countries of CEE and the FSU during the 60s and 70s. Labor force participation rates had stabilized at high levels, and rapid capital accumulation was offset by declining capital

productivity.<sup>18</sup> To the extent that structural distortions are reflected in PRIN2, we can also view this second component as a measure of what the supply shocks would be when prices are liberalized and free entry allowed. Changes in the parameters of the initial conditions dominating PRIN2 can only occur relatively slowly so that we can interpret this component as reflecting persistent conditions. To sum up, countries with higher initial *per capita* income, higher urbanization, over-industrialization, poor natural resources and low growth rates prior to 1989 will tend to have higher values for PRIN 2.

Given the nature of the principal components procedure, an important implication of these results is that macroeconomic distortions together with historical recollection of a market economy tended to be relatively uncorrelated in the pre-transition period with level of development and industrial overhang. Using the first two principal components as indices, we can group the transition economies along the two dimensions of macroeconomic distortions and over-industrialization. It can be seen in Figure 1 that the FSU states are uniformly high on the first dimension, but differ a great deal on the second. The Central Asian states were far less developed than the Slavic one, and the Central and Eastern European countries tend to cluster in the first quadrant. The Czech and Slovak Republics, for example, have a very high level of structural imbalance, but low macroeconomic distortions. Interestingly, countries like Hungary, Croatia, and Poland--

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<sup>18</sup>See Ofer 1987 and Easterly and Fischer 1994 for a discussion of factors leading to the Soviet economic decline.

that had a relatively long history of prior reforms and more liberal economic systems--have moderately low values for both macroeconomic and structural distortions. Finally, the East Asian economies and Albania form a separate group, characterized by a relatively low level of development, and also by lesser structural and macroeconomic distortions.

### **II.3 Economic Policies, Political Change and Other Factors**

An integrated view of transition requires us to consider initial conditions along with other factors, especially economic policies, political reforms, and regional tensions. Economic policies are proxied by economic liberalization indices originally developed in de Melo, Denizer, and Gelb (1996a). We use the annual liberalization index (**LIB**) which represents the level of liberalization achieved in each year. Of course, some countries initiated partial liberalization within the socialist context prior to transition. In Poland and Hungary, reforms were undertaken in 1968 and 1981 respectively, while Yugoslavia abandoned formal planning in the 1950s. But prior to 1990, other countries in Eastern Europe (Bulgaria, Romania, former Czechoslovakia) had departed little from the Soviet model of central planning and, notwithstanding the limited initiatives under *perestroika* in 1987, there were no major reforms in the USSR prior to 1991. China's transition started in 1978 from no prior reforms, though in a mainly rural setting. In South Vietnam, a small private sector and some market practices were preserved after the unification in 1974. The liberalization index incorporates the extent of prior reforms in each country in its initial value.

As mentioned earlier, the links between politics and reform are also important. The transition countries now display significant variation in the degree of political freedom and civil liberties achieved (see Table 5). Many have made a rapid transition to democracy, but in a few countries political freedom has eroded after some progress early in the beginning of transition. This erosion of political freedom has sometimes been related to ethnic, religious or cultural tensions deeply rooted in history. We use the index of political freedom (**FREEDOM**) by Freedom House to represent political change.

Finally, six of the 28 countries covered here have experienced serious regional tensions: wars, internal strife, or prolonged war-related blockades. We use a dummy variable **RT(regional tensions)** to capture the disruptive effects of these events.

### III. INITIAL CONDITIONS, ECONOMIC LIBERALIZATION AND PERFORMANCE

#### III.1 Explaining the Relationships

We now focus on the links between initial conditions, policy reform choices given by the liberalization indices, and performance outcomes measured in terms of growth and inflation. We posit the following system of equations; where “i” represents country and “t” represents year:

$$LIB_{it} = a + b_0 LIB_{it-1} + b_1 PRIN1_i + b_2 PRIN2_i + b_3 FREEDOM_{it} + b_4 RT_{it} + e \quad (III.1)$$

$$PERFORMANCE_{it} = z + y_0 PRIN1_i + y_1 PRIN2_i + y_2 LIB_{it} + y_3 LIB_{it-1} + y_4 RT_{it} + e \quad (III.2)$$

While we expect economic performance during transition to depend on initial conditions, reforms and special factors such as war and regional tensions, previous studies for CEE and the FSU (De Melo, Denizer, and Gelb 1996, Selowsky and Martin, 1997) have found strong evidence that the effect of liberalization is non-linear over time. In particular, empirical results suggest that good performance (high growth, low inflation) depends negatively on the size of the contemporaneous liberalization step but positively on the “accumulated stock” of reforms. We, therefore, expect  $y_2 < 0$  and  $y_3 > 0$ . Also, in order to have an overall positive effect of liberalization on performance in the steady state where  $LIB(t-1) = LIB(t)$ , we would expect  $|y_3| > |y_2|$ . With respect to macroeconomic distortions as reflected in  $PRIN1$ , we expect their effect on performance to be negative.  $PRIN2$  captures structural distortions which were higher in more developed socialist countries. We therefore expect  $y_1 < 0$ .

What are the implications of these relationships for the expected signs of the coefficients in the liberalization equation? In the performance equations, both contemporaneous liberalization and unfavorable initial conditions are expected to have a negative impact on growth and inflation. A negative relationship between unfavorable initial conditions and degree of liberalization would therefore be consistent with behavior which attempts to smooth output during transition. In these countries slower

reforms would have a smaller negative effect on performance in the short run and in this way might be favored to try to compensate for the negative impact of more unfavorable initial conditions. This logic would suggest a negative association between LIB and PRIN1, or  $b_1 < 0$ . Initial conditions could also have a direct effect on liberalization outcomes, due for instance to lower effectiveness of reforms under more unfavorable initial conditions.

It is more difficult to form expectations about the sign of  $b_2$ . To the extent that PRIN2 reflects structural distortions and has a negative impact on growth, we would expect the above reasoning to apply to PRIN2 as well. However, PRIN2 is dominated by indicators of level of development, and it is not *a priori* clear how this affects policy choices. Level of development, for example, tends to be positively correlated with political freedom, and as such is likely to be positively associated with liberalization. A higher level of development may be also associated with a lower marginal utility of income and therefore with a greater capacity to absorb negative shocks; this could imply a positive relationship between reforms and PRIN2. And finally, if administrative capacity to implement reforms is positively correlated with level of development, and if this capacity constraint is binding during transition, then we would also expect to observe a positive relationship between PRIN2 and LIB. All these hypotheses therefore suggest a positive association between PRIN2 and our liberalization index.

The hypothesis, based on empirical results from previous studies by Selowsky and Martin (1997) , and de Melo, Denizer and Gelb (1996) that performance depends

negatively on the level of contemporaneous liberalization but positively on the accumulated stock of reforms, also has implications for the effect of past liberalization on current policy choices, in the context of output smoothing behavior. Given this trade-off, a higher level of achieved liberalization allows a larger contemporaneous liberalization step for a targeted GDP growth rate. We therefore would expect contemporaneous liberalization to depend positively on the extent of past reforms.

As previously discussed, the “window of opportunity” argument suggests that radical political change may be associated with greater tolerance on the part of the populace to economic hardships in the short run. Political change can therefore support more forward-looking behavior which places greater value on future benefits making it easier to bear any immediate cost of liberalization in expectation of its future benefits. We therefore, expect  $b_3 > 0$ .

The above equations can be thought of as forming a recursive system in which policy does not depend directly on current performance. The exclusion of the performance variable from the liberalization equation is consistent with a view of policy formation as a forward looking process in which policy makers assess the likely impact of initial conditions and policy on performance over time and decide on an optimal reform path within the political envelope in a given country. However, simultaneity between performance and reforms can still be an issue if the error terms of the two equations are contemporaneously correlated. (Kennedy, 1994). To check this we estimated the system using 3SLS and SUR methods. The results indicate that our

system does not suffer from simultaneity. We therefore proceed under the assumption that the disturbance terms of the two equations are uncorrelated and use OLS estimation procedure in the analysis.

The assumption that disturbance terms are uncorrelated implies that performance surprises do not lead to revision of reform plans. This would be realistic if such surprises could be attributed to transitory shocks or if revision costs are high due for example to complexity, interdependence of different policy measures or credibility effects of policy reversals. One could also question the very assumption of rationality, which is implicit in the above formulation, in the case of unprecedented systemic changes of this nature. It can be argued, however, that even large mistakes in estimating the effects of liberalization and initial conditions on performance may not lead to major reassessment of reform programs especially in the direction of slowing the process. To use an analogy between reforms and investment decision, any losses associated with over-optimism or over-pessimism will be to some extent of the nature of sunk costs. For example, an underestimation of the negative short-term impact of liberalization may cause a larger than anticipated decline in output but it also brings the economy closer to the point where, because of large accumulated stock of reforms, the total impact of liberalization on performance would be positive. It is therefore conceivable that mistakes of this nature may even lead to acceleration of reforms.

### **III. 2 Empirical Analysis: Cross Section Equations and Relative Reform Effort**

We begin the empirical analysis of the relationships between initial conditions,

reforms, and performance by looking first at cross-country variation using the average values for the respective variables over the five-year period. The results are presented in Table 4. In the liberalization equations (AVLIB in equations 4.3 and 4.4), we observe a negative and statistically significant association between liberalization and our index for initial macroeconomic distortions (PRIN1). This result seems to indicate that severe macroeconomic distortions tend to be associated with slower reforms. The coefficient for PRIN2 has a positive sign suggesting that, on average, more developed countries tend to liberalize more. However, PRIN2 is statistically significant only in Eq 4.4, in which political freedom is excluded. In Eq 4.4, PRIN2 probably captures some of the effect of democratization on reforms due to the positive association between level of development and political change in our sample. The level of political freedom (AVFREE) has a strong and positive association with the degree of liberalization as demonstrated by the results for Eq. 4.3. This seems to corroborate previous findings that rapid and fundamental political change makes reform easier.

