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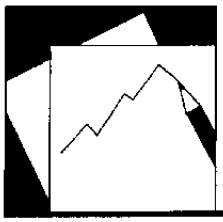

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Fiscal Adjustment in Transition Countries: Evidence from the 1990s

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Fiscal Adjustment in Transition Countries: Evidence from the 1990s[1]

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Abstract

In the 1990s, transition countries underwent large adjustments to address fiscal imbalances. This paper examines whether the factors identified in the literature on advanced economies, the size and composition of adjustment, are important in transition economies. It finds that larger consolidations were more successful in addressing fiscal imbalances on a durable basis. Policies focusing on expenditure reductions were more successful than those relying on revenue increases. There is little evidence of expansionary fiscal contractions, but fiscal contractions did not have a significantly negative impact on growth either. Few fiscal stimuli succeeded in boosting growth.

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I. Introduction

This paper examines empirically the fiscal stabilization that has occurred in transition countries between 1992 and 2000. The evidence points to a sharp reduction in the size of the fiscal deficit and in expenditure across most transition economies. Recent empirical literature suggests large and expenditure-based fiscal consolidation of this kind should be more successful in addressing fiscal imbalances. Traditional economic theory also suggests that an adjustment of these magnitudes would have been associated with a significant contraction in economic activity. However, recent work highlights various channels, such as wealth and expectations, through which fiscal adjustment could be associated with positive effects on consumption and growth. The adjustment in government size and the shift in the composition of government activity could have created the backdrop for a nontraditional economic response in transition economies.

This paper uses the approach of Alesina and Perotti (1995) to identify specific episodes of fiscal adjustment in transition economies in the 1990s. Predefined rules are used to separate periods of concerted fiscal adjustment from periods of smaller adjustments or even reversal. The focus on particular adjustment episodes will help answer two questions. First, did differences in the size, composition, or length of fiscal adjustment have implications for the success of fiscal policy in addressing the fiscal imbalances that existed at the start of the 1990s? Second, was the adjustment of fiscal policy associated with an overly negative impact on growth? Having identified the specific periods of fiscal adjustment, the paper uses descriptive and logit regression techniques to characterize the adjustments.

The analysis uses general government data collected from 25 transition countries of the former Soviet Union (FSU), the Baltics, Eastern Europe (CEE), and Mongolia, for 1992–2000. However, it is worth highlighting up front a number of weaknesses associated with these data. First, the coverage of general government accounts has varied over time and may be incomplete. Second, the data are reported on a cash basis and do not capture payment arrears and noncash transactions, such as netting. Finally, the data do not capture off-budget transactions, including price subsides granted through state-owned enterprises or banks which can be large (see Petri and others, 2002). While the data are subject to these problems, no alternative estimates of general government activity are available on a continuous basis for the 1990s.

The paper is set out as follows: Section II reviews the evidence on fiscal adjustment in transition economies. Section III highlights the potential factors identified in the literature that could have an impact on the success of fiscal adjustment in transition economies. Section IV outlines the definitions that identify specific fiscal adjustment episodes. Sections V and VI summarize the empirical analysis and Section VII concludes.

II. General Trends in Fiscal Adjustment in Transition Countries

Summary indicators point to a sizable fiscal adjustment in transition economies between 1992 and 2000 (see Table 1). The general government cash deficit fell on average by 1¼ percent of GDP per annum between 1992–2000 to reach almost 3½ percent of GDP by 1999–2000. However, there is huge variation across the transition countries as evident by the large standard deviations of the annual adjustment effort (almost 5 percent of GDP) and by the differences in the size of the adjustment in the FSU, CEE, and Baltic countries that reflects the differences in the initial level of fiscal imbalance. Also, for a number of countries (Azerbaijan, Belarus, Croatia, the Czech Republic, Estonia, Latvia, Mongolia, Slovenia, and Uzbekistan), the general government balance deteriorated in 1999–2000 relative to 1992 as fiscal policy was loosened in response to the shocks from the 1998 Russian crisis and falling primary commodity prices, and elections being held in some countries.

The data show that the decline in the overall deficit was achieved primarily through expenditure cuts as revenue collection fell throughout the decade. Expenditures were cut by about 2 percent of GDP per annum between 1992 and 2000, although the variation in the data is again very large, with Belarus, Croatia, Estonia, Latvia, and Mongolia experiencing an average annual increase in expenditure of between 0.3 and 2 percent of GDP in this period.[2] On the other hand, revenue collection fell annually by about ¾ percent of GDP owing mainly to the large declines in the FSU and CEE countries, implying an even higher annual adjustment effort than is revealed by the fall in the general government deficit. However the adjustment appears to have been unruly. Both Cheasty and Davis (1996) and Gupta and others (2001) point to the inability of these countries to mobilize revenues and financing as the main forces driving the fall in expenditures. This evidence is also consistent with that from Latin America, where the lack of access to credit in macroeconomic crises exacerbates the pro-cyclicality of fiscal policy, especially in countries with high deficits (Gavin and Perotti, 1997).

