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## Debt Accumulation in the CIS-7 Countries: Bad Luck, Bad Policies, or Bad Advice?

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**IMF Working Paper**

Research Department

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**Abstract**

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Following the breakup of the Soviet Union in 1992, several low-income countries in the Commonwealth of Independent States (CIS) accumulated substantial external debt in a short time span, about half of which is owed to multilateral financial institutions. Three factors contributed to the current debt burden. First, the initial years of transition brought large systemic economic disruptions, loss of transfers from the center and collapse of trade relations among Council for Mutual Economic Assistance (CMEA) countries, and negative terms of trade shocks. Second, fiscal and other reforms, and consequently, growth revival, took longer than expected. Third, overoptimism by multilaterals contributed to the high debt levels. If external financial assistance, which was needed because of high social costs of the transition, had come in the form of grants in the first two or three years of the transition, the debt burden would have been lower and sustainable.

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|         | Contents                                                                                                              | Page |
|---------|-----------------------------------------------------------------------------------------------------------------------|------|
| I.      | Introduction .....                                                                                                    | 3    |
| II.     | Key Statistics and External Debt Dynamics.....                                                                        | 5    |
|         | A. Structure, Maturity, and Creditors.....                                                                            | 5    |
|         | B. Decomposing External Debt Dynamics .....                                                                           | 6    |
| III.    | External Adjustment—Programs and Outcomes.....                                                                        | 8    |
|         | A. Case Studies .....                                                                                                 | 8    |
|         | B. Decomposing the Forecast Errors in External Debt Ratios.....                                                       | 11   |
| IV.     | External Adjustment: A Comparison with Other Transition Economies .....                                               | 12   |
|         | A. What Explains the Difference in the Adjustment Record? Five Hypotheses.....                                        | 13   |
|         | B. External Adjustment: Econometric Evidence .....                                                                    | 14   |
| V.      | What Has the Debt Accumulation Financed? .....                                                                        | 16   |
| VI.     | Conclusion and Policy Implications.....                                                                               | 17   |
|         | Appendix. Decomposing the External Debt Dynamics-Summary of the Methodology .....                                     | 19   |
|         | References .....                                                                                                      | 41   |
| Tables  |                                                                                                                       |      |
| 1.      | CIS-7 Countries: Key External Debt Ratios.....                                                                        | 22   |
| 2.      | External Debt Ratios: 4-year Forecast Error Decomposition for<br>Three CIS-7 Countries.....                           | 23   |
| 3.      | GDP: 4-year Forecast Error Decomposition for Two CIS-7 Countries .....                                                | 24   |
| 4.      | Transition Countries: Sample Correlations in Transition Time .....                                                    | 25   |
| 5.      | Transition Countries: Ranking of Structural Reform Outcomes .....                                                     | 26   |
| 6.      | Determinants of External Adjustment in Transition Countries .....                                                     | 27   |
| Figures |                                                                                                                       |      |
| 1.      | Comparison of Key External Debt Statistics .....                                                                      | 28   |
| 2.      | Comparison of External Debt by Creditors .....                                                                        | 29   |
| 3.      | Decomposing the External Debt Dynamics.....                                                                           | 30   |
| 4.      | Kyrgyz Republic: External Current Account Balance.....                                                                | 31   |
| 5.      | Kyrgyz Republic: External Debt .....                                                                                  | 32   |
| 6.      | Moldova: External Current Account Balance.....                                                                        | 33   |
| 7.      | Moldova: External Debt .....                                                                                          | 34   |
| 8.      | Georgia: External Current Account Balance .....                                                                       | 35   |
| 9.      | Georgia: External Debt.....                                                                                           | 36   |
| 10.     | Macroeconomic Adjustment in CIS-7 Countries Compared with Other<br>Transition Countries .....                         | 37   |
| 11.     | Macroeconomic and Structural Indicators in CIS-7 Countries Compared<br>with Other Transition Countries .....          | 38   |
| 12.     | Exports, Imports, and Multilateral Disbursements in CIS-7 Countries Compared with<br>Other Transition Countries ..... | 39   |
| 13.     | Consumption and Investment in CIS-7 Countries Compared with Other Transition<br>Countries.....                        | 40   |

## I. INTRODUCTION

With the exception of Azerbaijan, which is a net energy exporter, the other low-income CIS countries—Armenia, Georgia, the Kyrgyz Republic, Moldova, Tajikistan, and Uzbekistan—face serious external debt problems.<sup>2</sup> From a situation of virtually no debt in 1992, a meteoric increase in debt occurred thereafter. In particular, multilateral (IMF and World Bank) lending contributed to the high and increasingly unsustainable levels of debt, despite close monitoring undertaken by these institutions through their conditionality. The CIS-7 experience contrasts with that in other transition economies, which have managed the transition without similar debt accumulation, and is more akin to that of the poorer highly indebted countries heavily reliant on official credit.<sup>3</sup>

What caused this rapid accumulation of debt? Was it bad luck—was their transition especially painful because of unexpectedly difficult initial conditions and adverse exogenous shocks? Was it bad policies—did the countries fail to implement the reforms necessary to navigate the transition process smoothly? Or was it bad external advice—did the IFIs make matters worse by lending too much based on unrealistic expectations of growth under the policies prescribed?

As a first step, the paper analyzes the external debt dynamics in the CIS-7 countries. Debt accumulation was fundamentally the consequence of recurring large current account deficits combined with an unprecedented output decline in the initial years and its slow recovery thereafter. Debt ratios continued to rise despite the pickup in export growth, significant FDI inflows (albeit uneven across countries), a decline in average interest rates over time, and, surprisingly, a large real exchange rate appreciation during the transition (notwithstanding the depreciations following the Russian crisis). Although the macroeconomic performance of the CIS-7 countries has improved significantly in recent years, the large buildup of debt is proving to be a drag on their economies, requiring painful adjustment to bring debt back to sustainable levels.

Case studies indicate that problems encountered in projecting output accurately in the midst of large changes were severe: output growth projections were generally overoptimistic. Additional complications arose as historical data were revised downward. In essence, this meant that during the early years when debt sustainability exercises were conducted, true debt ratios were much higher than those measured in the data available at the time.

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<sup>2</sup> These countries are referred to in this paper as the CIS-7. The paper does not discuss in any detail the other members of the CIS (Belarus, Kazakhstan, Russia, Turkmenistan, and Ukraine).

<sup>3</sup> See Easterly (2001) on how developing countries became highly indebted in the early 1980s and Reinhart and others (2003) on the experience of the newly independent Latin American countries in the 1820s.

Next, we consider the factors associated with the recurring large current account deficits and the constraints on adjustment. Regression results suggest that the extent of external adjustment (measured by the change in the ratio of the current account deficit to GDP) was limited because of five factors: (i) large initial current account deficits stemming from the sudden cutoff of fiscal transfers from Moscow to the CIS-7; (ii) limited extent of concurrent fiscal adjustment; (iii) poor GDP growth performance in the initial years; (iv) easy availability of multilateral loans on a continual basis; and (v) adverse terms of trade shocks on account of the breakup of CMEA trade, a sharp increase in energy product prices, the Russian crisis, and, in some countries, internal armed conflict.

Thus, while difficult initial conditions, the inability to undertake fiscal adjustment, and exogenous shocks were responsible for the debt buildup, the availability of financing from the multilateral institutions allowed large current account deficits to continue. The hope was that the reform programs supported by the World Bank and the IMF would be successfully implemented. In practice, implementation fell short of plans, especially during the initial years, in part because the countries' implementation capacity was overestimated. Also, the consequences of the initial forecasting errors have proved to be far-reaching because temporal unanticipated and costly long-term debt problems have emerged. This problem was compounded by the fact that initial GDP estimates were typically revised downward ex post.