Political change and initial conditions do not exhaust the list of factors that may determine the policy choices of transition economies. Individuals, historical and cultural factors, external aid and demographic structure may also play an important role. As the WDR (1996) on transition points out, “most decisive reforms have reflected the vision of one leader or a small and committed group” (WDR, 1996, p. 11). One way to assess the importance of such factors for individual countries is to look at the residuals from equations 4.3 and 4.4. These capture the deviations of actual liberalization from what

could be viewed as a “normal” level of liberalization for a given set of initial conditions and political freedoms.<sup>19</sup> In Table 5 we compare rankings of the transition economies under AVLIB and under the residuals. Countries such as the Kyrgyz Republic, Estonia, Lithuania, and Moldova have liberalized substantially more than expected given their initial conditions. On the other hand, countries such as the Czech and the Slovak Republics, which started with very good initial conditions, show negative values of the residuals despite a high degree of liberalization achieved. Ukraine, Romania, Belarus and Turkmenistan are among the countries that have liberalized substantially less than expected for their set of initial conditions. Countries that have liberalized under relatively lower levels of political freedom improve further their position in the ranking by the residuals from Eq 5.3. Examples include Vietnam, Uzbekistan, and Tajikistan.

The results from the performance equations (4.1 and 4.2) suggest a negative association between PRIN1 and PRIN2 and economic performance. The effects of PRIN1 on inflation and growth are larger and have statistical significance. The coefficient for PRIN2 is not statistically significant in either performance equations. Regional tensions are statistically significant and important in both the growth and inflation equations; countries that have suffered from wars and other disruptions have experienced a substantially lower growth rate (5.6 percent less per annum) and higher inflation than other countries, controlling for initial conditions and liberalization. The

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<sup>19</sup> It is tempting to call the residuals indices for the relative reform effort in the spirit of the tax literature, which uses similar approach to derive measures for tax effort. See for example Lotz and Morss (1969).

coefficients for AVLIB are negative and statistically insignificant. However, we know from previous studies that the relationship between reforms and performance is highly non-linear over time, a feature that cannot be captured by this simple functional form and by cross-country regression only.

### **III. 3 Panel Estimates: Main Results**

As described earlier, the panel data set includes observations from five years for each of the 28 countries, with different periods for different subgroups. We allow a wider set of functional forms to exploit the time dimension of the data set and to capture potential non-linearities. As discussed earlier, previous studies have found strong empirical evidence for a non-linear relationship between reforms and performance. DLTALIB, the first derivative of the liberalization index with respect to time captures the extent of any “liberalization shock.” To test whether the effectiveness of policies depends on initial conditions we construct four new variables, PR1LIB, PR2LIB and DLTPR1 DLTPR2. These are interaction terms between LIB and DLTALIB, on the one hand, and PRIN1 and PRIN2 on the other. Finally, to look at how the impact of PRIN1 and PRIN2 on LIB and performance varies over time, we interact the two principal components with time dummies using PRIN1 and PRIN2 in year 1 as a control group. We first estimate our basic equations III.1 and III.2 and obtain the following results (t ratios are presented in parenthesis below the coefficients):

$$(A) \text{ LIB} = 0.182 + 0.641\text{LIB}(-1) - 0.022\text{PRIN1} + 0.021\text{PRIN2} + 0.015 \text{FREEDOM} -$$

**0.026RT**

(8.69) (16.93) (-2.64) (2.02) (4.33)

(-1.15)  $R^2_{Adj}=0.86$ , N obs=140

(B) **LOGINF= 4.80 + 2.5LIB-3.4LIB(-1) + 0.97PRIN1 + 0.17PRIN2 + 1.69RT**

(11.31) (1.86) (-3.05) (6.89) (1.08) (4.56)

$R^2_{Adj}=0.39$ , N obs=140

(C) **GROWTH=-10.41 - 17.54LIB + 32.6 LIB(-1) -2.95PRIN1 - 3.37PRIN2 - 11.16RT**

(-4.37) (-2.31) (5.19) (-3.71) (-3.73) (-5.34)

$R^2_{Adj}=0.43$ , N obs=140..

In (A), PRIN1 has a negative and statistically significant effect on LIB. The impact of PRIN2 is positive and also significant at the conventional 5% level. These results are in line with our previous findings that macroeconomic distortions tend to have a negative, and development a positive although less significant, impact on liberalization. FREEDOM is again positively associated with liberalization and is highly significant.

The results for the growth and inflation equations are also in conformity with the expected relationships. Current liberalization has a negative impact on growth and is statistically highly significant. LIB is also positively associated with current inflation although the coefficient is marginally insignificant. As expected, LIB(-1) has a strong positive impact on performance and the results are highly significant. These results therefore seem to indicate that performance depends positively on the “accumulated

stock” of reforms even if negatively affected by the size of the contemporaneous liberalization step. The coefficients for LIB and LIB(-1) imply that a liberalization step that more than doubles the previous period’s level of liberalization is required for the overall effect on growth to be negative. This is most likely in the early stage of reforms. Countries that started with some history of reforms may have had more incentives to liberalize rapidly because the total effect on performance is more likely to be positive.

As before, initial conditions have a significant impact on performance. PRIN1 has a negative and statistically significant effect on growth and inflation. PRIN2 also preserves its sign from the cross-sectional regressions, but is now also statistically significant in the growth equation. RT has a stronger effect on growth and inflation than before since it now is a year dummy as opposed to a country dummy in the cross-sectional regressions.

To illustrate graphically the implications of these results for the effects of initial conditions on growth we use the partial derivatives for GROWTH with respect to PRIN1 and PRIN2 in (C) to construct “isogrowth” lines for different sets of initial conditions and superimpose the “isogrowth” lines on Fig.1 to obtain Fig.2. The picture helps with the visualization of the effect of initial conditions on growth. It also clarifies the importance of initial conditions in explaining the different growth performance of China and Vietnam, and to some extent Albania, compared to other transition economies. China and Vietnam, for example, lie on an isogrowth line which is about 14 % higher

than the isogrowth line for most of the FSU republics.<sup>20</sup>

Similar equations have also been estimated excluding China and Vietnam. They produce similarly-sloped growth lines and an “out of sample” growth bonus for China and Vietnam about 7 percent higher than for the FSU. This bonus is especially interesting in highlighting the strength of observed structural and institutional features of China and Vietnam, even when set in a CEE/FSU context. The difference of 7 percent between the two estimates is also instructive as it may highlight the importance of other factors that are specific to East Asian economies.

Table 6 shows the impact of initial conditions on policy effectiveness and the time profile of the effect of initial conditions on liberalization and performance taking the interaction terms into account. Equations 6.2 and 6.4 include interaction terms between the policy and the initial conditions variables in order to test for the effect of initial conditions on the effectiveness of policies. Interestingly, we find that PR1LIB and PR2LIB are positively associated with performance. Only the coefficient of PR2LIB in the growth equation is statistically insignificant. The results for PR1LIB suggests that the higher the degree of initial macroeconomic distortions the higher the effectiveness of reforms in respect to both growth and inflation. The coefficient for PR2LIB in the

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<sup>20</sup>We also estimated a reduced-form equation by regressing growth on initial conditions political freedom and regional tensions to capture the total, direct and indirect (through liberalization), effects of initial conditions on growth. The results were similar.

inflation equation can be interpreted as partial evidence that the effectiveness of reforms in curtailing inflation is higher at higher levels of development which is associated with higher levels of distortions. With respect to DLTPR1 and DLTPR2, which capture the effect of initial conditions on the size of the liberalization shock, we expect to observe negative signs in the Growth equation and positive signs in the Inflation equation. The results in equations 6.2 and 6.4 do not support this, however. The coefficients for DLTPR1 and DLTPR2 in both performance equations are statistically insignificant and only the coefficient for DLTPR1 in the growth equation has the “expected” sign. We test for robustness of the results in equations 6.2 and 6.3 by excluding China and Vietnam from the sample. The results continue to hold for inflation and, although somewhat less strongly, for growth as well. Interestingly, with this restricted sample, the coefficient for PR2LIB in the growth equation is highly insignificant and now has a positive sign.

The results, therefore, do not support the hypothesis that the effectiveness of reforms is necessarily lower under unfavorable initial conditions as reflected in PRIN1 and PRIN2. On the contrary, we find some evidence that the effectiveness of liberalization is higher at higher levels of macroeconomic and structural distortions. Going back to our previous findings about the negative association between macroeconomic and structural distortions and reforms, this suggests that the negative association can not be explained by the lower potency of reforms under unfavorable initial conditions. Unfavorable initial conditions discourage reforms but effectiveness of

reforms is not reduced once they are implemented. This however, does not imply that steady-state growth rate of countries with good and bad initial conditions will be similar with similar sets of policies. Country specific factors, such as location can still be expected to play a role. For example, as shown by Radelet, Sachs, and Lee (1996) and Sachs and Warner (1996b,c) countries that are landlocked are likely to have smaller long- run growth rates than countries with easy market access.

#### **III.4 The Relative Importance of Policies and Initial Conditions**

The performance equations also provide a rough indication of the relative importance of initial conditions versus policies. By construction, PRIN1 and PRIN2 have ranges and standard deviations that are three to four times larger than the range for LIB. With respect to the variance of growth, the regression results suggest that PRIN1 and PRIN2 separately exert a smaller effect on growth variance than reforms, but that their combined effect is comparable in size to the effects of reforms.<sup>21</sup> In the inflation equation, the effect of PRIN1 is particularly strong and even dominates the effects of liberalization policies.

