

Circumstance and Choice: The Role of Initial Conditions and Policies in Transition Economies

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This article takes an integrated approach to evaluating the interaction of initial conditions, political change, reforms and economic performance in a unified framework covering 28 transition economies in East Asia, Central and Eastern Europe, and the FSU. Initial conditions and economic policy jointly determine the large differences in economic performance among transition economies. Initial conditions dominate in explaining inflation, but economic liberalization is the most important factor determining differences in growth. Political reform emerges as the most important determinant of the speed and comprehensiveness of economic liberalization, raising the important question of what determines political liberalization. Results suggest the importance of the level of development in determining the decision to expand political freedoms.

The experience of transition has varied greatly across regions. In East Asia, particularly in China and Vietnam, inflation has been contained and growth high since the beginning of reform. In Central and Eastern Europe and the former Soviet Union (FSU), output declined significantly; many of these countries also experienced hyperinflation. Some economies in the region, especially in Central and Eastern Europe, recovered strongly and brought down inflation to moderately low levels; others have been slower to reach the turning point.

The question of divergent experiences with transition has been much debated. Researchers have suggested that the transition path of a given country depends on both its initial conditions and the economic policies it chooses to implement. They have recognized that East Asia, Central and Eastern Europe, and the FSU had very different prior economic conditions, location, natural resources, histo-

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ries, and institutions.¹ But empirical analysis of cross-country variation in growth and inflation has focused mainly on economic policies (see Aslund, Boone, and Johnson 1996, de Melo, Denizer, and Gelb 1996, de Melo and Gelb 1996, Fisher, Sahay, and Vegh 1996a, 1996b, Sachs 1996, Selowski and Martin 1997, Hernandez-Cata 1997, Blanchard 1997, and Brixiova and Kiyotaki 1997).² To the extent that determinants of policy choices in Central and Eastern Europe and the FSU have been explored, the emphasis has been on political transition. No research has systematically addressed the role of initial conditions in shaping economic outcomes, directly or through their effect on policies.³

In this article, we take an integrated approach to evaluating the interaction of all factors—including initial conditions, political change, and reforms—in a unified framework covering 28 countries in East Asia, Central and Eastern Europe, and the FSU. We do so by addressing some key questions. First, do initial conditions (as well as political change) influence policy choices? Can slow reforms be viewed as a rational response to the reduced effectiveness of policies under unfavorable initial conditions? Second, whether or not initial conditions affect policy choices, is there also a direct effect on outcomes—namely, growth and inflation? How important are initial conditions compared with policies?

It has always been awkward to accommodate the experiences of China and Vietnam within the same analytical framework as Central and Eastern Europe and the FSU, partly because interpretations of the East Asian transition experience typically emphasize initial conditions, such as the high share of labor in agriculture, and partly because transition started much earlier, especially in China.⁴ Two features of our study facilitate a broad comparison of countries from all three regions. One feature is the formal inclusion of initial conditions in the analysis. The other feature is the use of panel data with time shifting to ob-

1. For a comparison between Central and Eastern Europe and the FSU, see Fisher and Gelb (1991) and Bruno (1992, 1993). For a comparison between East Asia and Central and Eastern Europe/FSU, see Sachs and Woo (1996), Parker, Tritt, and Woo (1997), and Thomas and Wang (1997).

2. Balcerowicz and Gelb (1994), de Melo, Denizer, and Gelb (1996), Fischer, Sahay, and Vegh (1996a, b), and Denizer (1997) do include one or two initial conditions into their analyses, but these studies fail to capture some important dimensions.

3. Research suggests close links between political transition and intensity of reforms (Balcerowicz and Gelb 1994, Aslund 1995, de Melo, Denizer, and Gelb 1996, Aslund, Boone, and Johnson 1996). In countries in which rapid and fundamental political change takes place, a period of “extraordinary politics” provides a window of opportunity for policymakers to push decisive reforms. Shleifer (1997) pointed to the importance of political transition in determining the success of economic reforms in the Russian Federation and Poland. Ickes (1996) discussed some of the consequences of not including initial conditions in the analysis of reforms and performance in the context of transition. Murrell (1996) noted that the degree of political change and liberalization seems to be related to initial conditions and war.

4. On Asian experience and the contrast with Europe, see Sachs and Woo (1996) and Parker, Tritt, and Woo (1997). Thomas and Wang (1997) argue that countries with relatively stable political and macroeconomic conditions can afford to conduct reforms in an evolutionary fashion, rather than risk political and economic chaos. For example, Vietnam did institute “shock therapy” macroeconomic reforms in March 1989 in response to severe inflation, while China could afford a gradual approach under more stable macroeconomic conditions.

tain a sample that is consistent with respect to the beginning of transition. The preference for working with a balanced sample constrains the length of the time series to five years: 1979–83 for China, 1987–91 for Vietnam, 1990–94 for Eastern Europe and Mongolia, and 1992–96 for the FSU.

The article is organized as follows. In section I we present a set of initial conditions, together with several other factors that plausibly influence the transition experience. Two principal component clusters of initial conditions are derived and interpreted. In section II we incorporate these clusters into a regression analysis to test whether they influence the choice of reform policy. We then assess the interaction of initial conditions and policy with performance and derive estimates of the relative importance of initial conditions and policies in determining performance. The framework is then expanded to include political freedom as an endogenously determined variable. Section III summarizes our main findings.

Standard caveats on data problems, which are especially severe in transition economies, apply to the conclusions drawn herein. These problems include difficulties in estimating deflators, difficulties in deriving consistent measures of trade and balance of payments over time, and overreporting of output at the beginning of transition and underreporting of output as transition and private sector development proceed.⁵

I. INITIAL CONDITIONS, POLICIES, AND OTHER FACTORS AFFECTING TRANSITION

The factors influencing a country's transition path can be divided into two main groups. The first is the set of initial conditions, which define important characteristics of the former planned economies prior to the beginning of their transition to market. The second group is the set of economic, political, and other choices these countries were making in response to the challenges of transition. This section provides a detailed description of these two groups of factors.

Initial Conditions

Despite their common legacy of central planning, the transition economies were characterized by substantial differences in initial levels of development, macroeconomic distortions, integration into the trading system of the socialist countries, extent of prior reforms, and so forth. In Central and Eastern Europe the beginning of transition was marked by a wave of largely peaceful political revolutions in 1989, accompanied by an economic shock from the breakdown of the Council for Mutual Economic Assistance (CMEA) trading arrangements. For the republics of the FSU, the collapse of the Soviet Union in 1991 was the defining political and economic event, as a result of which they gained their independence and began the transition to market economies. Reforms in China and Vietnam started earlier

5. Kaufman and Kaliberda (1996) and Johnson, Kaufman, and Shleifer (1997) provide interesting analyses of the size of the unofficial economy in transition economies.

but without a radical political change. Drawing on the literature, we identify 11 variables to characterize the initial conditions of transition economies just before their shift toward market-oriented development (1978 for China, 1986 for Vietnam, 1989 for Eastern Europe, and 1989–91 for Mongolia and the FSU).

Initial levels of development, resources, and growth as well as initial macroeconomic distortions and institutional characteristics varied widely across the countries studied (tables 1 and 2).⁶ Annual per-capita income levels (*INC*), measured in 1989 U.S. dollars but reflecting purchasing power parity incomes in the base year, ranged from \$800 in China to more than \$9,000 in Slovenia. Per-capita income for China is widely debated but was perhaps close to 60 percent that of Albania at the start of its transition.