In hindsight, multilateral agencies (or any other entities) could not have foreseen the full extent of the disruption that the breakup of the Soviet Union would cause. However, did the International Financial Institutions make a mistake in continuing to lend even though debt was rising consistently over time? Consumption data indicate that real consumption had also collapsed and that foreign aid helped raise domestic consumption levels above what would have otherwise been possible. It should be noted, however, that this financing was not sufficient to maintain consumption in real terms, with output falling rapidly and inflation surpassing three or even four digit levels in the initial years. Consequently, poverty and mortality rates rose at disturbingly high rates. At the same time, IFI financing was not free. This raises the question of whether more belt-tightening by the countries in the early years was warranted by the countries to prevent the large buildup of debt. In view of the trade-off between maintaining decent living standards and ensuring debt sustainability, a conclusion that could reasonably be drawn in hindsight is that more bilateral donor grants should have been given in the initial years, to be replaced later by IFI financing of investments in reform.

The paper is organized as follows. Section II examines the structure and evolution of the external debt of the CIS-7 countries. Where appropriate, the performance of the CIS-7 countries is compared with other countries in transition and with highly indebted low income countries in other parts of the world. Section III reviews the external adjustment experience under IMF programs and analyzes the reasons for the large deviation in outcomes relative to projections for three case studies—the Kyrgyz Republic, Moldova, and Georgia. Section IV relates the adjustment in the CIS-7 countries to that of other transition economies. Section V examines the expenditures financed by the accumulated debt. The final section summarizes the main results and discusses policy implications.

## II. KEY STATISTICS AND EXTERNAL DEBT DYNAMICS

Table 1 shows current levels of external debt in each of the CIS-7 countries measured in relation to exports, government revenues, and GDP. Apart from Azerbaijan and Uzbekistan, which are rich in natural resources, external debt in the remaining countries ranges from 55 percent of GDP to nearly 120 percent of GDP. These levels are much higher than those in other transition countries and are comparable to those in heavily or severely indebted low-income developing countries in the rest of the world.<sup>4</sup>

### A. Structure, Maturity, and Creditors

To facilitate comparison with other transition countries comparisons are made in “transition time,” following Fischer, Sahay, and Végh (1996) and Fischer and Sahay (2000). This expositional device allows us to account for the fact that transition started at different times in the various countries. In figures below, the time  $T_0$  denotes the year in which the transition from central planning to market started—for the CIS countries,  $T_0$  was 1992, somewhat later than for Central and Eastern Europe.

Figure 1 shows that CIS-7 external debt is largely debt issued or guaranteed by the public sector. The share of public and publicly guaranteed external debt in total external debt has been higher than the average in other transition economies or in low-income developing countries. While recently declining, the share remained above 80 percent, on average, in 2000, which is comparable to the share in heavily indebted low-income developing countries.<sup>5</sup>

Second, over time, the share of official external concessional financing (based on new commitments) in the CIS-7 countries reached levels observed in low-income developing countries (above 40 percent).<sup>6</sup> Initially, however, this share was small, as the CIS-7 countries’ external debt consisted primarily of energy import-related debt to Russia and Turkmenistan on commercial terms. Despite the recent increase, the share of official

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<sup>4</sup> We follow the country classification used in the World Bank’s *Global Development Finance*, our main data source in this section. Specifically, low-income developing countries are defined on the basis of a gross national income (GNI) per capita of less than US\$745 while heavily indebted low-income developing countries have either an external debt-to-exports ratio of 220 percent or more or an external debt-to-GNI ratio of more than 80 percent.

<sup>5</sup> Among the CIS-7 countries, Azerbaijan, the Kyrgyz Republic, and Tajikistan stand out with shares below average, which largely reflects higher shares of privately owned debt related to export credits and foreign direct investment.

<sup>6</sup> Per capita incomes in CIS-7 countries are comparable to those in low-income developing countries. This qualifies them for external financing on concessional terms from various sources, including from the IFIs.

concessional debt remains below that in heavily indebted low-income developing countries, even though the external debt ratios in the two groups of countries are comparable.

Third, the CIS-7 external debt is mostly long term in nature. Over time, the maturities of new external financing commitments have exceeded 30 years, on average, comparable to those in heavily indebted low-income developing countries and above those in other low-income developing and transition countries.

Fourth, the average interest rate of new debt commitments in the CIS-7 countries has fallen over time to about 1 percent, comparable to rates found in heavily indebted low-income developing countries. Average interest rates in low-income developing and other transition countries are substantially higher.

Fifth, the CIS-7 countries owe more to the IMF and the World Bank than other transition countries or low-income developing countries (Figure 2).<sup>7</sup> The share of CIS-7 debt owed to other IFIs is also more than for other transition countries, but comparable to that of low-income developing countries. Similarly, the share of CIS-7 debt to bilateral official creditors is larger than that of other transition countries but smaller than that of low-income developing countries. In contrast, the share of debt owed to private creditors in the CIS-7 is comparable to that of low-income developing countries but falls short of that of other transition countries. The most notable change over time in the structure of the CIS-7 countries' external debt is the shift from debt owed to bilateral official creditors to multilateral official creditors and, to a smaller degree, to private creditors. This pattern reflects the declining dependence on other CIS countries, notably for energy imports.

In sum, the debt structure of CIS-7 economies has become similar over time to that of other low-income countries. While initially the debt profile of CIS-7 countries was similar to that of other transition economies, a notable difference has emerged, namely, the much higher share of public and publicly guaranteed debt, indicating that private sector entities in the CIS-7 economies have substantially less access to international capital markets than those in other transition economies.

## **B. Decomposing External Debt Dynamics**

We decompose the changes in the CIS-7 countries' external debt into the main contributing factors (see Appendix 1 for technical details). Balance of payments identities imply that the change in the stock of external debt between any two periods must equal the sum of the trade of goods and services, the transfer balance (these two items together add up to the primary external current account balance), interest payments on existing external debt, and the change in foreign exchange reserves (and other assets held by residents abroad), *minus* non-debt

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<sup>7</sup> Relative to the CIS average, Tajikistan and Uzbekistan, where reform efforts have been lagging, have relatively smaller shares of debt owed to the IMF and the World Bank, whereas faster reformers, especially Armenia and the Kyrgyz Republic, have higher shares.

creating net capital. Since, FDI flows are the most important non-debt creating flows, they are shown separately below.

It is customary to use the ratio of external debt to GDP rather than the debt stock in nominal terms to assess the burden that the external debt can impose on the economy as a whole since some sectors (for example, the government have significant revenues in domestic currency). When considering ratios, factors contributing to the changes in the denominator (for example, the domestic GDP in US dollar terms) also need to be taken into account. In addition to real GDP growth in domestic currency terms, changes in the real exchange rate are another factor that can potentially alleviate or aggravate the debt burden.<sup>8</sup> If the real exchange rate appreciates, the external debt burden declines, and vice versa.