Notwithstanding the sizable adjustment in fiscal deficits, external public indebtedness increased markedly. The average level of public external debt in 2002 exceeded 37 percent of GDP, up from about 19 percent in 1992–93.[3] The increase is largely driven by the rapid accumulation of debt in some FSU countries, namely the Kyrgyz Republic, Russia, Turkmenistan, Moldova, and Mongolia, due in part to the recognition of off-budget and quasi-fiscal liabilities as well as higher external concessional borrowing. Although the data point to a sharp reduction in CEE debt over the period, most of the decline reflects the impact of debt rescheduling in Bulgaria and Poland.

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[2] Cash expenditure data most likely overstate the magnitude of the decline since substantial arrears and quasi-fiscal liabilities were accumulated off budget. For example, the outstanding stock of payment arrears is estimated at over 5 percent of GDP in 2000 in both Moldova and the Ukraine.

[3] External public sector debt data come from the World Bank's *Global Financial Statistics*.

Table 1. Indicators of Fiscal Policy, 1992–2000

(Average in percent of GDP)

	Overall Deficit			Total Expenditure			Total Revenue			Public External Debt		
	1992–93	1999–2000	Annual change	1992–93	1999–2000	Annual change	1992–93	1999–2000	Annual change	1992–93	1998–99	Annual change
All sample	-11.2	-3.4	-1.2	46.4	33.6	-2.1	34.4	30.2	-0.7	18.5	37.0	3.3
Std dev	*12.5*	*3.0*	*4.7*	*11.9*	*9.5*	*5.7*	*10.2*	*10.2*	*4.4*	*27.2*	*21.4*	*17.1*
FSU countries	-14.3	-3.5	-1.4	47.4	28.1	-2.8	31.9	24.5	-1.0	18.6	37.0	4.7
Std dev	*14.6*	*2.4*	*5.3*	*14.3*	*10.4*	*6.5*	*12.4*	*11.1*	*5.6*	*23.9*	*22.3*	*22.2*
CEE countries	-6.0	-3.8	-0.4	46.3	41.8	-0.7	39.7	38.1	-0.3	34.4	29.5	-0.6
Std dev	*6.1*	*3.6*	*2.3*	*6.7*	*6.4*	*3.0*	*7.4*	*7.3*	*2.6*	*32.1*	*13.6*	*6.3*
Baltics	-8.4	-4.0	-1.6	41.4	41.7	-0.8	33.1	37.8	0.8	4.3	9.7	1.4
Std dev	*14.0*	*1.7*	*4.2*	*13.9*	*4.3*	*4.8*	*3.5*	*5.8*	*1.8*	*1.1*	*5.3*	*1.5*
Mongolia	-11.9	-9.5	0.1	43.5	39.9	0.7	31.6	30.4	0.6	41.6	77.6	9.6

Sources: FAD Transition Database (derived from various staff reports and REDs); and IMF staff calculations.

III. Some Evidence on the Effects of Fiscal Adjustment

Studies of fiscal adjustments in member countries of the Organization for Economic Cooperation and Development (OECD) suggest that the size and composition of fiscal policy matter for solving fiscal imbalances. Alesina and Perotti (1995) find that although most fiscal adjustment efforts rely on tax increases to lower the deficit and the debt burden, those successful in addressing fiscal imbalances rely more heavily on cuts in current expenditures than tax increases. McDermott and Wescott (1996) also find that expenditure-based retrenchments are more likely to reduce the public debt ratio than tax increases. They also find that larger adjustments have a higher likelihood of reducing the debt-to-GDP ratio. However, Alesina and Ardagna (1998) find that it is the composition rather than the size of adjustment effort that matters: adjustments that focus on cuts in transfers and wages are more likely to succeed in reducing the primary structural balance.

The tightening of fiscal policy could also generate expectation, credibility, and wealth effects that could help underpin the adjustment effort. At the high levels of inflation that prevailed in the transition economies in the early 1990s, a large reduction in budget deficits could underpin the credibility of fiscal policy and lower expectations that a government will seek to depreciate the value of its debt via inflation. Falling inflation (and default risk) could lower nominal interest rate premiums, which in turn would lend support to the adjustment of the deficit by reducing interest outlays. Both Sutherland (1997) and Perotti (1997) show that expectation effects are stronger when fiscal consolidation occurs in times of high and rapidly growing debt-to-GDP burdens. Fiscal adjustment could also induce wealth effects that help offset, if not reverse, the traditional Keynesian effects on consumption. In a theoretical model by Bertola and Drazen (1993), a cut in government expenditure when government expenditure is rising rapidly induces expectations that future spending and taxes will fall significantly, which causes private wealth and hence consumption to expand.