To derive more accurate estimates of the explanatory power of initial conditions relative to policies, special factors and interaction terms, we follow a methodology developed by Schmalensee (1985) which uses the adjusted  $R^2$  to set plausible bounds for the variance explained by different groups of coefficients. To calculate these bounds, we estimate three models. The first is the full model, which includes as

regressors contemporaneous and lagged liberalization, interactive terms, initial conditions, and regional tensions. The adjusted  $R^2$  shows the percent of total variance in performance explained by our full set of regressors. Next, we estimate the model, restricting the coefficients to zero for a set of factors. By subtracting the adjusted  $R^2$  from this regression from the adjusted  $R^2$  from the first regression, we compute a rough measure of the total variation explained by these factors. Finally, we estimate the model, restricting to zero the coefficients not in the given set. Its adjusted  $R^2$  provides a second crude measure of the amount of total variation explained by the included set of factors.

The results of this procedure are presented in Table 7. We find that policies have the highest explanatory power among all sets of factors in the growth equations, accounting for 35 to 40 percent of the variation in growth that is explained by the model. Initial conditions are also important contributing 19 to 30 percent of the explained variance and PRIN1 has a higher explanatory power than PRIN2. Interaction terms play a relatively less important role. In the inflation equation, initial conditions dominate with PRIN1 being especially important. Interaction terms come second with 22 to 25 percent of the explained variance in inflation.

We do the same exercise for policy as a dependent variable and find that political change has the highest explanatory power accounting for 38 to 90 percent of

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<sup>21</sup> This is based on the properties of variances assuming the regressors are independent random variables.

the explained variance. PRIN2 may also be important; however the range of the estimate for its explanatory power is wide.

### **III.5 The Influence of Initial Conditions over Time**

We next explore the time profile of the relationships between initial conditions, reforms and performance. As described above, we interact the two principal components with the year dummies using the principal components in year 1 as control group. Results are presented as equations 6.6, 6.7 and 6.8. With respect to liberalization (Eq. 6.8), the signs and the magnitudes of the coefficients suggest convergence over time; less developed transition economies and those with more severe macroeconomic distortions start slowly but gradually catch up. The evidence for convergence with respect to performance is less conclusive. PRIN1 continues to have a negative impact on growth throughout the period, but this impact is diminishing over time as the coefficients exhibit an increasing trend and tend towards zero. Only the coefficient for the interaction term in year 3 (PR1Y3) is not statistically significant. The signs of the coefficients for PRIN2 are also negative throughout the period but their magnitudes do not exhibit any particular trend. Also, none of the coefficients is statistically significant. The results for the inflation equation are similar. Countries with more severe initial macroeconomic distortions continue to suffer from higher inflation rates throughout the period, although the negative impact of PRIN1 is diminishing over time. The time profile of the coefficients for PRIN2 is less clear and none of the coefficients is statistically significant.

As implied by our model, initial conditions have a direct effect on performance as well as an indirect one through their impact on policy choices. It is instructive to compare the two effects and derive their evolution over time. The total effects are calculated by adding the direct effect of initial conditions on performance from equations 6.6 and 6.7 and the indirect contemporaneous and lagged effects of initial conditions on performance through their effect on liberalization, obtained by multiplying the coefficients for PRIN1 and PRIN2 from equation 6.8 with the LIB and DLTALIB coefficients from Eq.6.6 and 6.7. The results are shown in Table 8 for Growth and Table 9 for Inflation. As the results indicate, adverse initial conditions continue to have a negative, although diminishing, impact on performance throughout the period. Second, the direct effects are stronger in magnitude than the indirect effects operating through the liberalization channel for both PRIN1 and PRIN2. A third observation is that the effects of PRIN1 on performance exhibit a more pronounced trend than the effects of PRIN2.

The results shown in Table 6 can also be used to decompose the performance (growth and inflation) and reform paths<sup>22</sup> of transition economies into components reflecting the influence of liberalization and initial conditions over time. We present results only for growth in Fig.3 using the average values for the FSU countries as illustration. The picture clearly shows the positive and growing impact of liberalization

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<sup>22</sup>The decompositions of the reform path is based on the following equation:  $Lib=0.072+0.62Lib(-1) - 0.09Prin1+0.06Prin2+0.02PR1Y2+ 0.03PR1Y3+0.05PR1Y4+ 0.10PR1Y5-0.02PR2Y2-0.03PR2Y3-$

and the diminishing negative impact of DLTALIB on growth. Convergence with respect to PRIN1 is illustrated by the decreasing distance between the PRIN1 line and the horizontal axis. It can also be seen that the positive effect of liberalization overtakes the negative impact of DLTALIB in year 2.

The decomposition of the reform path of transition economies, again using average values for FSU, is presented in Fig. 4. At early stages of transition, a lower level of past liberalization and higher initial macroeconomic distortions limit the extent of liberalization. Political change, however, at this stage is more dramatic and largely drives the policy choices. Over time, the effect of the accumulated stock of reforms, as measured by the lagged liberalization index, grows in importance simultaneously with a decreasing negative influence of initial macroeconomic distortions. The diminishing effects of initial conditions over time is shown by the convergence of PRIN1 and PRIN2 to the zero line.

Finally, an interesting question is whether these results continue to hold if using the contemporaneous sample 1989-96 for all transition economies. In essence, this sample is unbalanced with respect to the length of the pre- and post-reform periods for different sub-groups of countries. We find that our main results are supported by this dataset.

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0.07PR2Y4-0.08PR2Y5+0.05 Freedom.

## **I V. CONCLUSIONS**

Casual observation suggests that transition countries fall into three broad groups: the sharply-recovering countries of CEE; the slower-adjusting FSU countries; and the East Asian countries which responded to reforms with accelerated growth rather than initial contraction. In this paper we depart from previous research that focussed on the relationship between policy and performance to analyze the sources of cross-country variation in both reform policy choices and economic performance. A special focus is given to the role of initial conditions, as well as to the role of political developments. We also include a variable to represent regional tensions -- noneconomic events such as wars and blockades that can have a major economic impact.

Countries may differ in many dimensions, but we find that most of the variation across 11 initial conditions can be summed up in their first two principal components. The first can be interpreted as measuring macroeconomic imbalance and unfamiliarity with market processes (market distortions); the second represents the level of socialist development and its associated structural distortions (overindustrialization). Countries cluster into four broad groups. Those in the FSU all started from deep market distortions, but the Slavic countries were far more developed than those in Central Asia, and had more serious structural distortions. Countries in CEE had lesser market distortions but, being relatively more developed, had severe structural distortions.

China and Vietnam, and to a lesser extent Albania, formed the final group of countries with lower structural and market distortions.

Linkage between initial conditions, policies and performance is then specified as an equation system and tested to ensure recursivity. Policy reform, which is represented by economic liberalization, depends on initial conditions, political change and regional tensions. Economic performance, measured in terms of growth and inflation, depends on initial conditions, economic policies and regional tensions. Cross-section equations suggest that initial conditions are indeed important, both for performance and the speed of economic liberalization; also that political reform, in particular, affects the speed of economic liberalization. Belarus and Uzbekistan offer examples of countries where political change and economic liberalization proceeded relatively slowly.

Comparing actual and predicted economic liberalization provides a new ranking of countries. Mongolia and the Kyrgyz Republic, for example, reformed more rapidly than would have been expected given their initial conditions; Bulgaria and Romania reformed more slowly. The Czech Republic, which is normally thought of as a very rapid reformer, is only average once its unusually favorable initial conditions are taken into account.

Moving to estimates using panel data, regressions confirm that adverse initial conditions are associated with slower economic liberalization. This may be because governments are reluctant to accept upfront costs of sharp reforms on top of the losses

they are experiencing from the dissolution of the old system. Indeed, very sharp economic liberalization is associated with an output contraction, but this is a temporary phenomenon, as the effect is speedily offset by the positive cumulative effect of past liberalization efforts. As in other studies, the relationship between economic liberalization and performance is highly non-linear over time.

The explanation that difficult conditions are associated with slow reforms because they diminish the effectiveness of reforms is not supported by the regressions. Unfavorable initial conditions discourage reforms but effectiveness of reforms is not reduced once they are implemented. Moreover, countries cannot avoid the costs of non-reform, especially if deeply embedded in a disintegrating economic and political system. Those fortunate enough to have exports that can be redirected to market economies -- such as Uzbekistan with its gold and wool -- can of course cushion a more gradual reform process more easily than the others. Having potential exports on the other hand, such as natural gas which cannot be exported due to problems of accessing pipelines, may delay essential reforms and deteriorate performance; Turkmenistan offers an example.

Regressions confirm the adverse effect of macroeconomic and structural distortions on performance. A typical country in CEE benefits over the first five years by some 5 percent per year relative to the Slavic states of the FSU; China and Vietnam benefit by some 14 percent per year from their more favorable initial conditions. A possible objection to this large estimate is that it includes a range of

factors not captured in the initial conditions but nevertheless important in differentiating East Asian from European experience. An out-of-sample estimate of the growth bonus for China and Vietnam, estimated using the sample of CEE and FSU countries only, still suggests a growth bonus of 7% per year. East Asian structural characteristics have been important, no matter how you look at them.

Nevertheless, applying the procedure due to Schmalensee (1985) shows that policy is still the most important factor determining growth differences between the 28 countries in the sample. Initial conditions dominate in the inflation equation. And political reform emerges as the most important single determinant of the speed and comprehensiveness of economic liberalization.

The final question addressed in the paper is whether the influence of the initial conditions on performance grows or diminishes in the course of transition. Results suggest that their influence diminishes, a conclusion that might be surprising in the light of cross-country growth regressions that show a persistent impact of variables such as location that are included in the initial conditions. Many of the conditions woven into the principal components are, however, themselves modified in the course of transition.

Monetary overhangs are dissipated through inflation; the industrial overhang is eroded as plants shut down, and market memory returns through experience.