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

Industrialization is an 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 gross domestic product (GDP) and the share predicted by the regression analysis in Chenery and Syrquin (1989).⁷ Industrial shares were often high because trade, financial services, and business and consumer services were typically repressed in socialist countries.⁸ In 1989 only Croatia, Hungary, and Slovenia had service shares of 50 percent of GDP, a typical level for upper-middle-income countries. Armenia, Bulgaria, the Czech Republic, Poland, Romania, and the Slovak Republic had industrial shares of more than 50 percent of GDP; the Russian Federation and countries in the northwestern part of the FSU were close to that level. Industry in Vietnam accounted for a much smaller GDP share.

We consider three indicators of resources and growth. 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. Location is an important determinant of growth even for market economies, as Moreno and Trehan (1997) show. Countries in Central and Eastern 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 the prospect of membership. China and Vietnam are located near some of the most rapidly growing market economies in the world. At the other end of the spectrum are the remote, landlocked countries of Central Asia and the Caucasus, with their essential transport

6. 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 them.

7. 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.

8. Services were suppressed in communist countries, partly for ideological reasons that held nonmaterial output to be "unproductive." See Easterly, de Melo, and Ofer (1994) for econometric estimates of the gap between actual and expected levels of services in the Russian Federation and other former Soviet states.

TABLE 1. Initial Level of Development, Resources, and Growth

Region	Country	INC per capita GNP at PPP US\$1989	URBAN Urbanization (percent of population 1990)	Share of industry in GDP 1990 current prices (%)	INDIST Predicted share of industry (%)	Overindustrialization (difference between actual and predicted industrialization, as percentage of GDP)	LOCAT Location	RICH Natural Resources	PRGR Average growth (1985-89) (%)
<i>Central and Eastern Europe</i>	Albania	1,400	37	37	34	3	1	Poor	3.6
	Bulgaria	5,000	68	59	36	23	0	Poor	2.7
	Croatia	6,171	62	35	34	1	1	Poor	0.2
	Czech Republic	8,600	65	58	37	21	1	Poor	1.6
	Hungary	6,810	62	36	37	-1	1	Poor	1.6
	Macedonia	3,394	59	43	34	9	0	Poor	0.2
	Poland	5,150	62	52	39	13	1	Moderate	2.8
	Romania	3,470	53	59	37	22	0	Moderate	-0.8
	Slovak Republic	7,600	57	59	36	23	1	Poor	1.60
	Slovenia	9,200	62	44	39	5	1	Poor	-0.4
	Armenia	5,530	68	55	35	20	0	Poor	2.7
	Azerbaijan	4,620	54	44	36	8	0	Rich	0.8
	Belarus	7,010	66	49	37	12	0	Poor	5.2
	Belgium	8,900	72	44	34	10	1	Poor	2.7
<i>ESU and Mongolia</i>	Georgia	5,590	56	43	35	8	0	Moderate	2.4
	Kazakhstan	5,130	57	34	38	-4	0	Rich	4.3
	Kyrgyzstan	3,180	38	40	34	6	0	Poor	5.2
	Latvia	8,590	71	45	35	10	1	Poor	3.5
	Lithuania	6,430	68	45	35	10	1	Poor	2.9
	Moldova	4,670	47	37	35	2	0	Poor	5.7
	Russian Federation	7,720	74	48	41	7	1	Rich	3.2
	Tajikistan	3,010	32	34	34	0	0	Poor	1.9
	Turkmenistan	4,230	45	34	35	-1	0	Rich	5.0
	Ukraine	5,680	67	44	40	4	0	Moderate	2.4
	Uzbekistan	2,740	41	33	37	-4	0	Moderate	3.9
	Mongolia	2,100	60	41	40	1	0	Moderate	5.4
	China ^a	800	18	49	46	3	1	Moderate	9.0
	Vietnam ^b	1,100	19	23	30	-7	1	Moderate	5.0

^aFigures are for 1978.

^bFigures are for 1986.

Notes: Predicted share of industry is derived using regression results in Syrquin and Chenery (1989).

Source: The World Bank 1980, 1988, 1992, 1993, authors' estimates.

TABLE 2. Initial Economic Distortions and Institutional Characteristics

Region	Country	STATE					
		REPR ^a Repressed inflation 1987-90	TDEP ^b Trade dependence 1990 (%)	BLCMKT Black market premium 1990 (%)	Independence and development of state institutions	MARMEM Years under central planning	
<i>Central and Eastern Europe</i>	Albania	4.3	6.6	434	2	47	
	Bulgaria	18	16.1	921	2	43	
	Croatia	12	6.0	27	1	46	
	Czech Republic	-7.1	6.0	185	1	42	
	Hungary	-7.7	13.7	47	2	42	
	Macedonia	12	6.0	27	1	47	
	Poland	13.6	8.4	277	2	41	
	Romania	16.8	3.7	728	2	42	
	Slovak Republic	-7.1	6.0	185	0	42	
	Slovenia	12	4.0	27	1	46	
	<i>FSU and Mongolia</i>	Armenia	25.7	25.6	1,828	0	71
		Azerbaijan	25.7	29.8	1,828	0	70
		Belarus	25.7	41.0	1,828	0	72
		Estonia	25.7	30.2	1,828	0	51
Georgia		25.7	24.8	1,828	0	70	
Kazakhstan		25.7	20.8	1,828	0	71	
Kyrgyzstan		25.7	27.7	1,828	0	71	
Latvia		25.7	36.7	1,828	0	51	
Lithuania		25.7	40.9	1,828	0	51	
Moldova		25.7	28.9	1,828	0	51	
Russian Federation		25.7	11.1	1,828	1	74	
Tajikistan		25.7	31.0	1,828	0	71	
Turkmenistan		25.7	33.0	1,828	0	71	
Ukraine		25.7	23.8	1,828	0	74	
Uzbekistan		25.7	25.5	1,828	0	71	
Mongolia	7.6	31.0	1,400	2	70		
<i>East Asia</i>	China ^c	2.3	1.0	208	2	46	
	Vietnam ^d	15	7.2	464	2	21 ^e	

^aRepressed inflation is defined as the percentage change in real wages less the percentage change in real GDP.

^bTrade dependence is defined as the ratio of CMEA exports and imports to GDP.

^cFigures for China are for period before 1978.

^dFigures for Vietnam are for period before 1986.

^eAverage for North and South Vietnam.

Source: World Bank 1992, 1993; Tarr 1993.

connections routed through the Russian Federation. A dummy variable equal to one is used to indicate that a country has a thriving market economy as a neighbor.

The richness of natural resources differs significantly across the transition economies (*RICH*; table 1). At first glance, resources would appear to make transition easier. This may not be the case, however.⁹ 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.

9. See Sachs and Warner (1995) for a discussion of the effects of natural resources on growth.

In some cases, the availability of exportable energy resources may permit governments to delay reform (as it has in Azerbaijan and Turkmenistan). Of course, for energy importers, the break up of the CMEA and the Soviet Union entailed large terms of trade shock, leading to growing external indebtedness.

Reported prior economic growth rates (*PRGR*) are included as an initial condition because for poorer countries, growth rates appear to have been higher in the earlier stages of socialist accumulation than in the later stages. The more mature countries experienced stagnation, if not declining growth. During the second half of the 1980s, growth in the poorer countries (China, Mongolia, Moldova, the Kyrgyz Republic, Turkmenistan, and Vietnam) tended to be higher than in Central and Eastern Europe and the FSU.