Figure 3 illustrates the debt-to-GDP decompositions. They are based on annual data in transition time. All contributing flows are shown as *cumulative* flows from transition time  $t_1$  onward, showing the total contribution from the beginning to that point in time. The primary current account balance in time  $t_5$ , for example, would be the sum of primary current account balances from  $t_1$  to  $t_5$ .<sup>9</sup>

Large *primary current account deficits* are the single most important factor contributing to the rise in CIS-7 external debt. The cumulative sum of the primary current account is, on average, about 7 times as large as in other transition countries. Also, as expected, *interest payments* have been less significant for the CIS-7 countries than other transition countries since a substantially larger share of CIS-7 debt is on concessional terms while other transition countries have borrowed more from the private sector on commercial terms. *FDI inflows* and high *export growth* have mitigated the debt problem in both the CIS-7 countries and other transition economies. Interestingly, the relative significance of FDI flows in mitigating the debt burden has been greater in the CIS-7 countries than in the other transition countries, although export growth has been much higher in the latter.<sup>10</sup> In both country groups, the average contribution of *real GDP growth* to reducing the debt burden is similar.

Perhaps the most surprising result of this exercise is the positive contribution of the real appreciation of the CIS-7 currencies against the US dollar in *reducing* the debt burden. On average, this effect turned out to be half as large as the absolute value of the cumulative

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<sup>8</sup> Strictly speaking, there is also a third factor, US dollar inflation, as discussed in the Appendix. However, this factor is outside the control of the transition countries, and its contribution to the debt dynamics has been small.

<sup>9</sup> The obvious exception to this timing convention concerns the changes in the debt-to-export ratios, which are based on the end-of-period debt ratios in  $t_0$ .

<sup>10</sup> Among the CIS-7 countries, the distribution is very uneven. Azerbaijan, the oil-producing country, received three times the CIS-7 average, while the slow reformers, Tajikistan and Uzbekistan, received very little FDI.



current account or about 25 percentage points of GDP. Even the depreciations of the CIS-7 currencies against the ruble and other currencies in later 1998 and 1999 do not appear to have made much of a difference.

### III. EXTERNAL ADJUSTMENT—PROGRAMS AND OUTCOMES

Having established the primary importance of current account deficits in contributing to the external debt burden, we now explore whether such large deficits were or could have been predicted. Since virtually all countries had Fund programs, projections and actual performance of macroeconomic indicators potentially provide useful insights into what went wrong. Given that CIS-7 countries began with large initial imbalances in the fiscal and external accounts, medium-term projections in Fund programs typically reflected large adjustments to make the debt sustainable.

Despite large initial current account deficits in the CIS-7, there seemed to be good reasons *ex ante* to believe that a combination of financing and adjustment policy would help achieve medium-term debt sustainability, given two mutually reinforcing factors. First, *permanent productivity increases* could be expected as many of the pre-existing distortions of the communist system were removed and market-oriented reforms were adopted (Blanchard, 1997). Positive productivity shocks, especially to the external sector, can initially generate current account deficits (Obstfeld and Rogoff, 1996). However, over time, productivity growth allows the deficits to gradually turn into surpluses, which can then service the external debt. Second, *external aid* was planned, not only to finance investments in reforms but also to allow for the gradual reduction of the external imbalances so as to avoid disruptive adjustment and large social costs. As transition proceeded, events did not quite shape up as planned.

To maximize the period covered under Fund programs, case studies on the first three countries—the Kyrgyz Republic, Moldova, and Georgia—that entered a Fund program are presented to illustrate what went wrong. Since our main variable of interest—external debt-to-GDP ratio—depends as much on the evolution of GDP as on external debt in absolute terms, we looked at Fund program projections on both variables. Errors in GDP growth projections in these countries turn out to be the key to understanding the evolution of the debt-GDP ratios. The extent of the output collapse in the early years of the transition was simply not anticipated (Campos and Coricelli, 2002).

#### A. Case Studies

##### **Kyrgyz Republic**

The Kyrgyz Republic has, perhaps, the most acute problem, with external debt, which is nearly 120 percent of GDP. Figures 4 and 5 illustrate the policy planning problems of the early years. The projected and actual medium-term paths for the external current account and the external debt (in US\$ and in percent of GDP) under various annual programs approved during 1993 to 1998 are presented. As is typical for IMF program analyses, all projected paths typically start in the year in which the program was approved and are reported for five- to six-year periods ahead.

Consistent with the expectation that productivity would rise rapidly, the first program (the 1993 Stand-By Arrangement (SBA)) predicted a sharp initial increase in the current account deficit and a rapid decline thereafter. The external debt was expected to stabilize quickly at around 45 percent of GDP in this scenario. Interestingly, during the first two years of the program ( $t_1$  and  $t_2$ ), the actual current account deficits turned out to be below projections. The difference was especially large in US dollar terms but smaller in percentage points of GDP, an indication that growth fared worse than expected.

Given the better-than-expected outcomes in the first two years of the first program, the paths for the external current account deficits envisaged under subsequent programs were revised from the V-like shapes to “stretched U-shapes.” Thus, the projected external current account deficits in later programs were not anticipated to increase to the maximum levels envisaged under the earlier SBA but were expected to remain large for a longer time span and decrease only very gradually. Despite large deficits for a longer period of time, the external debt was expected to increase only gradually and converge to about 45 percent of GDP, reflecting among other things, sustained anticipations of rapid GDP growth in US dollar terms.

The deviations between program projections and actual outcomes occurred under subsequent programs and reflected the unexpected deterioration in the external current accounts in 1996 ( $t_4$ ) and in 1998 ( $t_6$ ), the year of the Russian crisis. These large shocks do not seem to have led to a call for more ex ante adjustment, and projected external current account deficits remained in the range of 5 percent of GDP. In program documents, the deterioration in external debt ratios was noted but was long not considered a problem, as references were made to the large share of concessional funds in the overall external financing received.

As new programs were initiated and new statistical systems were set up, large discrepancies in the measurement of GDP began to emerge. Comparing early program documents with later ones suggests that, at some point, the US dollar GDP in 1992, the initial year of the transition, was belatedly revised downward by about 2/3 of the value used in the early projections. This revision alone implied ex post increases in the debt-to-GDP ratio at the end of the projection period under the first SBA of about 40 percentage points.

Overall, the graphical analysis illustrates how the combination of programmed large external current account deficits, initial growth optimism, and subsequent revelations of statistical overstatement of GDP turned out to be a lethal mix for misjudging the rapid increase in external debt ratios. With planned large external current account deficits, the debt dynamics became more vulnerable to unexpected deviations from projections. External debt, manageable at about 40 percent of GDP at the end of  $t_4$ , basically worsened during a period of 3 years (from  $t_5$  to  $t_7$ ).

## **Moldova**

The first Fund program with Moldova began in late 1993, only a few months later than the Kyrgyz Republic's program. The comparisons between projected and actual medium-term paths for the external current account and the external debt under various annual programs approved during 1993 to 1998 are shown in Figures 6 and 7. The projected adjustment in the external current account deficits (as a percent of GDP) over the medium term appears somewhat more ambitious than in the case of the Kyrgyz Republic, which is reflected in declining debt-to-GDP ratio projections. Initially, during  $t_0$  to  $t_3$ , the actual external current account balance in US dollar terms performed noticeably better than anticipated, which is also reflected in the external debt path. In percent of GDP, the performance is better only in some of these early years, as GDP in US dollar terms was overpredicted. The latter also explains the overshooting of the actual external debt as percent of GDP in  $t_3$ .