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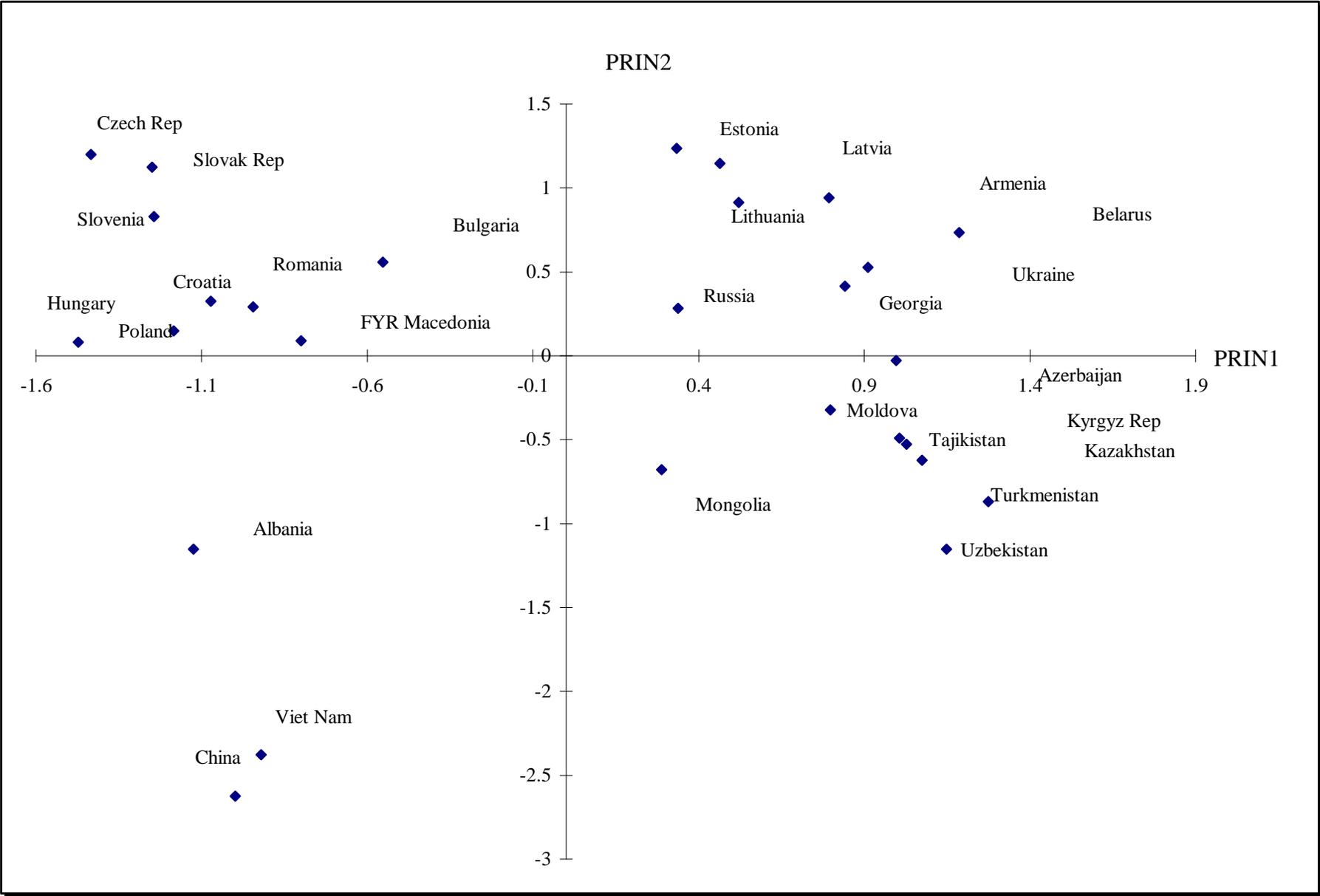
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**Figure 1. Ranking of Transition Economies by the First Two Principal Components**



Note: PRIN1- macroeconomic distortions and unfamiliarity with market process;  
PRIN2- level of development and overindustrialization.

**Figure 2. Isogrowth Lines for Sets of Initial Conditions**

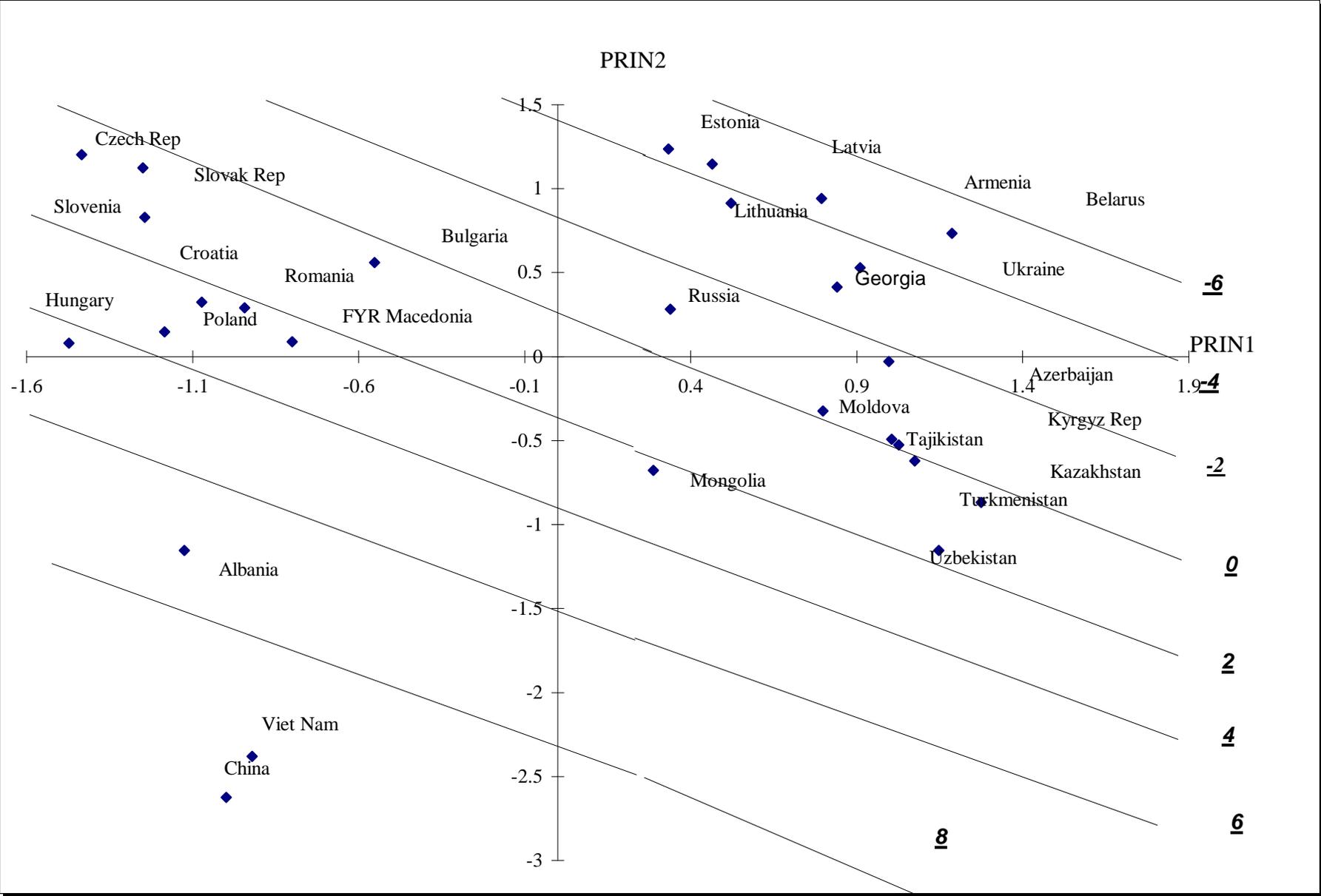
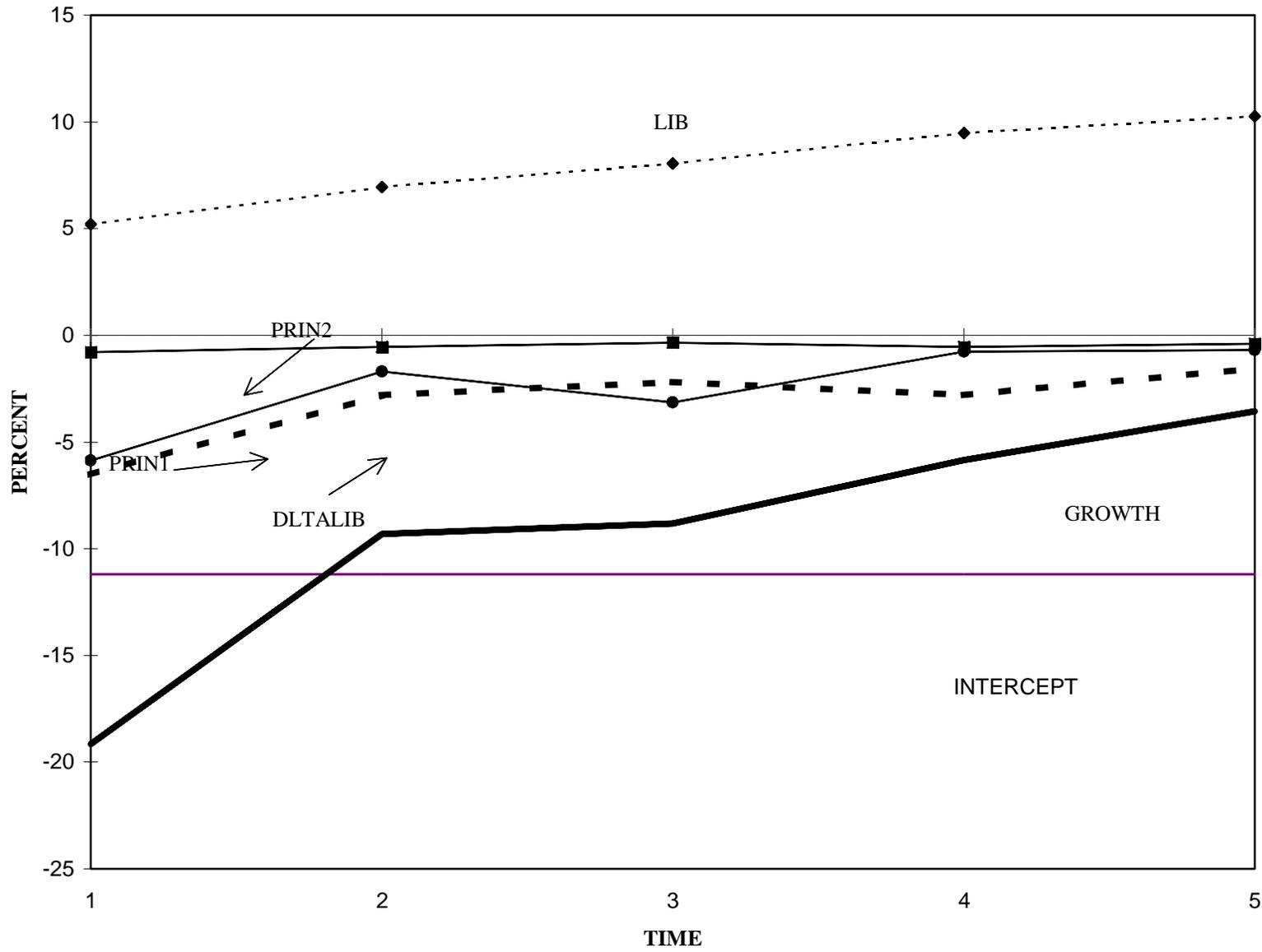
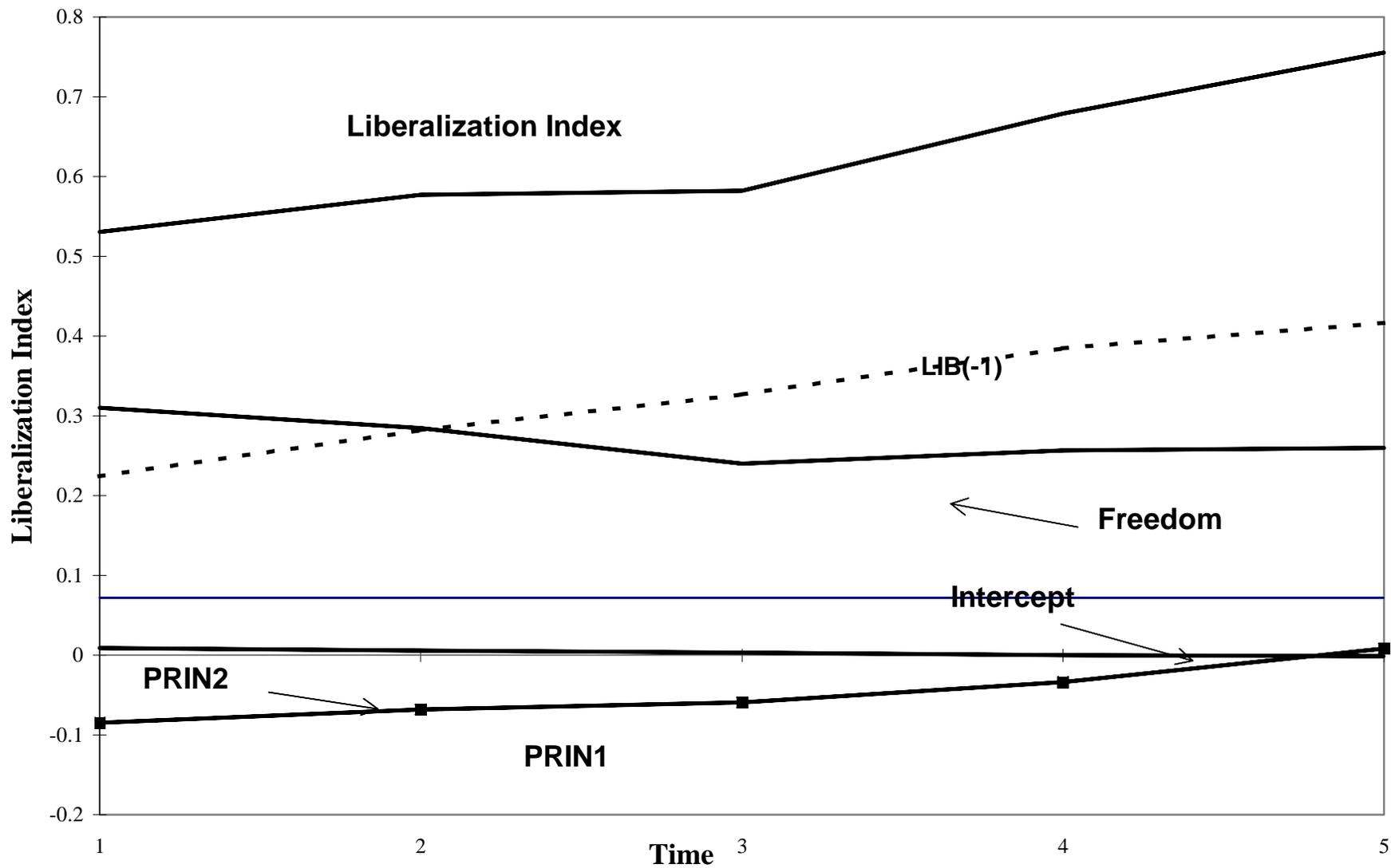