One important economic distortion is repressed inflation (*REPR*). Open inflation was chronic only in Poland and the Yugoslav republics in 1989, but repressed inflation, in the form of a monetary overhang, was high in most of Central and Eastern Europe 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 indicator suggests that the strongest inflationary pressures in Central and Eastern Europe were in Bulgaria, Romania, and Poland, and the weakest were in the Czech Republic, Hungary, and the Slovak Republic.¹⁰ Repressed inflation was highest, however, in the FSU, where upward pressures on prices mounted after 1987, propelled by glasnost and diminishing control by the center over the republics. Macroeconomic imbalances were severe in Vietnam in the mid-1980s; China, in contrast, began its reforms at the end of the 1970s without a monetary overhang.

Trade dependence on other communist countries (*TDEP*) is another type of economic distortion. Under communism, the authorities sought to create a regionally interdependent communist economy. As a result of this policy, external trade flows were concentrated within the CMEA area, and trade among republics represented a significant share of GDP. Compared with the counterfactuals generated by gravity models (Winters and Wang 1994), inter-republic trade flows were especially large for the smaller republics of the Soviet Union, which engaged in very little trade outside the area. The breakdown of the CMEA and the collapse of the Soviet Union therefore caused tremendous disruption in the international trade and payments of these countries. Central and Eastern Europe countries were less dependent on CMEA trade than the FSU and hence suffered less disruption. The effects of disruption also depended partly on location. Some countries could benefit from cross-border trade with rich neighbors; 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.

10. This measure tries to capture the increasing discrepancies between the growth in nominal purchasing power and the production of goods and services. Official estimates of inflation are used to deflate wages. Direct estimates of money overhang are hard to obtain because of the difficulty estimating the underlying voluntary money demand functions.

Another measure of economic distortion is the black market exchange rate premium (*BLCMKT*). A high black market exchange rate premium is an indicator of expectations of depreciation or foreign exchange rationing or both. A large differential between the official and the free exchange rate can also be interpreted as a distortionary tax on exports and a subsidy on imports (Easterly 1994). This differential stimulates the diversion of resources from the official to the informal sector, a process often associated with consumption of real resources in activities that are not directly productive. Black market premiums were especially high in the FSU, Mongolia, Bulgaria, and Romania. They were relatively modest in countries—such as Hungary and the former Yugoslav republics of Croatia, Macedonia, and Slovenia—that had some previous experience with reforms. The black market premium in the Czech and Slovak republics was high according to international standards but low compared with the average for transition countries. China also began reforms with a relatively low level of distortion in its foreign exchange market.

Two other variables reflect initial institutional characteristics of the transition economies. *STATE* is a categorical variable differentiating among new nation states (value of 0); members of decentralized states, such as the former Yugoslav republics, or core countries of centralized federal states, such as the Soviet Union (value of 1); and countries that were independent states before 1989 (value of 2). The new nation-states needed to build national institutions—including systems of democratic representation, justice, and security as well as economic institutions, such as central banks and customs bureaus—while confronting economic changes.¹¹ The non-Baltic FSU, in particular, lacked national institutions. Until recently, these former Soviet republics were territories in a highly centralized political union, in which a brain drain reallocated human resources from the periphery to the center. The new nation-states created out of the former Yugoslavia and Czechoslovakia were not faced with such serious problems, as the federal systems there gave substantial powers and responsibilities to the constituent republics. Furthermore, the historical ties and the political affiliation of Central and Eastern Europe countries with Western Europe gave 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 *MARMEM* is related to the *STATE* variable, it is likely that it has a separate influence on the reform process, particularly on the ability of societies to deal with the disequilibria of transition.¹² Lacking a single generation in the society with experience of the workings of a market economy could provide a basis for adopting a wait-

11. Recent cross-country growth studies emphasize the importance of institutional and political variables (see Alesina 1997 and Knack and Keefer 1995).

12. Schultz (1990) used the concept of the ability to deal with disequilibria in a market economy context, but it is also highly relevant in the transition context. The ability of transition economies to reallocate resources toward their best uses and to establish institutions toward that end has been a major determinant of the transition experience (World Bank 1996).

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, where policies that could be regarded as “a clean break with the past” have been more difficult to adopt. The fact that some non-Baltic countries in the FSU were unwilling to leave the ruble zone until the Russian Federation forced them to do so while the Baltic countries did so quickly and on their own may partly reflect the importance of prior experience with a market-based system. If transition is viewed as a process requiring varying amounts of large-scale institutional change (Dewatripont and Roland 1996), the number of years under central planning can be seen as a proxy for the degree of change required.¹³

Initial Conditions Clusters

The use of all these initial conditions in the analysis is impractical, because there are 11 variables, some possibly correlated with one another. To reduce their dimensionality and deal with multicollinearity, we use the method of principal components (Dunteman 1989). This technique entails the use of rotating factor analysis to create clusters of variables—also known as eigenvectors, or principal components—that are orthogonal to one another. They represent separate dimensions of the initial conditions that can be used together in regression analysis. The factor loadings, or mutual correlations, define the clusters and provide insight into their interpretation.

Although there are as many clusters, or principal components, as there are initial conditions, most of the variability is explained by the first few components. The first two principal components account for 67 percent of the variation of the initial conditions defined above (table 3). The interpretations of these two components are robust to a sensitivity analysis in which principal components are derived for modified sets of initial conditions. In each case, the first two components have a consistent interpretation and explain 64–75 percent of the variability of the specified initial conditions. Hence in the rest of the analysis, only the first two principal components, estimated for the original 11 initial conditions, are used. They are interpreted as follows:

- *PRINI*, the most important cluster, has high positive correlations, or loadings, for *MARMEM* and for economic distortions (*TDEP*, *REPR*, *BLCMKT*). The weights for these variables given in the eigenvector suggest that *PRINI* can be interpreted as the degree of macroeconomic distortions and unfamiliarity with market processes at the beginning of transition. With liberalization these distortions 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

13. The experience of market-based law, for example, was never lost in Central and Eastern Europe (World Bank 1996).

TABLE 3. Results from the Principal Component Analysis

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

Note: *p*-values are shown in parentheses.

Source: Authors' calculations.

in the eigenvector are still sizable. Countries with higher scores on trade dependence, black market exchange premium, repressed inflation, and market memory and with lower values for *STATE* and *LOCAT* 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 industrial distortion (*INDIST*) and might therefore be interpreted as an index of the overall level of development, incorporating the so-called socialist development overhang, as measured by overindustrialization. Poor but resource-rich countries tended to grow faster before transition, so *PRIN2* also has high negative loadings for resources (*RICH*) and prior growth (*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. Growth did slow noticeably in the richer countries of Central and Eastern Europe and the FSU during the 1960s and 1970s. Labor force participation rates stabilized at high levels, and rapid capital accumulation was offset by declining capital productivity.¹⁴ To the extent that structural distortions are reflected in *PRIN2*, this second component can also be seen as a measure of what the supply shocks would be if prices were liberalized and free entry allowed. Changes in the parameters of the initial conditions dominating *PRIN2* can occur only relatively slowly, so this component can be interpreted as reflecting persistent conditions. Countries with higher initial per capita income, higher urbanization, higher industrial distortion, poor natural resources, and low growth rates before 1989 will tend to have higher values for *PRIN2*.