Traditional economic theory suggests that the fiscal adjustment experienced in the transition economies would have been accompanied by a downturn in economic activity, at least in the short run. Lower government expenditure (or higher taxes) would contribute to reducing aggregate demand and income directly, which in turn would multiply the negative impact on output. At least at first sight, the slow recovery across the transition economies suggests that the fiscal adjustment could have had an adverse impact on growth. But the empirical evidence from advanced economies suggests that Keynesian multipliers, while usually positive, are typically small. Also, Havrylyshyn and others (1998) find that while inflation stabilization initially had a negative impact on growth in transition economies, it was quickly compensated if reform continued. The economic recovery across transition economies was strongest where stabilization was achieved earlier and where structural reform progressed most. Fiscal adjustment could also contribute to improving allocative efficiency in transition economies. As the composition of public expenditure is shifted away from economic production and defense toward the provision of public goods and services, fiscal adjustment could have a positive impact on long-run growth. The privatization of the extensive portfolio of state-owned assets and price liberalization could also contribute to improving productive efficiency and growth.

The empirical evidence from OECD and emerging-market economies suggest that there have been incidences where sharp fiscal contractions resulted in expansionary effects. Fiscal contractions in Canada (1986–87), Denmark (1983–86), Ireland (1987–89), and Sweden (1986–89) were associated with an expansion rather than a contraction in economic activity. Giavazzi and others (2000) find that relative to the OECD expansionary fiscal contractions occur more frequently in emerging- and developing-market economies. While Alesina and Ardagna (1998) isolate expenditure-based adjustments as the main reason for the expansionary effects of these fiscal contractions, Giavazzi and Pagano (1996) attribute the positive relation between private sector consumption and fiscal adjustment to large adjustments rather than to the policies through which they are implemented.

For transition economies, the evidence on the relationship between fiscal deficits and growth is mixed. Coricelli (1997) and Pirttilä (2001) find a trade-off between the speed of reform and the level of the budget deficit in transition. Initially fast reformers experience larger budget deficits as well as a sharp contraction in output because higher transfer expenditure is needed to offset the costs of enterprise restructuring. The fiscal position improves gradually as tax and benefit reforms are put in place and as private sector firms become more efficient. Havrylyshyn and others (1998) find that while the reduction in government spending is less important for growth than inflation stabilization and structural reforms, annual growth rates are 0.1–0.25 percent higher for each percentage point decline in the government spending-to-GDP ratio. Finally, Dethier and Orlowski (1998) find for Hungary that the postponement of fiscal adjustment during 1991–94 reduced GDP growth by ½ percent annually between 1993–2006.

IV. Definitions

An episode of fiscal adjustment is defined for the purposes of this paper as one where *the general government primary balance improves by at least 2 percentage points of GDP in one year or by at least 1½ percentage points of GDP a year in two or more consecutive years.* Thus we rule out small but prolonged adjustments since we are interested in the impact of large fiscal adjustments as a measure of a concerted effort to address fiscal imbalances. This definition contrasts with the literature on fiscal adjustment in OECD countries, which uses the primary structural balance to purge the effect of automatic stabilizers from the measure of fiscal adjustment. However, distinguishing between the automatic and discretionary components of fiscal policy is problematic. The importance of automatic stabilizers in transition economies is also debatable. Pirttilä (2001) finds no significant relationship between the changes in the deficit (or revenue) and GDP growth in most transition economies, which suggests that the budgets of these economies are less dependent on GDP changes than those in the OECD.[4]

[4] Fiscal policy could also be assessed using the general government balance because interest payments affect aggregate demand via their effect on income from capital. Also, the creditability and success of fiscal adjustments in addressing the high inflation that prevailed in transition economies in the 1990s would be reflected in lower nominal interest rates and lower interest expenditure. Therefore, Section VI cross checks the

An episode of fiscal adjustment is successful if *the average general government primary balance in the two years after the contraction is at least 2 percentage points of GDP lower than it was in the two years prior to adjustment.* This implies that the effects of a successful adjustment on the primary balance are sustained once the episode has ended because the primary balance does not drop below the level that qualified it as an adjustment.

Finally, a period of fiscal adjustment is expansionary if the *average real GDP growth rate during the adjustment episode and the two subsequent years is at least one standard deviation above the average growth rate recorded for that country over the period 1992–2000.* This is a demanding criterion because, in the absence of country-specific estimates of potential GDP growth for most transition countries, it is necessary to isolate the impact of fiscal policy from the recovery that followed the output collapse at the start of transition.[5]

The first definition isolates some 33 cases of fiscal contraction excluding those consolidations ongoing at the start and end of the sample (see Table 2). Of these, some 24 cases were successful in sustaining the reduction in the primary balance two years after the end of the adjustment. While only the 1998 Ukraine adjustment episode was expansionary, no episode was associated with economic growth falling one standard deviation below the average real GDP growth for the 1992–2000 period. This finding is relatively robust as alternative specifications of expansionary contractions yielded few additional episodes.[6] The definitions above are also used with the opposite sign to assess if fiscal stimulus episodes had expansionary effects. Of the 23 fiscal stimulus episodes identified, only the 1994 Czech Republic and the 1998 Turkmenistan episodes had expansionary effects.

V. Descriptive Analysis of Fiscal Adjustments

A. Contractions

Macroeconomic indicators improved substantially following cases of successful fiscal contractions (Table 3). Successful adjustments appear to be implemented against a backdrop of larger macroeconomic imbalances and as a coordinated response to conditions of high to hyperinflation. The initial conditions preceding fiscal adjustments in the FSU were

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robustness of the results for the primary balance by using the overall balance to define adjustment episodes according to the criteria specified here.