Starting in  $t_4$ , the actual current account began to deteriorate rapidly, compared to program targets, both in US dollar terms and as percent of GDP, a process that culminated in a forced abrupt adjustment after the Russian crisis in  $t_6$ . Correspondingly, the external debt began to increase rapidly and to exceed program projections by rising margins, although the deterioration in the actual debt dynamics compared with the projections also reflects the unanticipated sharp real depreciation of the domestic currency after the Russian crisis. While program projections suggest that the deterioration in the external current account was to be reversed quickly, policy measures were insufficient and the sequence of adverse shocks had larger effects than anticipated.

As in the case of the Kyrgyz Republic, the Moldovan experience shows how the combination of slow planned adjustment in large initial current account deficits (as percent of GDP), large shocks to the external current account, overly optimistic growth projections, and mismeasurement of data, led to a surge in the external debt to unsustainable levels within a period of four years. This problem was compounded particularly in the Moldovan case by the sharp real exchange rate depreciation following the 1998 Russian crisis.

## **Georgia**

Georgia embarked on a Fund-supported stabilization program in mid-1995, about two years later than the other two countries. The comparisons between projected and actual medium-term paths for the external current account and the external debt under various annual programs approved during 1993 to 1998 once again show that GDP in US dollars was consistently overpredicted (Figures 8 and 9). The Georgian case also highlights the problematic consequences with persistent one-sided forecast errors in the external current account. During the first four years of the program (from  $t_3$  to  $t_6$ ), external current account deficits in US dollars were consistently underpredicted. While early program paths recognized the worse-than-expected outcomes, the deterioration in the actual external current account balance was not recognized under the first and second annual program under the Enhanced Structural Adjustment Facility (ESAF) 1996 and 1997, which suggests substantial delays in the preparation of final data. It also suggests that projections were made with a substantial degree of uncertainty about actual economic conditions.

In view of the consistently worse-than-expected outcomes in the external current account balance up to  $t_6$ , the actual external debt in US dollars remained remarkably close to projected values. While surprising in view of the underprediction of current account deficits, it can be explained by the simultaneous underprediction of foreign investment inflows (see below). Nevertheless, as a percent of GDP, the actual debt paths generally remained above program projections on account of the overprediction of GDP. Finally, the Russian crisis in  $t_6$  appears to have had a less dramatic impact on Georgia's current account position and external debt than on those of the Kyrgyz Republic and Moldova.

### **B. Decomposing the Forecast Errors in External Debt Ratios**

A more systematic analysis of the forecast errors in the external debt-to-GDP ratios leads to similar conclusions (Table 2). A time span of four years for the calculation of the errors seems to be an acceptable compromise between a medium-term forecast horizon and a reasonable number of forecast errors, given the short sample sizes.<sup>11</sup> The errors reported in the table are the differences between the debt-to-GDP ratio four years ahead predicted at the time of the program approval and the actual debt-to-GDP ratio four years later. Given differences in reporting across time and countries, a few simplifying assumptions had to be made to allow for a unified methodology (see Appendix).

The external debt-to-GDP ratio was under-predicted in all but one year in Georgia. A decomposition of the forecast errors into the contributing factors suggests that the overprediction of GDP in US dollar terms was by far the most important reason for this outcome. While there were substantial errors in the prediction of balance of payments flows determining the debt dynamics (in US dollar terms), these errors often offset each other so that the prediction errors for overall net debt creating flows in US dollar terms were typically small or, sometimes, even negative (that is, they would have led to lower-than-predicted debt levels had GDP been predicted correctly). The overprediction of GDP in US dollar terms had two important consequences. First, cumulative flows as a percent of GDP turned out to be larger than predicted. Second, already accumulated debt stocks became more burdensome, that is, as a percent of GDP they turned out larger than projected. This stock effect was important and explains a good part of the debt problems of today. Finally, ex post revisions to the initial debt levels on which program projections were built contributed positively to the forecast errors in some instances, highlighting the importance of data issues and problems in CIS-7 countries in the early transition period.

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<sup>11</sup> The attribution of the overall error to the components had to be approximated, as the latter enter the debt-to-GDP ratio nonlinearly. We used a first-order approximation (Appendix). Even though in the case of large errors in components (for example, unanticipated large real depreciation) the second-order terms become significant, we do not report them here as the first-order approximation is sufficient to illustrate our main arguments.

Given the important role played by the forecast errors in US dollar GDP, we also analyzed their sources for two of the three countries (Table 3).<sup>12</sup> Two features are striking. First, ex post downward revisions to the initial level of US dollar GDP were often large and, especially in the case of Georgia, an important factor behind the overpredictions. Second, the errors in predicting growth in US dollar terms were due not only to errors in predicting real GDP growth but even more so to errors in predicting real exchange rates, as the real appreciation of the countries' currencies fell far short of what was expected.<sup>13</sup>

In sum, with GDP (in US dollar terms) being over-predicted, economic growth was not large enough to reduce the burden of already accumulated debt (in percent of GDP) as planned and, at the same time, allow for continued large (planned) deficits with little or no effect on debt ratios. As a result, the general strategy of keeping initially large external imbalances and rapid debt accumulation manageable through a rapid growth pickup was undermined because of large forecasting errors.<sup>14</sup>

#### **IV. EXTERNAL ADJUSTMENT: A COMPARISON WITH OTHER TRANSITION ECONOMIES**

A comparison of CIS-7 with other transition countries indicates that, in more recent years, the difference in the level of external current account deficits between the two groups has narrowed markedly over time. In particular, in the tenth year of the transition ( $t_9$  in Figure 10), the external imbalances in both groups were virtually the same. However, the dynamic path of the current accounts differed markedly. The CIS-7 started the transition with large current account deficits, which persisted for about 6 years (up to the Russian crisis), and began to adjust rather quickly after the Russian crisis. Other transition countries started, on average, with current account surpluses that slowly eroded and turned into deficits. Given these differences in the adjustment dynamics between the CIS-7 and other transition countries, this section examines the adjustment record over the period  $t_0$  to  $t_9$  (which corresponds to the years 1992-2001 for the CIS-7 countries) and finds a further breakdown into transition phases to be an important part of the story. Specifically, we refer to the years  $t_0$  to  $t_1$  as the initial phase (or initial conditions), the years  $t_2$  to  $t_5$  as the early phase, and the years  $t_6$  to  $t_9$  as the later transition phase.

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<sup>12</sup> We were unable to perform the analysis for the early programs in the Kyrgyz Republic given the information provided in staff reports.

<sup>13</sup> The prediction error for the growth rate of US dollar GDP is the sum of the errors for real GDP growth, real exchange rate changes, and US dollar inflation. Errors in the latter were minor compared to the first two so that the difference between the errors for US dollar GDP growth and those for real GDP growth is a rough measure of the prediction errors for the real exchange rate.

<sup>14</sup> In the case of Moldova, the reporting in program documents does not allow for the use of identical time spans for the calculation of the forecast errors, which explains the varying number of years in the forecast errors for GDP.

## **A. What Explains the Difference in the Adjustment Record? Five Hypotheses**

### **Initial conditions and distortions**

While all transition economies (including the CIS-7) inherited a system of distorted relative prices, state ownership of productive capital, and a large dependency on CMEA trade, the degree of distortions, economic structures, and patterns of specialization varied widely across transition countries. Fischer, Sahay, and Végh (1996, 1996a) and de Melo, Denizer, and Gelb (1996), among others, find that the differences in initial conditions were important determinants of varying inflation and growth performances during the transition.<sup>15</sup> The unraveling of the heavy economic dependence on the Soviet system through both CMEA trade and a complex system of taxation and transfers from the center appears to have contributed to the deeper and more prolonged output decline in the CIS-7 (Figure 11). In addition, the CIS-7 countries, most of which have been net energy importers, had to cope with a very large initial terms of trade shock, as energy prices rose to commercial terms overnight. The higher initial distortions in the CIS-7 countries, compared with other transition economies, were reflected in relatively larger external and fiscal imbalances in the initial years (Figure 10). Moreover, these larger initial deficits were also associated with smaller adjustments later, as the negative correlations with the changes in the deficits in subsequent years show (Table 4).