Given the nature of the principal components procedure, an important implication of these results is that during the pretransition period, macroeconomic distortions, together with unfamiliarity with the market economy, tend to be relatively uncorrelated with the level of development and industrial overhang. Using the first two principal components as indices, we can group the transition economies along two dimensions: macroeconomic distortions with unfamiliarity and the level of development with overindustrialization. The countries of the FSU states uniformly rank high on the first dimension but differ a great deal on the second (figure 1). The Central Asian states are far less developed than the Slavic states; the Central and Eastern Europe countries tend to cluster in the upper-left-hand quadrant. The Czech and Slovak republics, for example, have very high levels of structural imbalance but low macroeconomic distortions. Interestingly, Hungary, Croatia, and Poland—which had relatively long histories of reforms and more liberal economic systems—have moderately low values for both mac-

14. See Ofer (1987) and Easterly and Fischer (1994) for a discussion of factors leading to the Soviet economic decline.

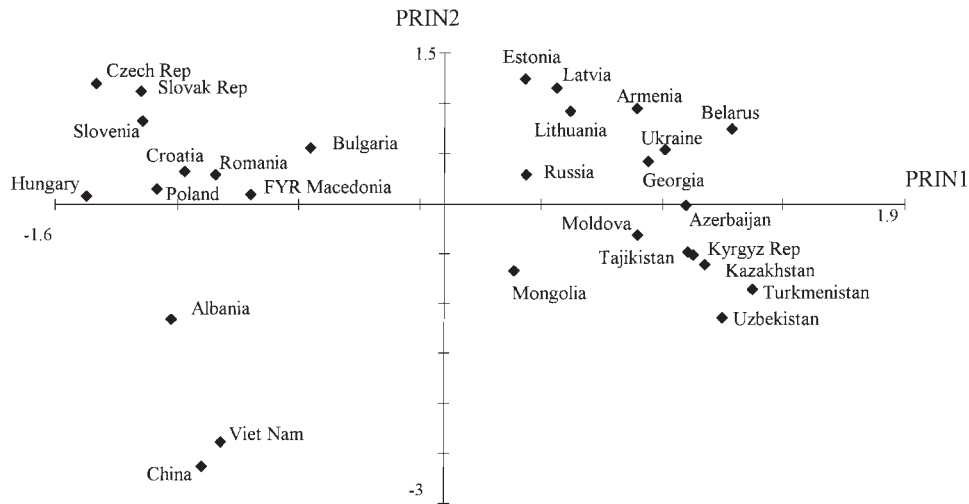


FIGURE 1. Ranking of Transition Economies by the First Two Principal Components

roeconomic and structural distortions. The East Asian economies and Albania form a separate group, characterized by a relatively low level of development and fewer structural and macroeconomic distortions.

Economic Policies, Political Change, and Regional Tensions

An integrated view of transition requires us to consider other factors, especially economic policies, political reform, and regional tensions, as well as initial conditions. Economic policies are proxied by the economic liberalization indices originally developed in de Melo, Denizer, and Gelb (1996). Their basic annual liberalization index (*LIB*), which is used here, represents the level of liberalization achieved each year. It is a composite of three different components, representing policy reforms focusing on internal prices, external markets, and private sector entry. Of course, some countries did initiate partial liberalization before transition. Yugoslavia abandoned formal planning in the 1950s. Poland initiated reforms in 1968; Hungary did so in 1981. But before 1990 other countries in the region 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 Soviet Union before 1991. China's transition started in 1978, albeit in a mainly rural setting. In South Vietnam a small private sector and some market practices were preserved after unification in 1975. The liberalization index incorporates the extent of prior reforms in each country in its initial value.

The links between politics and reform are also important; the transition economies now display significant variation in the degree of political freedom and civil liberties achieved. Many have made a rapid transition to democracy, but in a few countries political freedom has eroded after some early progress. This ero-

sion of political freedom has sometimes been related to deeply rooted ethnic, religious, or cultural tensions. We use Freedom House's index of political freedom (*FREEDOM*) to represent political liberalization.

Finally, 6 of the 28 countries covered—Armenia, Azerbaijan, Croatia, Macedonia, Georgia, and Tajikistan—experienced serious regional tensions (wars, internal strife, prolonged war-related blockades). A dummy variable for regional tensions (*RT*) is used to capture the disruptive effects of these events.

II. INITIAL CONDITIONS, ECONOMIC LIBERALIZATION, AND PERFORMANCE

This section focuses on the links among initial conditions, the level of policy reform given by the liberalization indices, and performance outcomes, measured in terms of growth and inflation.¹⁵ The following system of equations is posited, where i represents country and t represents year:

$$\begin{aligned}
 (1) \quad & LIB_{it} = a + b_0 LIB_{it-1} + b_1 GROWTH + b_2 PRIN1_i \\
 & \quad \quad \quad + b_3 PRIN2_i + b_4 FREEDOM_{it} + \varepsilon_{it} \\
 (2) \quad & GROWTH_{it} = c + \gamma_0 PRIN1_i + \gamma_1 PRIN2_i + \gamma_2 LIB_{it} + \gamma_3 LIB_{it-1} + \gamma_4 RT_{it} + \mu_{it} \\
 (3) \quad & INFLATION_{it} = d + z_0 PRIN1_i + z_1 PRIN2_i + z_2 LIB_{it} + z_3 LIB_{it-1} + z_4 RT_{it} + \gamma_{it}
 \end{aligned}$$

The specification of the performance equations can be seen as a type of reduced-form relation tying initial conditions, liberalization policies, and regional tensions. It explicitly omits macroeconomic stabilization policies, partly because they are closely related to and largely dependent on liberalization policies and partly because policy stance is not independent of economic performance. It is generally accepted that the sustainable fiscal deficit depends on real economic growth and that the appropriate change in nominal money supply depends on the demand for domestic currency, which is likely to change in relation to inflation.

Previous studies of Central and Eastern Europe and the FSU find strong evidence that the effect of liberalization is nonlinear over time (de Melo, Denizer, and Gelb 1996, Selowsky and Martin 1997). In particular, empirical results suggest that good performance (high growth, low inflation) is negatively related to the size of the contemporaneous liberalization step but positively related to the accumulated stock of reforms. It is therefore expected that $\gamma_2 < 0$ ($z_2 > 0$) and $\gamma_3 > 0$ ($z_3 < 0$). Also, if liberalization is to have an overall positive effect on performance in the steady state, where $LIB(t-1) = LIB(t)$, one would expect $|\gamma_3| > |\gamma_2|$ ($|z_3| > |z_2|$). The effect of macroeconomic distortions, as reflected in *PRIN1*, on performance is expected to be negative. *PRIN2* captures structural distortions, which were higher in more developed socialist countries. Therefore one would expect $\gamma_1 < 0$ ($z_1 > 0$).

15. Because growth during transition is not likely to be related to the standard determinants of growth found in the general literature, the specification of the equation does not reflect steady-state circumstances.

What are the implications of these relations 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 relation between unfavorable initial conditions and the degree of liberalization would therefore be consistent with behavior that attempts to smooth output during transition. In these countries slower reforms would have a smaller negative effect on performance in the short run and might therefore be favored to compensate for the negative impact of more unfavorable initial conditions. This logic would suggest a negative association between *LIB* and *PRIN1*, or $b_2 < 0$. Initial conditions could also have a direct effect on liberalization outcomes due, for instance, to the lower effectiveness of reforms under more unfavorable initial conditions.

It is more difficult to form expectations about the sign of b_3 . To the extent that *PRIN2* reflects structural distortions and has a negative impact on growth, one would expect the reasoning used earlier to apply to *PRIN2* as well. However, *PRIN2* is dominated by indicators of the level of development, and it is not a priori clear how these indicators affect policy choices. The 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 also be associated with a lower marginal utility of income and therefore with a greater capacity to absorb negative shocks. This could imply a positive relation between reforms and *PRIN2*. Finally, if administrative capacity to implement reforms is positively correlated with the level of development and this capacity constraint is binding during transition, one would also expect to observe a positive relation between *PRIN2* and *LIB*. All these hypotheses suggest a positive association between *PRIN2* and the liberalization index.