Fig. 3 :Decomposition of the Growth Path of FSU Economies



**Fig 4: Decomposition of the Reform Path of FSU Economies**



**Table 1: Initial Level of Development, Resources and Growth**

GROUP	COUNTRY	Per cap	Urbanization	Distribution of GDP			Predicted	Average	Natural	Location
		GNP at PPP US\$ 1989	(% of population) 1990	Industry	1990 cur prices		Share of Industry	% growth 1985-89	resources	
					Agriculture	Services				
Central and Eastern Europe	Albania	1400	37	0.37	0.26	0.37	0.34	3.6	poor	1
	Bulgaria	5000	68	0.59	0.11	0.30	0.36	2.7	poor	0
	Croatia	6171	62	0.35	0.10	0.55	0.34	0.2	poor	1
	Czech Republic	8600	65	0.58	0.07	0.35	0.37	1.6	poor	1
	Hungary	6810	62	0.36	0.14	0.50	0.37	1.6	poor	1
	FYR Macedonia	3394	59	0.43	0.12	0.45	0.34	0.2	poor	0
	Poland	5150	62	0.52	0.13	0.35	0.39	2.8	moderate	1
	Romania	3470	53	0.59	0.14	0.27	0.37	-0.8	moderate	0
	Slovak Republic	7600	57	0.59	0.07	0.35	0.36	1.60	poor	1
	Slovenia	9200	62	0.44	0.05	0.51	0.39	-0.4	poor	1
	Yugoslavia	NA		0.45	0.10	0.45		0.2	poor	
	Czechoslovakia	NA		0.59	0.07	0.34		1.6	poor	
FSU and Mongolia	Armenia	5530	68	0.55	0.11	0.34	0.35	2.7	poor	0
	Azerbaijan	4620	54	0.44	0.22	0.34	0.36	0.8	rich	0
	Belarus	7010	66	0.49	0.22	0.29	0.37	5.2	poor	0
	Estonia	8900	72	0.44	0.20	0.36	0.34	2.7	poor	1
	Georgia	5590	56	0.43	0.22	0.35	0.35	2.4	moderate	0
	Kazakhstan	5130	57	0.34	0.29	0.37	0.38	4.3	rich	0
	Kyrgyzstan	3180	38	0.40	0.33	0.27	0.34	5.2	poor	0
	Latvia	8590	71	0.45	0.19	0.36	0.35	3.5	poor	1
	Lithuania	6430	68	0.45	0.27	0.28	0.35	2.9	poor	1
	Moldova	4670	47	0.37	0.32	0.31	0.35	5.7	poor	0
	Russia	7720	74	0.48	0.15	0.37	0.41	3.2	rich	1
	Tajikistan	3010	32	0.34	0.27	0.39	0.34	1.9	poor	0
	Turkmenistan	4230	45	0.34	0.29	0.37	0.35	5.0	rich	0
	Ukraine	5680	67	0.44	0.21	0.35	0.40	2.4	moderate	0
Uzbekistan	2740	41	0.33	0.31	0.36	0.37	3.9	moderate	0	
	USSR	NA		0.44	0.18	0.38		3.8	rich	
	Mongolia	2100	60	0.41	0.20	0.39	0.40	5.4	moderate	0
East Asia	China*	800	18	0.49	0.24	0.27	0.46	9.0	moderate	1
	Vietnam**	1100	19	0.23	0.41	0.36	0.30	5.0	moderate	1

Notes: \* Statistics for 1978

\*\* Statistics for 1986

Predicted share of industry is derived using the regression results in Syrquin and H. Chenery (1986)

Source: The World Bank:History of Planned Economies,

World Development Report (various issues), staff estimates

## **Table 1: Initial Level of Development, Resources and Growth**

1/ 1978

2/ 1986

Source: World Bank.