### **The Transition**

While all transition countries faced bursts of inflation, volatility in relative prices, large-scale changes in economic structure, losses of subsidies and transfers (especially those related to energy consumption), the CIS-7 countries experienced the most difficult transition challenges. Debt began to accumulate rapidly as subsidies and transfers from the center came to a halt and near-market prices for energy-related products began to be paid. The downward spiral in output performance had important implications for adjustment—it reduced the present value of the stream of future taxes and raised the net present value of programmed expenditure.<sup>16</sup> Accordingly, fiscal policy was more expansionary, which, in turn, explained larger-than-projected external current account imbalances.

### **Large exogenous shocks during the transition**

The Russian crisis had a significant effect on external current account balances and external debt profiles (See Gelos and Sahay, 2000). External demand and their terms of trade worsened in the CIS-7 (Figure 11). Some countries like Georgia and Armenia experienced armed internal conflicts.

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<sup>15</sup> Berg, Borensztein, Sahay, and Zettelmeyer (1999) confirm this finding but show that the effect of the initial conditions declines over time, while policy performance becomes increasingly important.

<sup>16</sup> See, for example, Easterly (2001).

## Policy performance

For policymakers, policy planning involved significant uncertainties, as both transition paths and steady states were largely unknown. Notwithstanding these problems, it is also clear in hindsight that there was insufficient adjustment of policies, particularly at the initial stages of transition. Both stabilization and structural reform policies were not sufficiently ambitious not only in the achievements but also in the targets set. It took a long time for credit to tighten and for the economies to stabilize from high inflation levels. Fiscal policy was also expansionary in the initial years. Interestingly, fiscal consolidation in the later years did not translate to concurrent external adjustment (Figure 10). As regards structural reforms, the pace was much slower than in other transition countries (Table 5). In particular, the slow liberalization of the external regime is also likely to have hindered export growth initially (Figure 11).

## Donor financing and overoptimism

Donor financing, though gradually declining over time, has been relatively high as a share of GDP. Apart from initial energy-related loans by Russia and Turkmenistan that were closer to commercial terms, financing during the transition has generally been on concessional terms. It can be argued that official financing may have contributed to the present debt problems, as it allowed for delaying the needed adjustment. Figure 12 illustrates how official financing, especially by multilateral financial institutions, accommodated the external imbalances of the CIS-7 countries. Sample correlation coefficients support the following interpretation: higher multilateral disbursements are associated with larger external imbalances. The seemingly generous multilateral loans were, to some extent, the result of lower-than-expected growth, which made the related capital inflows more expansionary than originally envisaged. Simple correlation coefficients, strikingly, also suggest that while official external financing accommodated large external imbalances, it also supported relatively stronger adjustment in the early stages of the transition (Table 4). Adjustment (the change in the external current account balance) was larger in countries that had higher official external financing (both in levels and in terms of change).

## B. External Adjustment: Econometric Evidence

Multivariate cross-section regressions for 25 transition economies were carried out to examine the relative importance of the factors listed above and, thereby, explain the differences in adjustment patterns among transition economies. External adjustment is measured by the change in the primary external current account (in percent of GDP) in the estimated equation below:

$$\begin{aligned} \overline{\Delta ca}_{t,t+3} = & \alpha + \beta_1 \overline{ca}_{mi} + \beta_2 \overline{\Delta gb}_{t,t+3} + \beta_3 \overline{\Delta Y}_{t,t+3} + \beta_4 \overline{of}_{t,t+3} + \beta_5 \overline{\Delta X}_{t,t+3}^* \\ & + \beta_6 \overline{\Delta TT}_{t,t+3} + \beta_7 \overline{PL}_{t,t+4} + \beta_8 \overline{FTL}_{t,t+3} + \varepsilon_{t,t+3} \end{aligned}$$

Variables in small letters are in percent of GDP, a  $\Delta$  in front of a variable indicates a change against the previous period, and a bar over a variable denotes an average over a transition phase. The combination of a  $\Delta$  and a capital letter variable indicates a percentage change. To

illustrate the notation:  $\overline{\Delta ca}_{t,t+3}$  denotes the change in the average external current account balance as a percent of GDP in the phase starting in  $t$  and ending in  $t+3$  compared to the average during the previous phase. Thus, the goal is to explain the change in the primary external current account balance ( $ca$ ) by relating that change to the initial primary external current account ( $ca_{ini}$ ), the general government balance ( $gb$ ), the level of GDP ( $Y$ ), disbursements by multilateral financial institutions ( $of$ ), foreign demand (exports,  $X^*$ ), the terms of trade, the EBRD index of domestic price liberalization ( $PL$ ), and the EBRD index of foreign exchange and trade liberalization ( $FTL$ ).

The rationale behind the specification closely follows our hypotheses in the previous section: most variables are measured as changes, since we are interested in adjustment. The initial current account balance is measured in levels, to examine if adjustment was more difficult with higher initial deficits. Similarly, the disbursements by multilateral financial institutions is measured in levels as well, given the conjecture that higher donor financing may have discouraged adjustment.

Table 6 reports the result for the early transition phase, which is most relevant for this discussion.<sup>17</sup> The first column shows the full equation as specified above. The second column is a parsimonious reduction and includes only variables that turned out to be significant at the 10 percent level.<sup>18</sup> Standard errors are heteroskedasticity-consistent. The final column uses a weighted absolute distance estimator, as implemented in STATA 8.0, to check the robustness of the results with regard to outliers in our relatively small sample. The results suggest that while the magnitudes of some coefficients vary with the estimator, the qualitative implications are generally robust, except for the foreign demand variable, which turns insignificant with the robust estimator.

The results suggest that initial conditions (captured by the initial primary current account imbalances), fiscal imbalances, official financing, terms of trade, and foreign demand (exports) were associated with external adjustment during the early transition phase, albeit to varying degrees. All the coefficients are significant and their signs are consistent with our priors. While fiscal imbalances are reflected in external imbalances, the relationship is not strictly proportional. The level of disbursements by multilateral financial institutions had a negative effect on the external adjustment during the early transition phase, as conjectured, although this effect is only significant at the 10 percent level. The coefficient on the GDP is positive and significant, suggesting that output declines lowered the external adjustment above and beyond the fiscal channel. Interestingly, the structural reform indices (domestic

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<sup>17</sup> We report the results only for the early transition years since our main interest is in understanding how debt built up so quickly at the start of the transition.

<sup>18</sup> To be precise, we tested for the joint exclusion of all variables that did not meet the 10 percent benchmark significance levels before excluding them.



and external liberalization) turned out to be insignificant, indicating that though structural reforms proceeded slower than anticipated, that slow pace was not the main constraint on external adjustment. Overall, the regressors explain more than 90 percent of the variation in the change of the average external current account balance.<sup>19</sup>

## V. WHAT HAS THE DEBT ACCUMULATION FINANCED?

From a policy perspective, it is critical to know whether the accumulation of external debt financed consumption or investment, particularly investments in reforms. If it is the latter, the outlook for the debt burden and sustainability in the medium term would not be quite as worrisome.