The hypothesis 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 tradeoff, a higher level of achieved liberalization allows a larger contemporaneous liberalization step for a targeted GDP growth rate, other things equal. Thus, one would expect contemporaneous liberalization to depend positively on the extent of past reforms.

The “window of opportunity” argument suggests that radical political liberalization may be associated with greater tolerance on the part of the populace to economic hardships in the short run. Political liberalization 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. It is therefore expected that $b_4 > 0$.

Finally, the presence of the growth term in the liberalization equation is related to the more general question about the interactions between policy and economic performance. One view of policy formation is as a forward-looking process in which policymakers assess the likely impact of initial conditions and

policy on performance and, taking into account political circumstances, choose an optimal reform path. Such a view would imply a recursive system of equations in which policy does not depend directly on current performance. However, simultaneity between performance and reforms can still be an issue in this formulation if the error terms of the two equations are contemporaneously correlated (Kennedy 1994).

Contemporaneous correlation between the error terms may reflect, for example, the working of a feedback mechanism from economic performance to policy choices. Performance surprises (discrepancies between expected and actual economic performance) may lead to revisions of reform plans, which would imply correlation between the error terms of the performance and liberalization equations. Contemporaneous correlation between the error terms may also arise as a result of subjectivism and bias in the construction of the liberalization index. Knowledge of a country's growth and inflation performance might be implicitly reflected in experts' opinions about the country's progress in reforms, for instance, biasing the index in favor of countries with relatively good economic performance.

We ran a Hausmann test for contemporaneous correlation between the error and a regressor to assess the gravity of the simultaneity problem. The test indicates the presence of contemporaneous correlation between the liberalization index and the error term in the growth equation but not in the inflation equation. Inclusion of the growth variable in the liberalization equation reflects the results of this test. In this formulation, the system of simultaneous equations is exactly identified.

Empirical Analysis: Cross-Section Equations and Relative Reform Effort

This section presents a preliminary empirical analysis of the relations among 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, obtained by using the ordinary least squares estimation technique, are presented in table 4. In the liberalization equations (*AVLIB* in equations 3 and 4 in table 4), a negative and statistically significant association between liberalization and the index for initial macroeconomic distortions (*PRIN1*) is observed. The result indicates 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 equation 4, in which political freedom is excluded. In this equation, *PRIN2* probably captures some of the effect of democratization on reforms due to the positive association between the level of development and political change in the sample. The level of political freedom (*AVFREE*) has a strong positive association with the degree of liberalization, as demonstrated by the results for equation 3. These results seem to corroborate previous findings that rapid and fundamental political change makes reform easier.

TABLE 4. Cross-Country Regression Estimates of Relations among Performance, Liberalization, and Initial Conditions (N = 28)

Independent variable	LOGAVIN (1)	AVGR (2)	AVLIB (3)	AVLIB (4)
<i>Constant</i>	4.64 (5.48)	-4.43 (-1.27)	0.29 (4.3)	0.54 (22.17)
<i>PRIN1</i>	1.18 (5.62)	-4.03 (-4.64)	-0.05 (-2.54)	-0.07 (-2.82)
<i>PRIN2</i>	0.04 (0.14)	-1.25 (-1.13)	0.03 (1.03)	0.13 (5.20)
<i>AVLIB</i>	1.23 (0.83)	-3.44 (-0.56)		
<i>AVFREE</i>			0.04 (3.68)	
<i>RT</i>	1.42 (3.18)	-5.66 (-3.06)		
Adjusted R ²	0.644	0.602	0.7003	0.55

Note: *t*-ratios are shown in parentheses.

Source: Authors' calculations.

Political change and initial conditions do not exhaust the list of factors that may determine policy choices. Individuals, historical and cultural factors, external aid, and demographic structure may also play an important role. As the World Bank notes, "Most decisive reforms have reflected the vision of one leader or a small and committed group" (World Bank 1996, p. 11).

One way to assess the importance of such factors for individual countries is to look at the residuals from equations 3 and 4 in table 4 (shown in table 5), which 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.¹⁶ Countries such as Estonia, the Kyrgyz Republic, Lithuania, and Moldova have liberalized substantially more than expected given their initial conditions. In contrast, the Czech and Slovak republics, which faced favorable initial circumstances, show negative values of the residuals, despite the high degree of liberalization achieved. Belarus, Romania, Turkmenistan, and Ukraine liberalized substantially less than expected given their initial conditions. Countries such as Tajikistan, Uzbekistan, and Vietnam, which liberalized under relatively low levels of political freedom, improve their position in the ranking by the residuals even further.

The results from the performance equations (equations 1 and 2 in table 4) suggest a negative association between macroeconomic and structural distortions, as reflected in *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 the performance equations. Re-

16. It is tempting to call the residuals indices for the relative reform effort in the spirit of the tax literature, which uses a similar approach to derive measures for the tax effort (see Lotz and Morss 1969).

TABLE 5. Ranking of Transition Economies by the Liberalization Index and Residuals

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

Sources: de Melo, Denizer, Gelb (1996); Freedom House, 1997; authors' calculations.

gional tensions are statistically significant and important: controlling for initial conditions and liberalization, countries that experienced wars and other disruptions experienced substantially lower annual growth rates (5.6 percent less) and higher inflation. The coefficients for *AVLIB* are negative and statistically insignificant. However, previous studies have shown that the relation between reforms and performance is highly nonlinear over time, a feature that cannot be captured by this simple functional form and cross-country regression.

Determinants of Policies and Outcomes

The panel data set includes five years of observations for 28 countries, with different periods for different subgroups. The basic equations are estimated using the two-stage least squares method (table 6).

The level of macroeconomic distortions (*PRIN1*) has a negative but statistically insignificant effect on liberalization. The level of development/overindustrialization (*PRIN2*) has a positive effect and is significant at the 5 percent level. These results are in line with our previous findings that macroeconomic distortions tend to have a negative and development a positive impact on liberalization. The level of past liberalization (*LIB*(-1)) tends to be positively associated with the current period's level of liberalization. The coefficient for *GROWTH* is small and statistically insignificant. Interestingly, *PRIN1* becomes statistically significant when *GROWTH* is excluded from the liberalization equation. Political freedom is positively associated with liberalization, with a highly significant regression coefficient.

TABLE 6. Regression Estimates of Basic System of Equations (N = 140)

Independent variable	<i>LIB</i> (1)	<i>GROWTH</i> (2)	<i>Loginf</i> (3)
Constant	0.21 (5.72)	-0.63 (-0.11)	3.78 (3.82)
<i>LIB</i>		-59.2 (-2.47)	6.9 (1.72)
<i>LIB</i> (-1)	0.59 (9.45)	62.5 (3.56)	-6.52 (-2.23)
<i>GROWTH</i>	0.002 (1.09)		
<i>PRIN1</i>	-0.02 (-1.55)	-3.88 (-3.87)	1.07 (6.34)
<i>PRIN2</i>	0.03 (2.11)	-1.48 (-1.04)	-0.03 (-0.10)
<i>FREEDOM</i>	0.017 (4.54)		
<i>RT</i>		-12.98 (-5.16)	1.88 (4.50)
Adjusted R ²	0.85	0.4	0.396

Note: *t*-ratios are shown in parentheses.

Source: Authors' calculations.