[5] Potential GDP growth rates are only estimated for the Czech Republic (2.8 percent), Hungary (4.8 percent), and Poland (5.8 percent) by the OECD (see OECD Economic Surveys of these countries in 2000–01).

[6] For example, using the average growth in the two years after the adjustment yielded only two additional episodes (the 1993 Czech Republic and Romania episodes). However, for the 1994–96 Hungary episode, average real GDP growth in the two years after the end of the adjustment equaled the estimate of potential GDP growth produced by the OECD (2000).

Table 2. Episodes of Fiscal Adjustment and Stimulus in Transition Economies, 1992–2000 1/

Country	Adjustment	Stimulus 2/	Adjustment (Expenditure Based) 3/	Stimulus (Expenditure Based) 3/
CEE countries				
Albania	**93-95; 97-98**	-	93-95; 97-98	-
Bulgaria 2/	**94**	93; 97	94	-
Croatia	-	95; 99	-	-
Czech Republic	93	**94**	93	-
Hungary 2/	**94-96**	93	94-96	-
Poland	-	-	-	-
Romania	**93; 99**	-	93	-
Slovak Republic	**93-94; 99**	97	93-94; 99	-
Slovenia	-	-	-	-
Baltics				
Estonia	94; 97	95; 98-99	97	95; 98-99
Latvia	93; 96-97	94; 99	-	94; 99
Lithuania	**93**	-	93	-
FSU				
Armenia	**94-95**; 97	99	94-95; 97	99
Azerbaijan	**95-96**	98	95-96	-
Belarus	-	93	-	93
Georgia 2/	**95**	-	95	-
Kazakhstan	**95**; 97	94; 96; 98	95; 97	-
Kyrgyz Republic	**93-94; 96**	95	96	-
Moldova	**93**; 95; **98-99**	-	93; 98-99	-
Russian Federation	**93; 95**	94	93; 95	-
Turkmenistan	96	**98**	96	98
Ukraine	**95-96; 98**	-	95-96; 98	-
Uzbekistan	**94; 97**	96	94; 97	96
Mongolia 4/	**94-95**	93; 98	94-95	93; 98
Total episodes	33	23	27	10

Source: IMF staff calculations.

1/ Episodes successful in sustaining the reduction in the primary balance after the end of the adjustment are highlighted in bold. Expansionary stimulus episodes are also highlighted in bold.

2/ The sample excludes the 1996 Georgia, 1998 Hungary, and 1999 Bulgaria episodes because the widening of the deficit reflects structural breaks in the data. In Georgia and Bulgaria, off-budget accounts were incorporated; and in Hungary the widening deficit reflected pension-system reform.

3/ An expenditure-based adjustment (stimulus) is one where at least 60 percent of the improvement in the deficit is derived from cuts in primary expenditure and net lending.

4/ Mongolia is included in the group of FSU countries because as a former satellite of the Soviet Union, it shares many of the characteristics of other FSU transition countries.

Table 3. Fiscal and Macro Indicators Around Episodes of Fiscal Adjustment in Transition Economies, 1992–2000

	Successful	Unsuccessful	FSU	CEE	Baltics
Number of episodes (excluding outliers) 1/	21	9	17	9	4
		(In percent of GDP)			
Fiscal and macro indicators before adjustment 2/					
Primary balance	-9.0	-2.7	-9.1	-5.9	-1.4
External public debt	32.3	18.5	39.0	29.8	4.3
Expenditure	43.4	33.9	39.0	45.1	36.7
Real GDP growth rates	-8.0	-8.3	-10.3	-2.6	-11.5
Inflation	1,035.4	379.7	1,348.6	73.6	392.9
Current account balance	-6.4	-6.4	-6.7	-6.3	-4.5
Fiscal and macro indicators after adjustment 2/					
Primary balance	-2.4	-2.7	-5.9	0.3	-2.1
External public debt	28.5	36.8	28.8	29.4	6.2
Expenditure	35.1	36.8	32.0	39.7	42.1
Real GDP growth rates	2.4	1.3	1.4	3.3	2.0
Inflation	37.6	10.6	30.4	36.4	10.4
Current account balance	-6.1	-9.9	-9.1	-4.1	-6.6

Source: IMF staff calculations.

1/ Excludes 1993 Lithuania, 1993 Moldova, and 1994–95 Armenia because the level of the deficit prior to the episode implied an average change in primary balance exceeding 20 percent of GDP. Including these outliers does not alter the results.

2/ The period (after) before represents the unweighted two-year average of the variable preceding (after) the adjustment.

less favorable than those prevailing prior to the CEE and Baltic adjustments. However, after the end of successful adjustments, the debt burden and the level of expenditure were lower than they were preceding the adjustment, whereas unsuccessful adjustments left these indicators higher. Comparing macroeconomic indicators before and after the adjustment episodes shows that although inflation declined substantially by the end of all episodes, only successful adjustments were accompanied by some improvement in the current account balance. The rebound in growth was also stronger for countries with successful adjustments, although the general recovery from the slump in output that characterized the start of the transition process complicates the assessment. Using the more rigorous definition of expansionary fiscal contractions from Section IV shows there is limited evidence of expansionary fiscal contractions in transition economies during the 1990s.[7]

[7] Even for the 1998 Ukraine episode, the increase in growth one standard deviation above the average 1992–2000 rate during 1998–2000 was export led due to real depreciation of the hryvnia in 1999.