Given that the CIS-7 economies started out with suppressed consumption levels, an initial jump in consumption at the early stages of transition was to be expected—this occurred also in the better performers of Eastern Europe at the start of their transition.<sup>20</sup> Such a jump would also be consistent with the permanent productivity increase hypothesis discussed in Section III, as permanent income increases ahead of actual income. Indeed, consumption in the CIS-7 countries in the initial phase increased sharply (Figure 13).<sup>21</sup> Real exchange rate appreciation occurred much faster than in other transition countries, consistent with the pattern of debt-financed consumption booms. The investment dynamics, however, differed between the two groups of countries. In the CIS-7 countries, gross fixed capital formation as a percent of GDP has declined, on average, over time. In other transition countries, investment ratios have fluctuated around 23 percent of GDP during the entire transition.

In sum, Figure 13 suggests that the accumulation of external debt in the CIS-7 countries has largely financed higher consumption as a share of GDP.<sup>22</sup> When consumption is measured in real terms (rather than as a share of GDP), the picture is somewhat more sobering. The across-the-board collapse of output combined with inflationary bursts at the start of transition

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<sup>19</sup> We experimented with other specifications as well. For example, we estimated equations that used the change in official financing (as a percent of GDP) rather than the level. The main conclusions remain similar. We also respecified our original equation using 2-year rather than 4-year averages for the regressors and the dependent variable. Interestingly, disbursements by multilateral institutions now appear more important in explaining the adjustment dynamics during the first two two-year periods, while the general government balance becomes insignificant.

<sup>20</sup> See Calvo, Sahay, and Végh (1995).

<sup>21</sup> As a caveat, we note that the averages for the early years of the transition exclude the data for some CIS-7 countries, as these countries did not report national accounts data by expenditure in the early phases of the transition.

<sup>22</sup> On closer examination, a large part of this consumption appears to be related to energy products.

hurt real consumption substantially. This was reflected in rising poverty levels and mortality rates.

## VI. CONCLUSION AND POLICY IMPLICATIONS

Starting from virtually no debt in 1992, external debt ratios in the CIS-7 countries worsened rapidly. This debt buildup occurred even as their currencies appreciated and the average interest rate on the debt declined during the years 1992-2001. A large and increasing share of debt was to multilateral institutions, especially the IMF and the World Bank.

A combination of adverse initial conditions (the cutoff of subsidies from Moscow, the breakdown of the CMEA trade, the dismantling of the planned system, and large terms of trade shocks as energy prices rose to near commercial terms), external shocks during the transition (the Russian crisis in 1998 and internal armed conflict in some countries), delayed macroeconomic policy response, availability of multilateral loans, biased growth projections and over-optimism on the part of official lenders regarding macroeconomic policy performance, and considerable statistical uncertainty explain much of the debt problems of the CIS-7 countries today.

While it is always hard to assess the right combination of adjustment and financing for countries facing large macroeconomic imbalances, three points are worth noting in the context of the CIS countries. First, financing the large current account and fiscal deficits with loans required the clear expectation of rapid productivity increases, which did not happen fast enough. Output continued to decline for a considerable period, and the growth pickup was slow. Debt ratios, therefore, rose rapidly. Second, since financing was not being accompanied by faster adjustment, it can be argued that multilateral aid abetted the postponement of adjustment in the CIS-7. In the absence of any form of financing, the countries would have been forced to sharply reduce their current account deficits, mainly by cutting back on imports. This, however, would likely have entailed huge social costs, such as unemployment and a rise in poverty and mortality rates. Consequently, if rapid adjustment was neither feasible (because the initial conditions were too harsh or because the institutional capacity to implement reforms was rudimentary) nor desirable (because it would have entailed even larger social costs), the financing gap in the initial years should have been closed by external grants. Would such grant aid have been forthcoming had the transition path been predicted accurately? We do not know.

The good news is that most CIS countries are pursuing and achieving a relatively ambitious reform agenda. Inflation has fallen steadily and has reached single digit levels in five out of the seven countries—the average declined from 1,872 percent during 1992-95 to 16 percent in 2001. The turnaround in the fiscal balance has also been impressive—on average, fiscal deficits declined from about 15 percent of GDP in 1992-95 to about 6 percent in 1999-2001. The progress in structural reforms in some ways has been even more impressive than in other transition countries considering the fact that the CIS countries started from a lower base.

A more tentative conclusion also follows from the analysis. The diagnosis that heavily indebted countries are prone to remain that way because of their short time horizons, biasing decisions toward debt-financed consumption while foregoing investment opportunities (e.g.,

Easterly, 2002), does not seem to apply to the CIS countries. By undertaking significant structural reforms and preserving macroeconomic balance, the countries are creating the right conditions for a brighter future. To help sustain their progress and to prevent the large debt from being a drag, some external assistance in the form of debt forgiveness appears to be warranted in these specific cases.

### Decomposing the External Debt Dynamics—Summary of the Methodology

The decomposition of the external debt dynamics in section II is based on balance of payments identities, which imply that the following equation holds:

$$F_{t+1} - F_t = -C_t + r_t^* F_t + \Delta R_{t+1} - K_t + Z_t$$

The equation states that the change in the stock of external debt in US dollars between the beginning of period  $t$  and the beginning of period  $t+1$ , denoted as  $F_{t+1} - F_t$ , equals the sum of interest payments on external debt,  $r^* F$ , the change in foreign exchange reserves (and other assets held by residents abroad),  $\Delta R$ ; minus the sum of the external current account balance excluding interest payments on external debt,  $C$ ; and non-debt creating net capital flows,  $K$ . In practice, the above equation will not hold exactly, as valuation changes and other factors that are unrelated to current or financial account flows can affect the change in the face value of the external debt. For this reason, Figure 3 includes an entry *other factors* denoted with  $Z_t$ .

In the case of the CIS-7 countries, the contribution of the change in foreign exchange reserves (or other assets held by residents abroad) to the change in total debt is small, so that they are subsumed in the residual  $Z_t$ . Also, for practical purposes, non-debt creating FDI inflows are the most important item in the category *non-debt creating net capital flows*, so that the figure refers to them directly. Hence, any other flows in the general category are also part of the residual.

To assess the debt burden and the debt dynamics, it is customary to use the ratio of external debt to GDP (in US dollars, the standard currency denomination in external debt statistics) rather than the debt stock in nominal terms.<sup>23</sup> For this purpose, the identity can be reformulated with all terms expressed as ratios to GDP  $Y$ :

$$f_{t+1} - f_t = -c_t + \left( \frac{r_t^* - \hat{y}_t - \hat{q}_t - \pi_t^*}{(1 + \hat{y}_t)(1 + \hat{q}_t)(1 + \pi_t^*)} \right) f_t - k_t + z_t$$

where small letter variables denote variables as ratios of US dollar GDP except for those with a hat on top, which denote rates of change (as fractions). Specifically,  $\hat{y}_t$ ,  $\hat{q}_t$ , and  $\pi_t^*$  denote the rates of change of real GDP, the real exchange rate against the US dollar and US dollar inflation, respectively.<sup>24</sup>

<sup>23</sup> Exports or government revenues are other, frequently used denominators.

<sup>24</sup> The real exchange rate against the US dollar is defined as:

$$Q_t = \frac{P_t}{S_t P_t^*}$$

(continued...)