The regression results of the growth and inflation equations are also consistent with the expected relations. Current liberalization has a negative impact on growth and is statistically significant. LIB is also positively associated with current inflation, although the coefficient is marginally insignificant. As expected, lagged liberalization $LIB(-1)$ has a strong positive impact on performance, and the coefficients are highly significant. These results indicate that performance tends to depend positively on the accumulated stock of reforms, but may be negatively affected by the size of the contemporaneous liberalization step. In an equivalent formulation of the model, we separate the effects of the contemporaneous liberalization step ($LIB - LIB(-1)$) from the effect of past reform efforts ($LIB(-1)$). In this formulation, the coefficients for $LIB(-1)$ in the performance equations, which are the sums of coefficients γ_2 and γ_3 in equation 2 and z_2 and z_3 in equation 3, are not statistically significant. This suggests that within a five-year sample, the analysis does not fully capture the long-run effects of liberalization. The coefficients for LIB and $LIB(-1)$ imply that the overall effect of liberalization on growth is likely to be negative in the early stages 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.

Initial conditions have a strong impact on performance. Initial macroeconomic distortions, as reflected in $PRIN1$, have a negative and statistically significant effect on growth and inflation. $PRIN2$ preserves its sign from the cross-sectional regressions and is statistically insignificant in the growth and inflation equations. RT has a stronger effect on growth and inflation than before, because it is now a year dummy as opposed to a country dummy in the cross-sectional regressions.

The results in table 6 suggest that the degree of initial macroeconomic distortions is negatively associated with the extent of liberalization. To test if this could be viewed as a rational response of policymakers to the reduced effectiveness of reforms under unfavorable initial conditions and to explore more generally the relation between policy effectiveness and initial conditions, we construct four new variables: $PR1LIB$, $PR2LIB$, $PR1LAG$, and $PR2LAG$. These variables are interaction terms between LIB and $LIB(-1)$ on the one hand and $PRIN1$ and $PRIN2$ on the other. Table 7 presents the estimated impact of initial conditions on policy effectiveness, taking the interaction terms into account.

In the growth equation, the interactive terms for $PRIN1$ tend to reinforce the effects of LIB and $LIB(-1)$. The contemporaneous effect of liberalization is more negative under more unfavorable initial macroeconomic distortions, but this effect is more than compensated for by the stronger positive effect of the accumulated stock of reforms. The coefficients, however, are not statistically significant. The interactive terms for $PRIN2$ tend to dampen the effects for LIB and $LIB(-1)$: both the contemporaneous negative and the lagged positive effects of LIB and $LIB(-1)$ are smaller when the interactive terms for $PRIN2$ are taken into account. The coefficients are not statistically significant, however. In the inflation equation both the interactive terms for $PRIN1$ and $PRIN2$ with LIB are statistically significant and have negative signs, implying that the negative impact of the current

TABLE 7. Regression Estimates of Performance and Liberalization Equations with Interactive Terms between Policy and Initial Conditions (N = 140)

Independent variable	<i>GROWTH</i> ^a (1)	<i>GROWTH</i> ^b (2)	<i>Loginf</i> ^c (3)	<i>Loginf</i> ^d (4)	<i>LIB</i> ^e (5)
Constant	-0.63 (-0.11)	-5.03 (-1.02)	3.78 (3.82)	4.77 (6.25)	0.21 (5.72)
<i>LIB</i>	-59.2 (-2.47)	-46.93 (-2.21)	6.9 (1.72)	3.54 (1.08)	
<i>LIB</i> (-1)	62.5 (3.56)	57.10 (3.4)	-6.52 (-2.23)	-4.53 (-1.75)	0.59 (9.45)
<i>GROWTH</i>					0.002 (1.09)
<i>PRIN1</i>	-3.88 (-3.87)	-6.33 (-2.87)	1.07 (6.34)	2.43 (7.13)	-0.02 (-1.55)
<i>PRIN2</i>	-1.48 (-1.04)	-3.19 (-1.61)	-0.03 (-0.1)	0.6 (1.98)	0.03 (2.11)
<i>PR1LIB</i>		-5.36 (-0.61)		-3.71 (-2.74)	
<i>PR2LIB</i>		7.50 (0.93)		-2.99 (-2.39)	
<i>PR1LAG</i>		13.67 (1.65)		1.05 (0.82)	
<i>PR2LAG</i>		-6.12 (-0.71)		1.96 (1.49)	
<i>RT</i>	-12.98 (-5.16)	-10.50 (-4.45)	1.88 (4.5)	1.23 (3.37)	
<i>FREEDOM</i>					0.017 (4.54)
Adjusted R ²	0.4	0.427	0.396	0.517	0.85

^aBased on equation 2 from table 6.

^bBased on equation incorporating interactive terms.

^cBased on equation 3 from table 6.

^dBased on equation incorporating interactive terms.

^eBased on equation 1 from table 6.

Note: *t*-ratios are shown in parentheses.

Source: Authors' calculations.

level of liberalization on inflation performance is smaller when macroeconomic and structural distortions are greater. The interactive terms with *LIB*(-1) have the opposite signs but are statistically insignificant.

These results do not support the hypothesis that reforms are necessarily less effective under unfavorable initial conditions, as reflected in *PRIN1* and *PRIN2*. On the contrary, some evidence is found that liberalization is more effective at higher levels of macroeconomic and structural distortions. This result suggests that the negative association cannot be explained by the lower potency of reforms under unfavorable initial conditions. Unfavorable initial conditions discourage reforms, but the effectiveness of reforms is not reduced once they are implemented. This does not imply that steady-state growth rates 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. Countries that are landlocked, for

example, are likely to have lower long-run growth rates than countries with easy access to markets (Radelet, Sachs, and Lee 1996, Sachs and Warner 1996).

*The Relative Importance of Policies and Initial Conditions
in Determining Outcomes*

In this section, we estimate the relative importance of initial conditions and policies in explaining performance. The question of the relative importance of initial conditions versus political change in determining policy choices is also examined. The analysis is based on the results of the reduced-form equations presented in table 8.

To derive estimates of the explanatory power of initial conditions relative to policies and special factors, we use 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, presented in equations 1 and 2 in table 8. This model includes lagged liberalization, initial conditions, freedom, and regional tensions as regressors. The adjusted R^2 shows the percentage of total variance in performance explained by the 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, the model is estimated 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 9. Policies have the highest explanatory power among all sets of factors in the growth equations, accounting for 31–46 percent of the variation in growth explained by the model. Initial condi-

TABLE 8. Regression Estimates of Reduced Form Equations
(N = 140)

Independent variable	<i>GROWTH</i> (1)	<i>Loginf</i> (2)	<i>LIB</i> (3)
Constant	-11.5 (-5.85)	5.03 (14.4)	0.18 (8.67)
<i>LIB</i> (-1)	24.55 (6.97)	-2.13 (-3.37)	0.64 (16.9)
<i>PRIN1</i>	-2.59 (-3.36)	0.92 (6.67)	-0.02 (-2.64)
<i>PRIN2</i>	-2.74 (-2.8)	0.12 (0.69)	0.02 (2.02)
<i>RT</i>	-11.5 (-5.5)	1.71 (4.50)	-0.03 (-1.15)
<i>FREEDOM</i>	-0.91 (-2.75)	0.1 (1.78)	0.02 (4.33)
Adjusted R^2	0.44	0.392	0.86

Note: *t*-ratios are shown in parentheses.

Source: Authors' calculations.