Larger and expenditure-based fiscal adjustments were most successful in sustaining improvements in the primary balance (Table 4). Comparing the composition of fiscal policies between successful and unsuccessful adjustment episodes shows that successful episodes were generally longer lasting. They were also larger. The average contraction in the primary balance in successful adjustment cases is about twice that undertaken in unsuccessful adjustments. Another important distinguishing characteristic is that unsuccessful adjustments relied mostly on revenue increases, whereas successful episodes implemented large cuts in primary expenditure accompanied by some moderate decline in revenue. The finding on unsuccessful revenue-based adjustments is consistent with Alesina and Ardagna (1998) and Alesina and Perotti (1997), who find unsuccessful adjustments in the OECD are almost exclusively revenue based. Successful adjustments were also heavily focused on current outlays rather than on capital. In this respect, cuts in the wage bill are an important distinguishing characteristic of successful adjustment packages.[8]

Table 4. Composition of Fiscal Adjustment Episodes in Transition Economies, 1992–2000

	Successful	Unsuccessful	FSU	CEE	Baltics
Sample excluding outliers 1/					
Percent of episodes ≥ 2 years	42.9	11.1	29.4	44.4	25.0
	(Average change during the adjustment phase in percent of GDP)				
Size of adjustment	7.0	3.1	6.3	6.2	2.8
Total expenditure	-7.6	-0.2	-7.8	-4.0	1.6
Total primary expenditure	-8.3	-0.6	-7.6	-6.1	1.2
Current primary expenditure	-4.7	-0.6	-2.3	-5.4	-2.7
Wages and salaries	-1.1	0.6	-0.9	-0.9	0.7
Capital expenditure	-1.7	-1.1	-2.5	-0.4	-0.4
Total revenue	-2.2	2.5	-2.3	-0.2	4.1

Source: IMF staff calculations.
1/ As in Table 3, excludes the 1993 Lithuania, 1993 Moldova, and the 1994–95 Armenia episodes.

B. Fiscal Stimulus

Only two fiscal stimulus episodes were successful in boosting economic activity significantly (Table 5). The fact that so few stimulus episodes significantly boosted growth lends support to Kornai's (1994) argument that Keynesian-style effects would only be possible once government expenditure is firmly reoriented away from less-productive sectors and a hard budget constraint is in place. Relative to the nonexpansionary-stimulus episodes, the initial fiscal position was more favorable (the primary deficit was in surplus rather than

[8] The data on primary expenditure cuts are not directly comparable to those on the size of adjustment because of missing observations. A complete data set is only available for 22 episodes.

deficit and debt and expenditure were lower) which may have provided greater room for fiscal policy to maneuver. Again, larger macroeconomic and fiscal imbalances preceded the stimulus episodes across the FSU compared to the CEE and the Baltics. Although growth appeared to be contracting more sharply before successful stimulus episodes, the lower level of inflation and smaller current account deficits may also have created greater scope for relaxation of fiscal policy. Following the end of the successful stimulus episodes, the increases in the primary balance and the debt burden were not reversed. Although the primary deficit was reigned in after unsuccessful stimulus episodes by spending cuts, the debt burden continued to rise. On the macro front, the current account deficit was larger after the successful stimulus episodes but the rebound in growth was stronger.

Table 5. Fiscal and Macro Indicators Around Episodes of Fiscal Stimulus in Transition Economies, 1992–2000

	Successful	Unsuccessful	FSU	CEE	Baltics
Number of episodes	2	21	12	7	4
		(In percent of GDP)			
Fiscal and macro indicators before stimulus 1/					
Primary balance	0.5	-2.0	-4.6	1.8	0.5
External public debt	24.5	28.2	26.9	42.5	4.9
Expenditure	33.5	38.0	32.2	46.4	38.3
Real GDP growth rates	-5.1	-3.6	-5.3	-0.9	-4.3
Inflation	125.0	441.5	672.4	124.8	145.1
Current account balance	-4.6	-7.4	-10.5	-2.1	-8.6
Fiscal and macro indicators after stimulus 1/					
Primary balance	-1.6	-2.1	-4.2	0.8	-0.7
External public debt	35.5	31.4	31.1	42.0	5.2
Expenditure	31.1	37.8	30.8	45.9	41.3
Real GDP growth rates	7.3	2.5	2.0	3.7	4.1
Inflation	15.7	73.2	117.0	19.5	6.9
Current account balance	-11.8	-6.7	-8.2	-5.4	-7.4

Source: IMF staff calculations.
1/ Before (after) is the unweighted two-year average of the variable proceeding (after) the adjustment.