The second term on the right hand side of the last equation shows how GDP growth can reduce the burden of existing debt.<sup>25</sup> If growth in nominal US dollar GDP exceed, on average, the implied nominal interest on external debt, current account deficits need not add to the debt burden.<sup>26</sup> To assess the extent to which GDP growth has alleviated the external debt burden, the interest and growth components are shown separately in the figure. For the growth component, we distinguish between real GDP growth and real exchange rate changes, since the two factors can be driven by distinct forces.

With these identities, one can also derive formulas to decompose the debt ratio over several years, as is done in the figures in the main text. All components in those figures are shown as cumulative annual flows (factors) or changes in transition time. For example, the change in debt in period  $j$  refers to

$$f_{t_0 + j} - f_{t_0}$$

and the external current account in period  $j$  to the sum:

$$- \sum_{k=1}^j c_{t_0 + k}$$

where  $t_0$  refers to the beginning of the transition.

### **Decomposing the Forecast Error for the External Debt-to-GDP Ratio**

For the decomposition of the forecast errors for the external debt-to-GDP ratios in Section III, we had to make a few simplifying assumptions, given differences in reporting across time and countries. In particular, we used the external current account balance, including interest payments on external debt rather than the primary external current account balance. This seems an acceptable simplification, given that interest rates on the CIS-7 countries external debt were low and stable. The decomposition is based on a first-order approximation of the contribution of forecast errors in the constituent elements of the debt-

where  $P_t$  denotes the GDP deflator,  $S_t$  the price of 1US\$ in national currency, and  $P_t^*$  a US dollar-based “world” price index for traded goods (taken from the IMF’s *World Economic Outlook* database).

<sup>25</sup> This term only contains the first-order terms of what actually amounts to an approximation of the change in external debt as a fraction of GDP. Hence, the residual term  $z_t$  now also encompasses higher-order approximation terms, which are typically very small.

<sup>26</sup> See Cohen (1988) on external debt sustainability. While growth in excess of market interest rates is unlikely in a steady state, it can exceed interest rates during transition, especially with large shares of official financing.

to-GDP ratio to the forecast error in that ratio. Specifically, the forecast error in the external debt ratio in period  $t+h$  is decomposed as follows:

$$f_{t+h} - f_{t+h|t} \approx -n_{t+h|t} \left( \frac{N_{t+h} - N_{t+h|t}}{N_{t+h|t}} \right) + (f_{t|t} - n_{t+h|t}) \left( \frac{Y_{t+h} - Y_{t+h|t}}{Y_{t+h|t}} \right) + f_{t|t} \left( \frac{F_t - F_{t|t}}{F_{t|t}} \right)$$

where  $N$  denotes the sum of the external current account balance, non-debt creating FDI inflows, and the residual  $Z$ , where  $t+h|t$  denotes the forecast of a variable in  $t+h$  prepared in  $t$ , and where  $Y$  is now the GDP in US dollars (as above, a small letter variable stands for a ratio). This formula allows for subsequent revisions in initial values, as the notation  $t|t$  suggests. With the sign  $\approx$ , we draw attention to the fact that this approach only provides a rough approximation, as it does not take into account higher-order terms in the forecast errors of the constitutive elements of the external debt ratio.

Table 1. CIS-7 Countries: Key External Debt Ratios

|                                       | External Debt<br>Net Present Value, 2000 |                                        | External Debt<br>Face Value, end-2001 |                      | Debt Service<br>2001        |
|---------------------------------------|------------------------------------------|----------------------------------------|---------------------------------------|----------------------|-----------------------------|
|                                       | In percent of<br>exports 1/              | In percent of<br>government<br>revenue | In percent of<br>exports 1/           | In percent<br>of GDP | In percent of<br>exports 1/ |
|                                       |                                          |                                        |                                       |                      |                             |
| Armenia                               | 106.0                                    | 189.8                                  | 185.4                                 | 55.1                 | 5.3                         |
| Azerbaijan                            | 44.0                                     | 90.6                                   | 55.5                                  | 22.7                 | 3.7                         |
| Georgia                               | 103.8                                    | 275.1                                  | 203.6                                 | 63.4                 | 4.1                         |
| Kyrgyz Republic                       | 237.3                                    | 550.4                                  | 323.5                                 | 118.5                | 19.4                        |
| Moldova                               | 104.3                                    | 280.1                                  | 219.9                                 | 90.8                 | 12.9                        |
| Tajikistan                            | 117.5                                    | 697.3                                  | 158.4                                 | 107.6                | 5.3                         |
| Uzbekistan                            | 125.5                                    | 111.2                                  | 144.1                                 | 39.9                 | 21.9                        |
| Memorandum items:                     |                                          |                                        |                                       |                      |                             |
| All other transition<br>countries 2/  | ...                                      | ...                                    | 91.9                                  | 43.7                 | 17.2                        |
| Other CIS countries                   | ...                                      | ...                                    | 97.1                                  | 62.3                 | 13.5                        |
| Low-income<br>developing countries 3/ | ...                                      | ...                                    | 181.1                                 | 53.3                 | 15.7                        |
| Modestly indebted                     | ...                                      | ...                                    | 187.0                                 | 78.8                 | 12.3                        |
| Severely indebted                     | ...                                      | ...                                    | 237.9                                 | 100.3                | 19.3                        |
| Heavily indebted                      | ...                                      | ...                                    | 259.4                                 | 101.5                | 12.3                        |

Sources: IMF, World Economic Outlook database; World Bank, *Global Development Finance*, 2002.

<sup>1</sup> Exports of goods and services.

<sup>2</sup> Median.

<sup>3</sup> 2000.

Table 2. External Debt Ratios: 4-Year Forecast Error Decomposition for Three CIS-7 Countries

| Arrangement<br>Annual<br>Program                                              | Kyrgyz Republic |        |               |        | Moldova |        |        |        | Georgia |        |                 |                 |                 |
|-------------------------------------------------------------------------------|-----------------|--------|---------------|--------|---------|--------|--------|--------|---------|--------|-----------------|-----------------|-----------------|
|                                                                               | SBA             | ESAF   | ESAF/<br>PRGF | SBA    | SBA     | ESAF   | EFF    | R2     | R3      | SBA    | P1 <sup>1</sup> | P2 <sup>1</sup> | P3 <sup>1</sup> |
| Approval (first year of projection) <sup>2</sup>                              | Apr-93          | Jun-94 | Nov-95        | Mar-97 | Jun-98  | Dec-93 | May-96 | Jun-97 | Dec-98  | Jun-95 | Feb-96          | Mar-97          | Jul-98          |
| Last year of projection <sup>3</sup>                                          | 1996            | 1997   | 1998          | 2000   | 2001    | 1996   | 1999   | 2000   | 2001    | 1998   | 1999            | 2000            | 2001            |
| Projection span (years) <sup>4</sup>                                          | 4               | 4      | 4             | 4      | 4       | 4      | 4      | 4      | 4       | 4      | 4               | 4               | 4               |
| External Debt<br>(In percent of GDP, end-of-period)                           |                 |        |               |        |         |        |        |        |         |        |                 |                 |                 |
| Projection                                                                    | 47              | 36     | 40            | 92     | 85      | 37     | 24     | 40     | 81      | 48.3   | 25              | 26              | 31              |
| Outcome                                                                       | 63              | 76     | 95            | 126    | 119     | 59     | 111    | 108    | 91      | 45.5   | 62              | 60              | 63              |
| Forecast error (percentage points)                                            | 16.5            | 40.1   | 55.2          | 33.8   | 33.8    | 21.8   | 87     | 68     | 10      | -2.8   | 37              | 34              | 32              |
| Attributable to forecast errors in <sup>5</sup><br>(percentage points of GDP) |                 |        |               |        |         |        |        |        |         |        |                 |                 |                 |
| Cumulative flows in US dollars                                                | -1.2            | 9.0    | 17.3          | -6.0   | -3.2    | 19.2   | 9.4    | 0.6    | -2.1    | -1.1   | -2.2            | -1.9            | -5.2            |
| External current account                                                      | -13.9           | -1.4   | 18.6          | 2.0    | 14.2    | -13.4  | 0.6    | 6.6    | -13.2   | 17.5   | 7.6             | 3.0             | -7.3            |
| Foreign direct investment                                                     | -4.4            | -4.3   | -1.7          | -5.3   | -4.4    | 3.9    | -2.4   | 0.4    | -1.3    | -13.3  | -5.3            | -3.2            | 6.0             |
| Other (inc. residual)                                                         | 17.1            | 14.8   | 0.4           | -2.6   | -14.9   | 28.8   | 11.2   | -6.5   | 12.4    | -5.2   | -4.4            | -1.7            | -4.0            |
| Cum. flows due to GDP forecast error                                          | 13.5            | 10.8   | 9.8           | 11.2   | 8.0     | 2.1    | 4.6    | 6.9    | 0.4     | -0.1   | 5.7             | 5.0             | 7.0             |
| Revisions to initial debt in US dollars                                       | -1.0            | 0.4    | 16.2          | ...    | ...     | -0.1   | 10.2   | 15.9   | 6.1     | 0.0    | -0.6            | -0.8            | -0.4            |
| Stock effects due to GDP forecast error                                       | 0.4             | 10.4   | 16.2          | 21.0   | 27.5    | 0.0    | 23.6   | 22.9   | 2.7     | -3.1   | 28.4            | 18.4            | 17.4            |