TABLE 9. Estimates of Explanatory Power of Policy, Initial Conditions, and Political Freedom (percent)

	Policy		Initial conditions		RT		FREEDOM		PRINI		PRINZ		All variables
	max	min	max	min	max	min	max	min	max	min	max	min	
<i>Growth</i>													
Total variance	20.0	13.6	13.6	8.2	12.4	12.2	3.0	0	11.6	4.5	3.0	1.9	44.0
Explained variance	45.5	30.9	30.9	18.6	28.2	27.7	6.8	0	26.4	10.2	6.8	4.3	100.0
<i>Inflation</i>													
Total variance	6.8	4.7	26.8	20.0	9.8	9.2	1.0	0	27.0	20	0	0	39.2
Explained variance	17.3	12.0	68.4	51.0	25.0	23.5	2.6	0	68.9	50.3	0	-0.5	100.0
Political freedom													
Initial conditions													
Total													
<i>Policy</i>													
Total variance	50.3	20.3	0	-0.1	34.4	4.9	7.4	4.5	27	1.4	55.0		
Explained variance	91.5	36.9	0	-0.2	62.5	8.9	13.5	8.2	48.7	2.5	100.0		

Source: Authors' calculations.

tions are also important, accounting for 19–30 percent of the explained variance, with *PRIN1* having greater explanatory power than *PRIN2*. In the inflation equation, initial conditions dominate, with *PRIN1* especially important. Regional tensions come second, explaining 24–25 percent of the explained variance in inflation.

The same exercise is performed for policy. It reveals that political change has the highest explanatory power, accounting for 37–92 percent of the explained variance. *PRIN2* may also be important, but the range of the estimate for its explanatory power is wide.

To illustrate graphically the importance of initial conditions in explaining differences in growth performance, we use the partial derivatives for *GROWTH* with respect to *PRIN1* and *PRIN2* to construct iso-growth lines for different sets of initial conditions. These iso-growth lines are superimposed on figure 1 to obtain figure 2. The picture helps one visualize 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 with other transition economies. China and Vietnam, for example, lie on an iso-growth line that is about 14 percent higher than the iso-growth line for most of the FSU.¹⁷ Similar equations were estimated excluding China and Vietnam. They produce growth lines with similar slopes and an “out

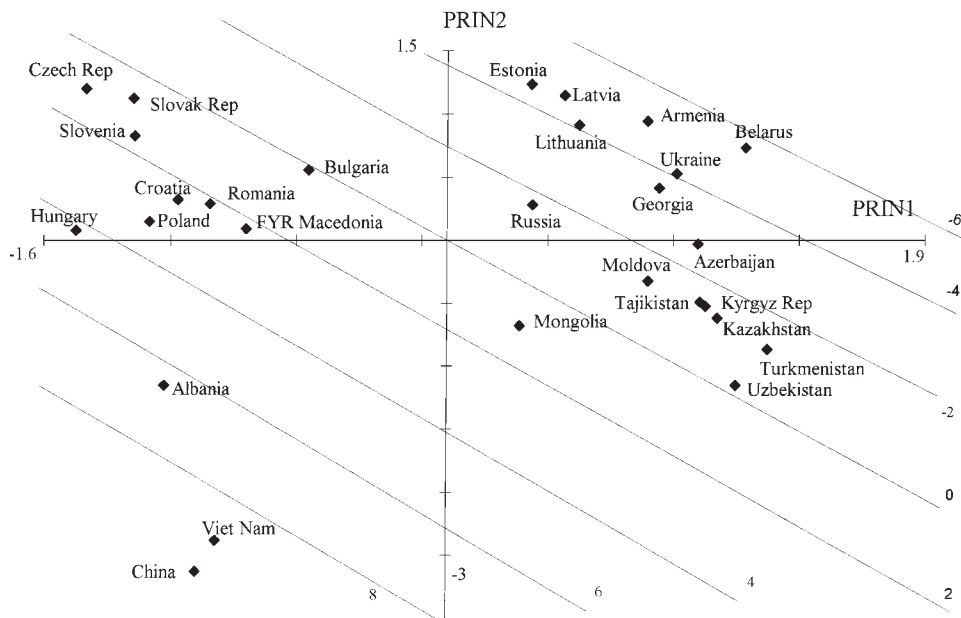


FIGURE 2. Iso-Growth Lines for Sets of Initial Conditions

17. A reduced-form equation has also been estimated 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.

of sample” growth bonus for China and Vietnam of about 7 percent relative to the FSU. The difference of 7 percent between the two estimates is especially instructive because it highlights the importance of factors that are specific to East Asian economies.

Initial Conditions, Political Liberalization, and Growth

What are the implications of this analysis for the impact of political freedom on economic growth in the context of transition? In the proposed framework, political liberalization is exogenous and has an indirect effect on growth through its influence on economic liberalization. Given the strong positive association between political and economic liberalization in the regression results, the nature of the relation between political freedom and economic growth is essentially the same as the relation between economic liberalization and growth—that is, nonlinear, with the size of the contemporaneous liberalization step having a negative effect and the accumulated stock of political reform a positive one. This finding may look similar to what is emerging as a general result in the literature: Political freedom has opposing effects on economic growth and, consequently, the net effect of democracy on growth is uncertain (Barro 1996a).¹⁸ In fact, our result implies that in a steady state, when *LIB* is equal to *LIB*(−1), the impact of democracy on growth is positive, other things equal.

Political freedom emerges as the most important factor for economic policies, raising the question of what determines political liberalization. One way to approach this question is to extend the model by making political liberalization endogenous. We add another exogenous variable—*ASIA*, a dummy variable with a value of 1 for China and Vietnam and 0 otherwise—to our system of equations to compensate for the loss of *FREEDOM* as an exogenous variable. Inclusion of this variable also allows us to test the degree to which the principal component approach succeeds in incorporating China and Vietnam in a unified analytical framework for the 28 transition economies. In the absence of adequate guidance from theory, we experiment with various specifications of the system of simultaneous equations, presenting the best statistical fit in table 10.

An interesting observation from equation 4 of table 10 is that the level of economic development, as measured by *PRIN2*, is an important determinant of the decision to liberalize politically. The result can be viewed as a confirmation that the so-called Lipset hypothesis—the propensity for democracy to rise with per-capita GDP—holds in the context of transition. Another interesting result is that the regional tensions variable has a negative and important effect (in equation 4) on political liberalization. To the extent that this variable reflects political instability and ethnolinguistic fractionalization (as in the case of the Balkans and the Caucasus), the result is in line with previous findings in the literature

18. In a broader cross-country empirical study, Barro (1996b) also found a nonlinear effect of democracy on growth, albeit one of a different kind: Growth is increasing in democracy at low levels of political freedom, but the relation turns negative once a moderate amount of freedom has been attained.

TABLE 10. Regression Estimates of Expanded System of Equations with Political Freedom as Endogenous Variable (N = 140)

Independent variable	<i>LIB</i> (1)	<i>GROWTH</i> (2)	<i>Loginf</i> (3)	<i>FREEDOM</i> (4)
<i>Constant</i>	0.09 (1.27)	-1.83 (-0.19)	3.66 (5.13)	1.97 (3.04)
<i>LIB</i>		-58.5 (-1.50)	7.5 (2.31)	6.87 (6.34)
<i>LIB(-1)</i>	0.51 (4.66)	62.7 (2.18)	-7.08 (-2.69)	
<i>FREEDOM</i>	0.04 (2.12)			
<i>PRIN1</i>	-0.02 (-2.07)	-3.1 (-1.88)	1.08 (6.99)	0.06 (0.25)
<i>PRIN2</i>	-0.02 (-0.65)			1.15 (4.0)
<i>ASIA</i>		8.84 (1.2)		-0.68 (-0.62)
<i>RT</i>		-12.4 (-4.06)	1.9 (4.71)	-0.92 (-1.8)
Adjusted <i>R</i> ²	0.8	0.39	0.37	0.58

Note: *t*-ratios are shown in parentheses.