The data on the composition of fiscal policy in stimulus episodes reveals little about which policies had an impact on the effectiveness of the stimulus (Table 6). With respect to size, the primary balance in the expansionary episodes widened by between 1 and 3 percentage points of GDP compared to an average of about 3 percent GDP for the nonexpansionary cases. There is no conclusive evidence to support the findings of traditional Keynesian models that expenditure increases are more effective in stimulating economic activity than cuts in revenue. The expansionary 1998 Turkmenistan episode increased current spending as civil servant wages and student stipends were doubled and pension payments were increased. In contrast, the expansionary 1994 Czech Republic episode relied on lower

direct tax and social security contribution rates, more generous deductions and allowances, and the nonrecurrence of exceptional collections associated with the 1993 tax reform. Across the nonexpansionary cases, roughly an equal number relaxed fiscal policy via expenditure increases as those that used tax cuts.

Table 6. Composition of Fiscal Stimulus in Transition Economies, 1992–2000

	Successful	Unsuccessful	FSU	CEE	Baltics
Percent of episodes ≥ 2 years	0	4.8	0	0	25.0
	(Average change during stimulus in percent of GDP)				
Size of stimulus	3.0	4.0	4.2	3.4	0.5
Total expenditure	2.3	3.0	3.3	1.6	4.2
Total primary expenditure	2.1	3.1	3.2	1.9	4.2
Total revenue	0.3	0.2	0.2	-0.5	1.1
Current primary expenditure	-2.2	0.4	-0.3	1.2	-0.2
Wages and salaries	n.a.	1.0	1.0	0.1	1.4
Capital expenditure	1.6	2.4	4.5	0.7	0.6

Source: IMF staff calculations.

VI. Econometric Investigation of Fiscal Adjustments

Section V identified the following factors that could be tested econometrically for their joint influence on the probability of adjustments successfully addressing fiscal imbalances.

The size of the consolidation effort. The hypothesis is that larger consolidations should be more successful in sustaining the reduction in the overall primary deficit after the adjustment phase ends than smaller adjustments. Larger adjustments should also signal a regime shift, reinforcing the credibility and irreversibly of the policies. It should also signal the government's commitment to reform and the "crowding in" of the private sector. Thus the variable, *size*, measures the difference between the average annual primary balance during the adjustment episode and the primary balance in the year prior to the adjustment.

The composition of fiscal policy. The hypothesis is that adjustments that rely more heavily on expenditure cuts are more likely to secure a lasting reduction in the primary deficit. Tackling sensitive items of current expenditure, such as transfers, public servant wages, and employment levels, could underscore the credibility of the government's policies to address fiscal imbalances in a sustainable manner. However, adjustments implemented via revenue/tax increases, for example using temporary profit transfers from state-owned enterprises, may signal that the adjustment effort is less durable. A dummy variable, *expend*, captures information on how the adjustment was implemented. It is set equal to one when at least 60 percent of the adjustment comes from a cut in primary expenditure.

The duration of the adjustment effort. The hypothesis is that adjustments implemented over longer periods of time should also be more credible and less prone to reversals than shorter adjustments. They should also facilitate the broadening of the scope and depth of the reform compared to shorter adjustments. Politically, they may also prove easier to sustain if the adjustment burden is spread across multiple periods. A dummy variable, *length*, is set equal to one if the adjustment is implemented over two years or more.

Initial conditions. Initial fiscal and macro conditions in the FSU were less favorable than in the CEE and Baltic countries. Disinflation and growth were also established later in the FSU, around 1997, compared to around 1994 for the CEE and Baltics. *Debt, CPI, and primary balance,* measured as the average level of these variables in the two years before the episode, are included in the analysis to control for the possible impact of divergent initial conditions. However, while adverse initial conditions could negatively affect the success of adjustment, Perotti (1999) shows that fiscal adjustments initiated in crises conditions are more likely to be associated with non-Keynesian effects.

These variables are included in a reduced form logit model to determine their influence on the probability of a fiscal adjustment securing a durable reduction in the primary deficit. Thus the probability of a successful adjustment is modeled by the following:

$$\log \frac{P_i}{(1-P_i)} = \alpha_0 + \alpha_1 size + \alpha_2 \exp end + \alpha_3 length + \alpha_4 debt + \alpha_5 CPI + \alpha_6 primary\,balance,$$

where P_i is the probability that an episode is successful as defined in Section IV. The model is estimated using a maximum likelihood estimation routine with the sample of 30 adjustment episodes.[9] The initial specification of the model fits the data well and all variables are jointly significant (Table 7).[10] However, as is common in these types of model, some of the variables are individually insignificant signaling a high degree of multicolinearity in the regressor matrix. To deal with this, the insignificant variables are dropped in three steps, at the 50, 20, and 10 percent significance levels, to arrive at the final model specification.

The final specification confirms that larger adjustments and expenditure-based policies improve the likelihood of a durable improvement in the primary balance. This mirrors the findings of McDermott and Wescott (1996) but contrasts to the findings of Alesina and Perotti (1997) who find only the composition of adjustment effort mattered in OECD adjustments. From Table 7, for a fiscal adjustment with a 0.5 percent probability of success, a 1 percentage point of GDP increase in the amount of the adjustment effort increases the

[9] Including the outliers does not alter the findings of the regression analysis.