**Table 1: Initial Level of Development, Resources and Growth**

Distribution of GDP 1989 cur prices			NON-CMEA <sup>c</sup> Exports in Total Exp	Exports to GDP	Infant mortality per th 1980	CMEA Exports in Total Exp	Conv. currency debt (b)	REFL87	REFL88	REFL89	
Industry	Agriculture	Services	1990	1990							
0.37	0.26	0.37	0.54	0.05	25.2	NA	0.1	-1	1.9	-5.1	
0.59	0.11	0.30	0.41	0.26	13.6		68%	8.9	-2.2	2.9	
0.36	0.14	0.50	0.65	0.28	15.8		51%	19.6	-4.5	-4.8	1.6
0.52	0.13	0.35	0.50	0.33	16.2		50%	39.5	-5.5	10.3	8.8
0.59	0.14	0.27	0.72	0.12	25.9		32%	2.5	-2.5	0.3	7.9
0.44	0.05	0.51	0.81	0.24	8.4	NA	NA	-0.8	-7.7	16	
0.45	0.10	0.45	0.72	0.20	25.0		32%	21.0	-5	-7	24
0.59	0.07	0.34	0.59	0.24	13.0		58%	7.4			
0.55	0.11	0.34	0.03	0.22	26.3		97%	NA			
0.44	0.22	0.34	0.08	0.36	36.0		94%	NA			
0.49	0.22	0.29	0.11	0.50	16.6		92%	NA			
0.44	0.20	0.36	0.06	0.29	13.5	NA		NA			
0.43	0.22	0.35	0.09	0.21	25.8		93%	NA			
0.34	0.29	0.37	0.11	0.20	34.4		91%	NA			
0.40	0.33	0.27	0.03	0.22	41.6		96%	NA			
0.45	0.19	0.36	0.05	0.33	14.3		92%	NA			
0.45	0.27	0.28	0.09	0.37	15.0		90%	NA			
0.37	0.32	0.31	0.08	0.27	27.3		94%	NA			
0.48	0.15	0.37	0.36	0.28	22.7		68%	NA			
0.34	0.27	0.39	0.18	0.27	61.0		87%	NA			
0.34	0.29	0.37	0.04	0.35	63.4		92%	NA			
0.44	0.21	0.35	0.18	0.30	18.5		86%	NA			
0.33	0.31	0.36	0.11	0.27	52.8		86%	NA			
0.44	0.18	0.38	0.75	0.25	25.0		38%	43.0	1	2.8	8.2
0.41	0.20	0.39	0.09	0.19	66.4	NA		NA	0.6	-0.9	2.4
0.41	0.26	0.33	0.96	0.19	38.0		7%	42.3	0.9	-7.3	-14.2
0.23	0.41	0.36	0.75	0.29	44.8	NA		11.6 (c)			

## Table 1: Initial Level of Development, Resources and Growth

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**Table 1: Initial Level of Development, Resources and Growth**

RFEL90	CUM REFL	Gov debt	GNP at PPP US\$ bil 1988	rEPRESED INFL: ST				
8.5	4.3	-0.2	4.4	0.37	0.26	0.37		
14.4	18	-5.8	53.6	0.59	0.11	0.30		1.8
-1.6	-7.7	-0.2	69.6	0.36	0.14	0.50		6.5
-12.8	13.6	0.3	187.2	0.52	0.13	0.35		10.5
11.1	16.8	-5.2	85.8	0.59	0.14	0.27		4.5
-19.9	7.5	NA	21.3	0.44	0.05	0.51		5
	12	0.1	NA	0.45	0.10	0.45		11
	-9.1	-2.0	NA	0.59	0.07	0.34		2.1
	0	-0.2	16.2	0.55	0.11	0.34		3.4
	0	-0.9	30.1	0.44	0.22	0.34		5.7
	0	NA	73.6	0.49	0.22	0.29		3.9
	0	5.3	14.2	0.44	0.20	0.36		39
	0	NA	34.5	0.43	0.22	0.35		13.1
	0	-4.3	76.2	0.34	0.29	0.37		4.5
	0	-7.3	13.7	0.40	0.33	0.27		17.1
	0	15.6	21.2	0.45	0.19	0.36		9.1
	0	7.6	25.0	0.45	0.27	0.28		9.14667
	0	1.7	19.8	0.37	0.32	0.31		
	0	NA	1105.5	0.48	0.15	0.37		
	0	-6.3	13.5	0.34	0.27	0.39		
	0	-3.9	13.2	0.34	0.29	0.37		
	0	-0.3	286.3	0.44	0.21	0.35		
	0	-9.2	59.2	0.33	0.31	0.36		
13.7	12	-11.0	NA	0.44	0.18	0.38		
5.5	7.6	NA	NA	0.00	0.00	0.00		
4.1	-16.5	-2.4	NA	0.41	0.26	0.33		
	0	-7.0	NA	0.23	0.41	0.36		

## **Table 1: Initial Level of Development, Resources and Growth**

**Table 1: Initial Level of Development, Resources and Growth**

Non-CMEA exp in tot	NON-CMEA ports in G	Repressed Inflation (a)
exp 1988	1990	1989
NA	0.03	-5.1
0.32	0.11	2.9
0.49	0.18	-5.6
0.50	0.16	8.8
0.68	0.09	7.9
NA	0.19	16.0
0.68	0.06	NA
0.42	0.14	NA
0.03	0.02	16.9
0.06	0.03	10.7
0.09	0.10	2.6
9.9.%	0.03	-0.2
0.07	0.04	16.4
0.09	0.05	7.5
0.04	0.02	6.3
0.08	0.03	7.9
0.10	0.07	10.7
0.06	0.02	8.7
0.33	0.14	10.0
0.13	0.14	11.4
0.08	0.04	7.0
0.15	0.11	7.0
0.14	0.07	4.2
0.62	0.03	NA
NA	0.02	NA
0.93	0.18	NA
NA	0.22	NA

## **Table 1: Initial Level of Development, Resources and Growth**

**Table 2: Initial Economic Distortions and Institutional Characteristics**

GROUP	COUNTRY	Repressed	Black market	Trade	Years under	State	
		Inflation 1987-90	premium 1990 (%)	dependence 1990 (%)	central planning		
Central and Eastern Europe	Albania	4.3	434	6.6	47	2	
	Bulgaria	18	921	16.1	43	2	
	Croatia	12	27	6.0	46	1	
	Czech Republic	-7.1	185	6.0	42	1	
	Hungary	-7.7	46.7	13.7	42	2	
	FYR Macedonia	12	27	6.0	47	1	
	Poland	13.6	277	8.4	41	2	
	Romania	16.8	728	3.7	42	2	
	Slovak Republic	-7.1	185	6.0	42	0	
	Slovenia	12	27	4.0	46	1	
	Yugoslavia	12	27	6.0			
	Czechoslovakia	-7.1	185	6.0			
	FSU and Mongolia	Armenia	25.7	1828	25.6	71	0
Azerbaijan		25.7	1828	29.8	70	0	
Belarus		25.7	1828	41.0	72	0	
Estonia		25.7	1828	30.2	51	0	
Georgia		25.7	1828	24.8	70	0	
Kazakhstan		25.7	1828	20.8	71	0	
Kyrgyzstan		25.7	1828	27.7	71	0	
Latvia		25.7	1828	36.7	51	0	
Lithuania		25.7	1828	40.9	51	0	
Moldova		25.7	1828	28.9	51	0	
Russia		25.7	1828	11.1	74	1	
Tajikistan		25.7	1828	31.0	71	0	
Turkmenistan		25.7	1828	33.0	71	0	
Ukraine		25.7	1828	23.8	74	0	
Uzbekistan		25.7	1828	25.5	71	0	
		USSR	25.7	1828			
		Mongolia	7.6	1400	31.0	70	2
East Asia	China*	2.3	208	1.0	46	2	
	Viet Nam*	15	464	7.2	21**	2	

Notes: Repressed inflation is calculated as percent change in real wage less the percent change in real GDP over 1987-90.

\* The numbers for China and Viet Nam are for the period before 1978 and 1986 respectively.

\*\* Average for North and South Vietnam

Trade dependence is defined as the ratio between the average of exports and imports and GDP.

Source: The World Bank, Syrquin and Chenery (1989), Tarr (1993).

**Table 2:Initial Economic Distortions and Institutional Characteristics**

Exports to GDP 1990		Infant mortality per th 1988	CMEA Exports (in Total	Conv. currency debt(b)	REFL87	REFL88
0.00	3	25.2	NA	0.1	-1	1.9
0.01	23	13.6	68%	8.9	-2.2	2.9
1.00	1					
0.01	-1	15.8	51%	19.6	-4.5	-4.8
8.90	8.9					
0.02	13	16.2	50%	39.5	-5.5	10.3
0.02	22	25.9	32%	2.5	-2.5	0.3
0.05	5.6	8.4	NA	NA	-0.8	-7.7
0.20		25.0	32%	21.0	-5	-7
0.02		13.0	58%	7.4		
0.22	20	26.3	97%	NA		
0.36	8	36.0	94%	NA		
0.50	12	16.6	92%	NA		
0.29	10	13.5	NA	NA		
0.21	8	25.8	93%	NA		
0.20	-4	34.4	91%	NA		
0.22	6	41.6	96%	NA		
0.33	10	14.3	92%	NA		
0.37	10	15.0	90%	NA		
0.00	2	27.3	94%	NA		
0.28	7.3	22.7	68%	NA		
0.27	0	61.0	87%	NA		
0.35	-1	63.4	92%	NA		
0.30	4	18.5	86%	NA		
0.27	-4	52.8	86%	NA		
0.25		25.0	38%	43.0	1	2.8
0.19	1	66.4	NA	NA	0.6	-0.9
0.18	2.3	38.0	7%	42.3	0.9	-7.3
0.03	-6.2	44.8	NA	11.6(c)		

**Table 2:Initial Economic Distortions and Institutional Characteristics**

REFL89	RFEL90	CUM REFL	Gov debt	rEPRESED INFL: ST	GNP at PPP US\$ bil 1988
-5.1	8.5	4.3	-0.2		4.4
2.9	14.4	18	-5.8		53.6
1.6	-1.6	-7.7	-0.2		69.6
8.8	-12.8	13.6	0.3		187.2
7.9	11.1	16.8	-5.2		85.8
16	-19.9	7.5	NA		21.3
24		12	0.1		NA
		-9.1	-2.0		NA
		0	-0.2		16.2
		0	-0.9		30.1
		0	NA		73.6
		0	5.3		14.2
		0	NA		34.5
		0	-4.3		76.2
		0	-7.3		13.7
		0	15.6		21.2
		0	7.6		25.0
		0	1.7		19.8
		0	NA		1105.5
		0	-6.3		13.5
		0	-3.9		13.2
		0	-0.3		286.3
		0	-9.2		59.2
8.2	13.7	12	-11.0		NA
2.4	5.5	7.6	NA		NA
-14.2	4.1	-16.5	-2.4		NA
		0	-7.0		NA