Source: Authors' calculations.

and identifies an additional channel through which such factors can have an impact on economic growth during transition (through their impact on political freedom and the impact of political freedom on economic liberalization, for example). In addition to the level of development, *PRIN2* reflects—or is potentially correlated with—other variables that have been used in the literature as determinants of democracy (urbanization, health, education). Potentially important factors, however, such as income inequality, cultural characteristics, and religion, are left out of the model.¹⁹

The *ASIA* dummy variable has the expected signs but is statistically insignificant. By its nature, the *ASIA* dummy is a genuinely exogenous variable. Its explanatory power, however, is reduced by the structural differences between Asia and Eastern Europe, as reflected in the two principal components. This reduced explanatory power in the presence of the principal components is an indication that the two principal components adequately capture the specific attributes of China and Vietnam in a unified analytical framework for all 28 transition economies.

III. CONCLUSIONS

Casual observation suggests that transition economies fall into three broad groups: the rapidly recovering countries of Central and Eastern Europe, the

19. For a detailed discussion of the determinants of democracy, see Barro (1996b).

slower-adjusting FSU, and the East Asian countries, which responded to reforms with accelerated growth rather than initial contraction. This article departs from previous research that focused on the relation between policy and performance to analyze the sources of cross-country variation in both reform policy choices and economic performance. Our focus is on the role of initial conditions and political developments. We also consider the effect of regional tensions (non-economic events, such as wars and blockades).

Countries differ in many dimensions, but most of the variation across 11 initial conditions is captured by the 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 Central and Eastern Europe had fewer market distortions but, being relatively more developed, suffered from severe structural distortions. China and Vietnam, and to a lesser extent Albania, had fewer structural and market distortions.

Linkage among initial conditions, policies, and performance is specified by an equation system. Policy reform, 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. Political reform, in particular, affects the speed of economic liberalization.

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 performance of the Czech Republic, normally thought of as a very rapid reformer, is only average once its unusually favorable initial conditions are taken into account.

Regressions confirm that adverse initial conditions are associated with slower economic liberalization. This may be because governments are reluctant to accept the up-front costs of sharp reforms on top of losses from the dissolution of the old system. Very sharp economic liberalization is indeed associated with an output contraction, but this is a temporary phenomenon; over time the effect is offset by the positive cumulative effect of past liberalization efforts. Consistent with other studies, we find the relation between economic liberalization and performance to be highly nonlinear over time. With a five-year sample, our analysis is not able to capture the long-run effects of liberalization.

The hypothesis that difficult conditions are associated with slow reforms because they diminish the effectiveness of reforms is not supported by our regressions. Unfavorable initial conditions discourage reforms, but the effectiveness of

reforms is not reduced once they are implemented. Moreover, countries cannot avoid the cost of not reforming, especially if they are deeply embedded in a disintegrating economic and political system. Countries fortunate enough to have exports that can be redirected to market economies—such as Uzbekistan with its gold and cotton—can, of course, cushion a more gradual reform process more easily than can other countries. In contrast, having potential exports, such as natural gas that cannot be exported because of problems accessing pipelines, may delay essential reforms and reduce performance, as it has in Turkmenistan.

Regressions also confirm the adverse effect of macroeconomic and structural distortions on performance. Over the first five years, more favorable initial conditions allowed the typical country in Central and Eastern Europe to grow about 5 percent more a year than the Slavic states of the FSU; China and Vietnam grew 14 percent a year more. A possible objection to this large estimate is that the East Asian experience includes a range of factors, such as culture, not captured in the initial conditions but nevertheless important in differentiating the Asian from the European experience. However, the estimation results of the expanded model, which includes a dummy variable for China and Vietnam, shows that the two principal components used in the analysis adequately capture the specific attributes of these countries. In addition, an out-of-sample estimate of the growth bonus for China and Vietnam, estimated using the sample of Central and Eastern European and FSU countries only, still suggests an annual growth bonus of 7 percent. East Asian structural characteristics have been important, no matter how you look at them. Indeed, because the slope of the iso-growth lines hardly changes when China and Vietnam are excluded, their structural features are almost precisely those that would be predicted to ease transition using data only from Central and Eastern Europe and the FSU.

Nevertheless, estimates of the relative importance of factors affecting performance show that policy is still the most important factor determining growth differences across the 28 countries in the sample. Initial conditions dominate in the inflation equation. Political reform emerges as the most important determinant of the speed and comprehensiveness of economic liberalization, raising the important question of what determines political liberalization. An extension of the model is considered in which political freedom is treated as an endogenous variable to be determined by initial conditions, regional tensions, and other factors. The results suggest the importance of the level of development (*PRIN2*) in determining the decision to expand political freedoms, which can be viewed as a confirmation of the Lipset hypothesis in the context of transition.

Our findings may have implications for the growth literature in general. Most cross-country growth studies include initial income levels as an initial condition variable. However, one variable may not be enough to capture the diversity of important initial conditions, such as location and institutions. At the same time, an inevitable feature of our research design is that the contribution to liberalization and economic performance of the different initial conditions cannot be identified. Questions related to the importance of geography, culture, and history in

the choice of reform paths are interesting and important, but they are beyond the scope of the article. They could be the subject of future research.

APPENDIX. DEFINITIONS OF VARIABLES USED IN THE ANALYSIS

- *ASIA*: a dummy variable assuming value of 1 for China and Vietnam, and 0 otherwise.
- *AVFREE*: time average of the index of political freedom from Freedom House.
- *AVGR*: average growth. Growth is measured in percentage terms.
- *AVLIB*: time average of the liberalization index.
- *BLCMKT*: black market exchange rate premium.
- *FREEDOM*: index for political freedom. Source: Freedom House.
- *INC*: GDP at PPP per capita.
- *INDIST*: the difference between actual and predicted share of industry in GDP.
- *LIB*: index of liberalization developed in de Melo, Denizer, and Gelb (1996).
- *LOCAT*: a dummy variable with 1 if a country has a thriving market economy as a neighbor.
- *LOGAVIN*: log of average inflation. Inflation is measured in percentage terms.
- *MARMEM*: the number of years a transition country has been under central planning.
- *PRGR*: average GDP growth for the five-year period prior to beginning of transition.
- *PR1LAG*: interactive term between *PRIN1* and *LIB*(-1).
- *PR2LAG*: interactive term between *PRIN2* and *LIB*(-1).
- *PR1LIB*: interactive term between *PRIN1* and *LIB*.
- *PR2LIB*: interactive term between *PRIN2* and *LIB*.
- *PRIN1*: the first principal component, which reflects the degree of macroeconomic distortions.
- *PRIN2*: the second principal component, which reflects the degree of structural distortions.
- *REPR*: a measure of repressed inflation, calculated as the difference between growth of real wages and real GDP growth over 1987–90.
- *RICH*: a dummy variable that assumes a value of 1 if a country has economically important endowments of energy resources.
- *RT*: regional tensions, a dummy variable assuming value of 1 if a country has experienced war or blockade in a particular year.
- *STATE*: a categorical variable with values of 2 if a country was an independent state at the beginning of reform, 1 if a country was a member of a decentralized federal state (Yugoslav republics) or was the core state of a centralized federal state (Russia, Czech Republic), 0 if none of the above.
- *TDEP*: a measure of trade dependence, calculated as the ratio between the average of CMEA (interrepublican for FSU) exports and imports and GDP.
- *URBAN*: share of urban population in total population.

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