[10] The likelihood ratio test is a test of the significance of the entire model using a chi-square distribution with four degrees of freedom.

probability of the improvement in the primary balance being sustained by 0.3 percent, holding all other variables constant.[11] Initial conditions are not found to have individually significant effects on the probability of success suggesting that those with larger fiscal and macro imbalances are not disadvantaged in implementing adjustments. This complements Havrylyshyn and others (1998), who find that worse initial conditions only have a small impact on relative economic performance across transition economies. Repeating the regression analysis with a variable that interacts the depth of the adjustment (*size*) with the composition of the adjustment effort (*expend*) shows that larger expenditure-based adjustments significantly improve the probability of success.

Table 7. Logit Probability Estimates of a Successful Fiscal Adjustment

	Initial Specification			Final Specification a.			Final Specification b.		
	Coefficient	t-stat	p-value	Coefficient	t-stat	p-value	Coefficient	t-stat	p-value
Constant	-5.5	-2.1	0.0	-5.1	-2.3	0.0	-1.4	-1.6	0.1
Size	1.1	1.6	0.1	1.4	2.5	0.0	...	...	...
Expend	0.3	0.2	0.9	...	...	...	...	...	...
Length	0.8	0.5	0.6	...	...	...	...	...	...
Debt	0.0	0.3	0.8	...	...	...	...	...	...
CPI	0.0	0.3	0.7	...	...	...	...	...	...
Primary balance	-0.1	-0.5	0.6	...	...	...	...	...	...
Size*expend	...	...	...	...	...	...	0.6	2.6	0.0
No. of observations			30.0			30.0			30
Log likelihood			-8.9			-9.7			-11.8
Pseudo-R-squared			0.5			0.5			0.4

Source: IMF staff calculations.

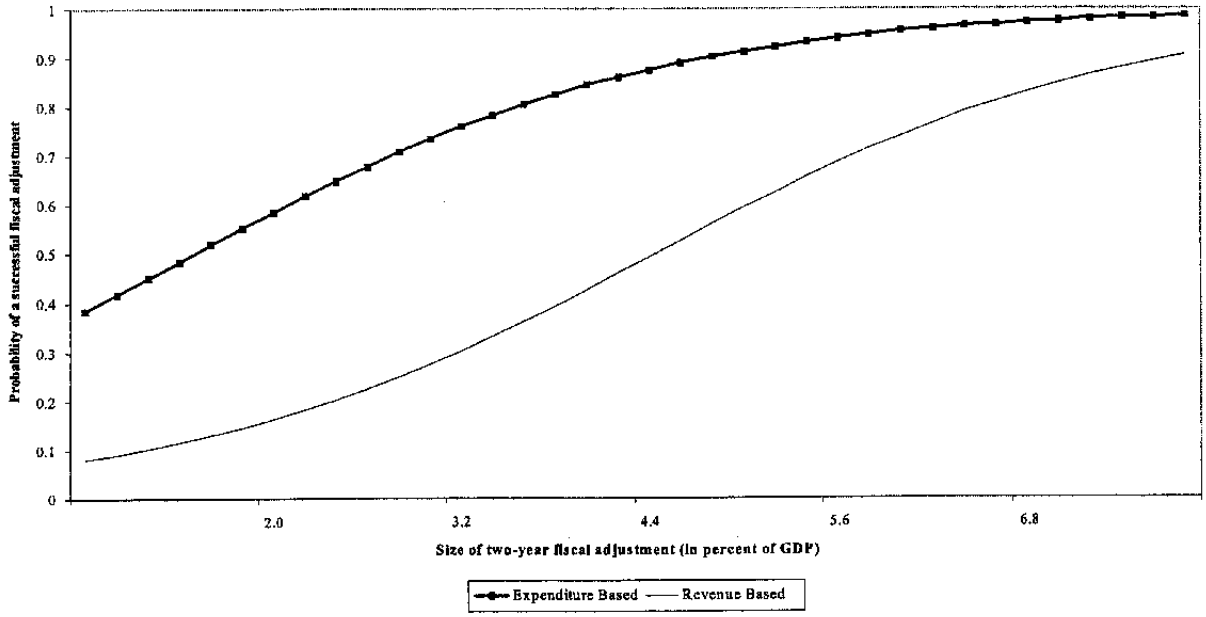
The robustness of the models' findings is also tested using the general government balance to identify adjustment episodes. The effectiveness of fiscal policy could be assessed using the general government balance because domestic interest payments have an effect on aggregate demand. Also the credibility effects of fiscal adjustments are mostly reflected in lower interest outlays. Using the general government balance in the definitions of Section IV produces only a slightly different set of adjustment episodes.[12] However, the results show that both the size and the composition of adjustment are individually significant for the probability of an adjustment being successful in addressing fiscal imbalances. As Figure 1 summarizes, for any given size of consolidation, the probability of it being

[11] The effect of a change in a continuous variable x on the probability of success is approximated by $\Delta P_i \cong \beta[P_i(1-P_i)]\Delta x$.