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**Table 2:Initial Economic Distortions and Institutional Characteristics**

				Non-CMEA exp in tot	NON-CMEA ports in GI exp 1988	1990
0.37	0.26	0.37		NA	0.03	
0.59	0.11	0.30	1.8	0.32	0.11	
0.36	0.14	0.50	6.5	0.49	0.18	
0.52	0.13	0.35	10.5	0.50	0.16	
0.59	0.14	0.27	4.5	0.68	0.09	
0.44	0.05	0.51	5	NA	0.19	
0.45	0.10	0.45	11	0.68	0.06	
0.59	0.07	0.34	2.1	0.42	0.14	
0.55	0.11	0.34	3.4	0.03	0.02	
0.44	0.22	0.34	5.7	0.06	0.03	
0.49	0.22	0.29	3.9	0.09	0.10	
0.44	0.20	0.36	39	9.9. %	0.03	
0.43	0.22	0.35	13.1	0.07	0.04	
0.34	0.29	0.37	4.5	0.09	0.05	
0.40	0.33	0.27	17.1	0.04	0.02	
0.45	0.19	0.36	9.1	0.08	0.03	
0.45	0.27	0.28	9.14667	0.10	0.07	
0.37	0.32	0.31		0.06	0.02	
0.48	0.15	0.37		0.33	0.14	
0.34	0.27	0.39		0.13	0.14	
0.34	0.29	0.37		0.08	0.04	
0.44	0.21	0.35		0.15	0.11	
0.33	0.31	0.36		0.14	0.07	
0.44	0.18	0.38		0.62	0.03	
0.00	0.00	0.00		NA	0.02	
0.41	0.26	0.33		0.93	0.18	
0.23	0.41	0.36		NA	0.22	

**Table 2:Initial Economic Distortions and Institutional Characteristics**

Repressed
Inflation (a)
1989
-5.1
2.9
-5.6
8.8
7.9
16.0
NA
NA
16.9
10.7
2.6
-0.2
16.4
7.5
6.3
7.9
10.7
8.7
10.0
11.4
7.0
7.0
4.2
NA
NA
NA
NA

**Table 3: Results from the Principal Component Analysis**

Component	Variation		Variable	Eigenvectors		Variable	Correlations*	
	Proportion	Cumulative		PRIN1	PRIN2		PRIN1	PRIN2
PRIN1	0.39	0.39	INC	-0.03	0.50	INC	-0.06 (0.78)	<b>0.86 (0.00)</b>
PRIN2	0.28	0.67	STATE	-0.36	-0.21	STATE	<b>-0.75 (0.00)</b>	-0.37 (0.06)
PRIN3	0.09	0.76	PRGR	0.16	-0.35	PRGR	0.33 (0.09)	<b>-0.61 (0.00)</b>
PRIN4	0.07	0.83	RICH	0.12	-0.36	RICH	0.24 (0.21)	<b>-0.62 (0.00)</b>
PRIN5	0.06	0.89	TDEP	0.40	0.14	TDEP	<b>0.84 (0.00)</b>	0.24 (0.21)
PRIN6	0.03	0.92	BLCMKT	0.46	0.06	BLCMKT	<b>0.96 (0.00)</b>	0.10 (0.61)
PRIN7	0.04	0.96	INDIST	-0.12	0.39	INDIST	-0.26 (0.18)	<b>0.68 (0.00)</b>
PRIN8	0.02	0.98	URBAN	0.00	0.52	URBAN	0.001 (0.99)	<b>0.90 (0.00)</b>
PRIN9	0.01	0.99	LOCAT	-0.32	0.05	LOCAT	<b>-0.66 (0.00)</b>	0.08 (0.68)
PRIN10	0.01	1.00	MARMEM	-0.42	0.01	MARMEM	<b>0.87 (0.00)</b>	-0.01 (0.94)
PRIN11	0.00	1.00	REPR	0.41	0.03	REPR	<b>0.86 (0.00)</b>	0.05 (0.80)

Note: \* P-values in parenthesis

**Table 4: Partial Associations Between Performance,  
 Liberalization and Initial Conditions  
 (Based on Cross-country Regressions)**

	<b>Dependent Variable</b>			
	<b>LOGAVIN</b>	<b>AVGR</b>	<b>AVLIB</b>	<b>AVLIB</b>
	Eq 4.1	Eq 4.2	Eq 4.3	Eq 4.4
<b>INT</b>	4.64 <u>5.48</u>	-4.43 <u>-1.27</u>	0.29 <u>4.30</u>	0.54 <u>22.17</u>
<b>PRIN1</b>	1.18 <u>5.62</u>	-4.03 <u>-4.64</u>	-0.05 <u>-2.54</u>	-0.07 <u>-2.82</u>
<b>PRIN2</b>	0.04 <u>0.14</u>	-1.25 <u>-1.13</u>	0.03 <u>1.03</u>	0.13 <u>5.20</u>
<b>AVLIB</b>	1.23 <u>0.83</u>	-3.44 <u>-0.56</u>		
<b>AVFREE</b>			0.04 <u>3.68</u>	
<b>RT</b>	1.42 <u>3.18</u>	-5.66 <u>-3.06</u>		
Adj R2	0.644	0.602	0.7003	0.55
N obs	28	28	28	28

Note: t-ratios below coefficients

**Table 5: Ranking of Transition Economies by AVLIB and Residuals from Eq 5.3 and 5.4**

Country	AVLIB	AVFREE	PRIN1	PRIN2	Residuals from Eq 4.3	Residuals from Eq 4.4	Rank by AVLIB	Rank by Resid from Eq 4.4	Rank by Resid from Eq 4.3
Albania	0.46	4.4	-1.12	-1.15	-0.050	-0.019	17	16	18
Armenia	0.50	6.8	0.79	0.94	-0.082	-0.096	15	22	23
Azerbaijan	0.38	3.2	1.00	-0.03	-0.006	-0.083	22	19	15
Belarus	0.37	5.8	1.19	0.73	-0.139	-0.168	23	26	26
Bulgaria	0.55	7	-0.55	0.56	-0.098	-0.099	14	23	25
China	0.12	0	-1.00	-2.62	-0.147	-0.166	28	25	27
Croatia	0.71	4.8	-1.07	0.32	0.127	0.047	8	12	4
Czech Republic	0.72	8.6	-1.43	1.20	-0.065	-0.077	6	17	21
Estonia	0.84	8.2	0.33	1.24	0.159	0.170	1	3	1
Georgia	0.44	4.6	0.84	0.41	-0.028	-0.088	20	20	16
Hungary	0.75	9.6	-1.47	0.08	-0.056	0.088	4	8	19
Kazakstan	0.48	4.4	1.07	-0.62	0.066	0.100	16	7	8
Kyrgyz Republic	0.67	6.8	1.03	-0.53	0.140	0.270	11	1	2
Latvia	0.72	8	0.46	1.15	0.058	0.073	7	11	11
Lithuania	0.79	9.6	0.52	0.91	0.062	0.171	2	2	10
FYR Macedonia	0.70	5.6	-0.80	0.09	0.102	0.084	9	9	6
Moldova	0.56	5.2	0.80	-0.32	0.091	0.125	13	5	7
Mongolia	0.45	6.6	0.29	-0.68	-0.095	0.022	19	14	24
Poland	0.78	9.4	-1.18	0.15	-0.004	0.129	3	4	14
Romania	0.46	3.8	-0.94	0.29	-0.059	-0.188	18	27	20
Russia	0.63	6.8	0.34	0.28	0.038	0.077	12	10	12
Slovak Republic	0.69	7.8	-1.25	1.12	-0.043	-0.080	10	18	17
Slovenia	0.75	5.4	-1.24	0.83	0.111	0.006	5	15	5
Tajikistan	0.31	1.8	1.01	-0.49	0.005	-0.090	26	21	13
Turkmenistan	0.20	1.4	1.27	-0.87	-0.067	-0.138	27	24	22
Ukraine	0.34	6.8	0.91	0.53	-0.226	-0.197	24	28	28
Uzbekistan	0.41	1.6	1.15	-1.15	0.140	0.102	21	6	3
Vietnam	0.34	0	-0.92	-2.38	0.063	0.024	25	13	9

Source: Freedom House (various issues) authors estimates.