[12] See the appendix for tables identifying the episodes and describing the regression results.

successful in addressing fiscal imbalances is significantly higher if it is implemented via expenditure cuts rather than revenue increases. An adjustment in the general government deficit of almost 5 percentage points of GDP is needed over two years if a revenue-based adjustment is to have a 50 percent probability of being successful but only 2 percentage points is needed if an expenditure-based adjustment is to be equally successful.

Figure 1. Probability of a Successful Fiscal Adjustment
(Expenditure- Versus Revenue-Based Consolidations—Using the Overall General Government Balance)



VII. Conclusions

This paper's findings suggest that large-scale expenditure-based fiscal adjustments are most successful in addressing the fiscal imbalances in transition economies. The descriptive analysis showed that larger and longer adjustments result in a durable reduction in the primary deficit. Although they may prove politically costly, perhaps large adjustments help signal a credible commitment to address imbalances which in turn could help underpin their durability. The analysis also suggests that expenditure policies, especially cuts in current expenditure, prove more durable. Adjustments that rely on revenue increases are not typically successful in putting fiscal policy on a more sustainable path, most likely because they are less credible and easier to reverse. The regression analysis confirmed the size of the adjustment as the most significant factor for securing durable improvements in the primary

balance, although expenditure cuts are also important for durably reducing the primary balance and the overall balance.

On the relationship between fiscal policy and growth in transition economies during the 1990s, the findings of the paper are less clear. Although there is little evidence of expansionary fiscal contractions in the transition economies in the 1990s, fiscal contractions did not have a significantly negative impact on growth. Equally important is that very few fiscal stimuli succeeded in boosting economic growth significantly. The lack of evidence in this paper on the impact of fiscal policy on growth also reflects the partial nature of the analysis. A more comprehensive approach that captures a fuller range of factors, including structural and institutional variables, would be more appropriate to determining the short-term relationships between fiscal policy and growth in transition economies.

Analysis Using Overall General Government Balance

Table 8. Episodes of Fiscal Adjustment and Stimulus, 1992–2000
Using Overall Balance 1/

Country	Adjustment	Stimulus	Adjustment Expenditure Based 3/	Stimulus Expenditure Based 3/
CEE countries				
Albania	**93-95**; 98	-	93-95	-
Bulgaria	94; **97-98**	93; 96	97-98	-
Croatia 2/	93-94	95; 99	-	95
Czech Republic	93	**94**	-	-
Hungary	**95-96**	-	95-96	-
Macedonia, FYR	-	-	-	-
Poland	**93**	-	-	-
Romania	**93**	-	93	-
Slovak Republic	**93-94; 99**	97	93-94; 99	-
Slovenia	-	-	-	-
Baltics				
Estonia	94; 97	95; 98-99	97	95; 98-99
Latvia	96-97	94; 99	-	94; 99
Lithuania	93; **97**	98-99	93	98-99
FSU				
Armenia	**94; 96-97**	93	94; 96-97	-
Azerbaijan	94-97	93; 98	94-97	-
Belarus	-	-	-	-
Georgia	**94-95**	96	94-95	-
Kazakhstan 3/	**95**; 97	93-94; 96; 98	95; 97	96
Kyrgyz Republic	**93-94; 96**	95; 99	96	99
Moldova	**93**; 95; **98**	97	93; 98	97
Russian Federation	**93**; 95; **99**	94; 96	93; 95; 99	94
Turkmenistan	96	93-94; **98**	96	98
Ukraine	**93-96; 98**	97	93-96; 98	97
Uzbekistan	**94; 97**	93; 96	94; 97	96
Mongolia	**94-95**	93; 98	94-95	93; 98
Total episodes	36	30	26	15

Source: IMF staff calculations.

1/ Episodes successful in sustaining a reduction in the deficit after end of the adjustment are highlighted in bold. Expansionary stimulus episodes are also highlighted in bold.

2/ Tajikistan episodes are removed from sample due to structural break in the data in 1995. The Croatia 1993–95 episode is removed in subsequent analysis due to lack of debt data.

3/ An expenditure-based adjustment (stimulus) is one where at least 60 percent of the improvement in the deficit is derived from cuts in total expenditure and net lending.

Table 9. Logit Probability Estimates of a Successful Fiscal Contraction Using Overall Balance

	Initial Specification			Final Specification		
	Coefficient	t-stat	p-value	Coefficient	t-stat	p-value
Constant	-3.8	-2.0	0.5	-3.1	-2.2	0.0
Size	0.7	1.7	1.0	0.7	1.7	0.1
Expend	2.1	2.0	0.1	2.0	2.0	0.1
Length	1.2	1.0	0.3	...	...	...
Debt	0.0	0.2	0.9	...	...	...
No. of observations 1/			35.0			35.0
Log Likelihood			-13.4			-13.5
Pseudo-R-Squared			0.4			0.4

Source: IMF staff calculations.
1/ 1993–94 episode from Croatia is dropped from the analysis due to missing observations.

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