**Table 6: Estimates of the Performance and Liberalization Equations**

	Dependent Variable							
	Growth Eq 6.1	Growth Eq 6.2	Loginf Eq 6.3	Loginf Eq 6.4	Lib Eq 6.5	Growth Eq 6.6	Loginf Eq 6.7	Lib Eq 6.8
INT	-10.41 <u>-4.37</u>	-11.02 <u>-4.55</u>	4.80 <u>11.31</u>	5.05 <u>12.98</u>	0.30 <u>9.19</u>	-11.19 <u>-4.59</u>	4.72 <u>10.79</u>	6.27 <u>7.50</u>
LIB	15.06 <u>3.96</u>	16.40 <u>4.35</u>	-0.90 <u>-1.33</u>	-1.29 <u>-2.12</u>		15.80 <u>4.13</u>	-0.81 <u>-1.18</u>	
DLTALIB	-32.60 <u>-5.19</u>	-35.79 <u>-5.13</u>	3.40 <u>3.05</u>	3.52 <u>3.15</u>		-31.10 <u>-4.70</u>	3.91 <u>3.28</u>	
PRIN1	-2.95 <u>-3.71</u>	-6.11 <u>-2.90</u>	0.98 <u>6.89</u>	2.42 <u>7.14</u>	-0.05 <u>-3.74</u>	-6.90 <u>-4.11</u>	1.16 <u>3.84</u>	-0.10 <u>-2.95</u>
PRIN2	-3.37 <u>-3.73</u>	-4.40 <u>-2.59</u>	0.17 <u>1.08</u>	0.06 <u>2.45</u>	0.04 <u>1.96</u>	-5.10 <u>-2.97</u>	0.39 <u>1.27</u>	0.06 <u>1.86</u>
PR1LIB		8.15 <u>2.43</u>		-2.65 <u>-4.92</u>				
PR2LIB		3.06 <u>0.99</u>		-1.11 <u>-2.23</u>				
DLTPR1		-9.30 <u>-1.27</u>		-1.26 <u>-1.07</u>				
DLTPR2		0.73 <u>0.10</u>		-1.71 <u>-1.45</u>				
PR1Y2						4.88 <u>2.03</u>	0.24 <u>0.55</u>	0.02 <u>0.50</u>
PR1Y3						3.24 <u>1.36</u>	0.01 <u>0.02</u>	0.03 <u>0.70</u>
PR1Y4						5.98 <u>2.51</u>	-0.57 <u>-1.32</u>	0.06 <u>1.37</u>
PR1Y5						6.00 <u>2.52</u>	-0.58 <u>-1.36</u>	0.11 <u>2.22</u>
PR2Y2						1.49 <u>0.63</u>	-0.41 <u>-0.98</u>	-0.02 <u>-0.52</u>
PR2Y3						2.88 <u>1.21</u>	-0.21 <u>-0.49</u>	-0.04 <u>-0.83</u>
PR2Y4						1.52 <u>0.64</u>	-0.17 <u>-0.40</u>	-0.06 <u>-1.25</u>
PR2Y5						2.37 <u>0.99</u>	-0.41 <u>-0.95</u>	-0.07 <u>-1.43</u>
RT	-11.16 <u>-5.34</u>	-9.41 <u>-4.41</u>	1.69 <u>4.56</u>	1.14 <u>3.33</u>		-10.03 <u>-4.74</u>	1.59 <u>4.18</u>	
FREEDOM					0.04 <u>8.00</u>			0.05 <u>8.25</u>
Adj R2	0.429	0.452	0.393	0.522	0.551	0.439	0.429	0.552
Nobs	140	140	140	140	140	140	140	140

Note: T-ratios appear below the coefficients

**Table 7: Estimates of the Explanatory Power of Policy, Initial Conditions and Political Freedom**

Measure of Explanatory Power for Sets of Independent Variables	Policy		Interactions		Initial Conds		RT		Prin1		Prin2		All variables max=min
	max	min	max	min	max	min	max	min	max	min	max	min	
<b>Growth</b>													
Percent of <i>total variance</i> explained by set	18.1	15.8	8.9	2.3	13.6	8.7	12.2	7.8	11.6	3.1	2.4	1.9	45.2
Percent of <i>explained variance</i> explained by set	40.0	35.0	19.7	5.1	30.1	19.2	27.0	17.3	25.7	6.9	5.3	4.2	100.0
<b>Inflation</b>													
Percent of <i>total variance</i> explained by set	6.3	4.5	12.9	11.7	27.4	26.8	9.8	3.9	27	18.2	1.7	0	52.2
Percent of <i>explained variance</i> explained by set	12.1	8.6	24.7	22.4	52.5	51.3	18.8	7.5	51.7	34.9	3.3	0.0	100.0
<b>Policy</b>													
Policy	Pol Freedom		Initial Conds		Prin1		Prin2		Total				
	max	min	max	min	max	min	max	min					
Percent of <i>total variance</i> explained by set	50.3	20.7	34.4	4.8	7.4	4.3	26.8	1	55.1				
Percent of <i>explained variance</i> explained by set	91.3	37.6	62.4	8.7	13.4	7.8	48.6	1.8	100.0				

year	coefpr1lib	coefpr2lib	coefpr1gr
1	-0.095	0.059	-6.94
2	-0.072	0.035	-2.05
3	-0.063	0.021	-3.69
4	-0.032	0.002	-0.95
5	0.01	-0.006	-0.94

**Table 8: Summary of Estimated Direct and Indirect Effects of Initial Conditions on Growth**

Relevant Parameters		PRIN1				Comment
year		Direct effect on Growth	Through Liberalization lagged	Through Liberalization contemp	Total	
1	$a_4 + b_2 * a_2$	-6.90	-2.95	1.45	-8.40	
2	$(a_4 + a_6) + (b_2 + b_4) * a_2$	-2.05	-2.24	1.10	-3.19	b4 not significant
3	$(a_4 + a_7) + (b_2 + b_5) * a_2$	-3.69	-1.96	0.96	-4.69	a7, b5 not significant
4	$(a_4 + a_8) + (b_2 + b_6) * a_2$	-0.95	-1.00	0.49	-1.46	b6 not significant
5	$(a_4 + a_9) + (b_2 + b_7) * a_2$	-0.94	0.31	-0.15	-0.78	
PRIN2						
1	$a_5 + b_2 * a_2$	-5.10	1.83	-0.90	-4.16	
2	$(a_5 + a_{10}) + (b_3 + b_8) * a_2$	-3.61	1.09	-0.54	-3.06	a10, b8 not significant
3	$(a_5 + a_{11}) + (b_3 + b_9) * a_2$	-2.22	0.65	-0.32	-1.89	a11, b9 not significant
4	$(a_5 + a_{12}) + (b_3 + b_{10}) * a_2$	-3.58	0.06	-0.03	-3.55	a12, b10 not significant
5	$(a_5 + a_{13}) + (b_3 + b_{11}) * a_2$	-2.73	-0.19	0.09	-2.83	a13, b11 not significant

Notes. The estimated a's are taken from regression 6.6

The estimated b's are taken from regression 6.8

coeflaggedp1		coefpr2gr	coeflibgr	total pr1	total pr2	thr lib pr1	thr lib pr2		
	31.1	-5.1	-15.3	-5.4865	-6.0027	1.4535	-0.9027	-2.9545	1.8349
	31.1	-3.61	-15.3	-0.9484	-4.1455	1.1016	-0.5355	-2.2392	1.0885
	31.1	-2.22	-15.3	-2.7261	-2.5413	0.9639	-0.3213	-1.9593	0.6531
	31.1	-3.58	-15.3	-0.4604	-3.6106	0.4896	-0.0306	-0.9952	0.0622
	31.1	-2.73	-15.3	-1.093	-2.6382	-0.153	0.0918	0.311	-0.1866

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	<b>PRIN2</b>			<b>Comment</b>
	Direct effect on Growth	Through Liberalizat ion	Total	
a5+b2*a2	-5.100	-0.903	-6.003	
(a5+a10)+(b3+b8)*a2	-3.610	-0.536	-4.146	a10, b8 not significant
(a5+a11)+(b3+b9)*a2	-2.220	-0.321	-2.541	a11, b9 not significant
(a5+a12)+(b3+b10)*a2	-3.580	-0.031	-3.611	a12, b10 not significant
(a5+a13)+(b3+b11)*a2	-2.730	0.092	-2.638	a13, b11 not significant

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year	coefpr1lib	coefpr2lib	coefpr1in
1	-0.095	0.059	1.16
2	-0.072	0.035	1.4
3	-0.063	0.021	1.17
4	-0.032	0.002	0.59
5	0.01	-0.006	0.58

**Table 9: Summary of Estimated Direct and Indirect Effects of Initial Conditions on Inflation**

Relevant Parameters		PRIN1			Comment	
year		Direct effect on Inflation	Through Liberalization lagged	Through Liberalization contemp	Total	
1	$a_4 + b_2 * a_2$	1.160	0.371	-0.295	1.237	a2 not significant
2	$(a_4 + a_6) + (b_2 + b_4) * a_2$	1.400	0.282	-0.223	1.458	a2, a6, b4 not significant
3	$(a_4 + a_7) + (b_2 + b_5) * a_2$	1.170	0.246	-0.195	1.221	a2, a7, b5 not significant
4	$(a_4 + a_8) + (b_2 + b_6) * a_2$	0.590	0.125	-0.099	0.616	a2, a8, b6 not significant
5	$(a_4 + a_9) + (b_2 + b_7) * a_2$	0.580	-0.039	0.031	0.572	a2, a9 not significant
PRIN2						
1	$a_5 + b_3 * a_2$	0.390	-0.231	-0.048	0.342	coefficients not significant
2	$(a_5 + a_{10}) + (b_3 + b_8) * a_2$	-0.090	-0.137	-0.028	-0.118	coefficients not significant
3	$(a_5 + a_{11}) + (b_3 + b_9) * a_2$	0.180	-0.082	-0.017	0.163	coefficients not significant
4	$(a_5 + a_{12}) + (b_3 + b_{10}) * a_2$	0.220	-0.008	-0.002	0.218	coefficients not significant
5	$(a_5 + a_{13}) + (b_3 + b_{11}) * a_2$	-0.020	0.023	0.005	-0.015	coefficients not significant

Notes. The estimated a's are taken from regression 6.8

The estimated b's are taken from regression 6.7

	coefpr2in	coeflibin	total pr1	total pr2	thr lib pr1	thr lib pr2
-3.91	0.39	3.1	0.8655	0.5729	-0.2945	0.1829
-3.91	-0.09	3.1	1.1768	0.0185	-0.2232	0.1085
-3.91	0.18	3.1	0.9747	0.2451	-0.1953	0.0651
-3.91	0.22	3.1	0.4908	0.2262	-0.0992	0.0062
-3.91	-0.02	3.1	0.611	-0.0386	0.031	-0.0186

<b>PRIN2</b>				<b>Comment</b>
	Direct effect on Inflation	Through Liberalization	Total	
$a5+b3*a2$	0.390	0.183	0.573	coefficients not significant
$(a5+a10)+(b3+b8)*a2$	-0.090	0.109	0.019	coefficients not significant
$(a5+a11)+(b3+b9)*a2$	0.180	0.065	0.245	coefficients not significant
$(a5+a12)+(b3+b10)*a2$	0.220	0.006	0.226	coefficients not significant
$(a5+a13)+(b3+b11)*a2$	-0.020	-0.019	-0.039	coefficients not significant



p1lagged	p2lagged
0.37145	-0.23069
0.28152	-0.13685
0.24633	-0.08211
0.12512	-0.00782
-0.0391	0.02346

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