Source: Staff calculations based on staff reports and WEO database.

<sup>1</sup> P<sup>1</sup>, P<sup>2</sup>, and P<sup>3</sup> denote the respective annual programs in Extended Structural Adjustment Facility (ESAF)/Poverty Reduction and Growth Facility (PRGF) arrangements while R1, R2, and R3 denote respective reviews under Extended Fund Facilities (EFF).

<sup>2</sup> Date of Executive Board Approval of arrangement or annual program, respectively.

<sup>3</sup> The fourth year of the projection horizon.

<sup>4</sup> Number of years covered by the projections.

<sup>5</sup> First-order approximation of forecast error in debt-to-GDP ratio. There is an unexplained residual error which is due to second-order errors, which can be large in the case of large errors to components. A positive sign means an overprediction for variables that are positive (underprediction for negative variables such as deficits).



Table 3. GDP: 4-Year Forecast Error Decomposition for Two CIS-7 Countries

| Arrangement<br>Annual<br>Program                                      | Moldova |        |        |       | Georgia |        |                 |                 |                 |
|-----------------------------------------------------------------------|---------|--------|--------|-------|---------|--------|-----------------|-----------------|-----------------|
|                                                                       | SBA     | EFF    |        |       | SBA     | ESAF   |                 |                 |                 |
| Approval (first year of projection) <sup>2</sup>                      | Dec-93  | May-96 | Jun-97 | R3    | Jun-95  | Feb-96 | P1 <sup>1</sup> | P2 <sup>1</sup> | P3 <sup>1</sup> |
| Last year of projection <sup>3</sup>                                  | 1994    | 1998   | 1999   | 2001  | 1998    | 1999   | 2000            | 2000            | 2001            |
| Projection span (years) <sup>4</sup>                                  | 2       | 3      | 3      | 4     | 4       | 4      | 4               | 4               | 4               |
| GDP in millions of US dollars<br>(Final year of projections)          |         |        |        |       |         |        |                 |                 |                 |
| Projections                                                           | 2,120   | 3,409  | 2,738  | 1,687 | 3,482   | 7,695  | 7,781           | 8,049           |                 |
| Outcomes                                                              | 1,346   | 1,930  | 1,313  | 1,613 | 3,620   | 2,804  | 3,043           | 3,210           |                 |
| Error (in percent of projection)<br>due to: <sup>5</sup>              | -36.5   | -43.4  | -52.1  | -4.4  | 4.0     | -63.6  | -60.9           | -60.1           |                 |
| Revisions to initial GDP                                              | -62.0   | -6.1   | -0.3   | -0.1  | -43.2   | -27.7  | -33.2           | -31.6           |                 |
| Error in projected growth rate                                        | 67.1    | -39.7  | -51.9  | 4.3   | 82.9    | -49.6  | -41.4           | -41.7           |                 |
| Interaction between<br>the two errors                                 | -41.6   | 2.4    | 0.1    | ...   | -35.8   | 13.7   | 13.8            | 13.2            |                 |
| Memorandum items:                                                     |         |        |        |       |         |        |                 |                 |                 |
| Growth in US dollar GDP<br>(In percent; cumulative from initial year) |         |        |        |       |         |        |                 |                 |                 |
| Projections                                                           | -7.3    | 90.3   | 42.4   | -23.3 | 179.5   | 180.1  | 69.2            | 53.9            |                 |
| Outcomes                                                              | 54.9    | 14.8   | -31.6  | -26.3 | 411.3   | 41.2   | -0.9            | -10.2           |                 |
| Error (in percentage points)                                          | 62.2    | -75.5  | -74.0  | -3.0  | 231.8   | -138.9 | -70.1           | -64.2           |                 |
| Real GDP Growth<br>(In percent; cumulative from initial year)         |         |        |        |       |         |        |                 |                 |                 |
| In percent                                                            |         |        |        |       |         |        |                 |                 |                 |
| Projections                                                           | -18.0   | 14.0   | 11.0   | 4.0   | 25.0    | 36.0   | 36.0            | 34.0            |                 |
| Outcomes                                                              | -32.1   | -10.8  | -8.3   | -1.7  | 26.5    | 26.9   | 18.3            | 12.5            |                 |
| Error (in percentage points)                                          | -14.1   | -24.8  | -19.3  | -5.7  | 1.5     | -9.1   | -17.7           | -21.5           |                 |

Source: Staff calculations based on Staff reports and WEO database.

<sup>1</sup> P<sup>1</sup>, P<sup>2</sup>, and P<sup>3</sup> denote the respective annual programs in Extended Structural Adjustment Facility (ESAF)/Poverty Reduction and Growth Facility (PRGF) arrangements while R1, R2, and R3 denote respective reviews under Extended Fund Facilities (EFF).

<sup>2</sup> Date of Executive Board Approval of arrangement or annual program, respectively.

<sup>3</sup> The fourth year of the projection horizon.

<sup>4</sup> Number of years covered by the projections.

<sup>5</sup> Second-order approximation of forecast error in GDP in US dollars attributable to errors in initial GDP and in growth rate.

Table 4. Transition Countries: Sample Correlations in Transition Time  
(Marginal significance levels in parentheses)

|                                     | External current account balance 1/ |                 |                 | General government balance 1/ |                |                 | External debt 1/ |                 |  |
|-------------------------------------|-------------------------------------|-----------------|-----------------|-------------------------------|----------------|-----------------|------------------|-----------------|--|
|                                     | Average                             | Adjustment 2/   | Average         | Average                       | Adjustment 2/  | Average         | Adjustment 2/    | Change 3/       |  |
|                                     | $t_2-t_1$                           | $t_2-t_1$       | $t_2-t_1$       | $t_2-t_1$                     | $t_2-t_1$      | $t_2-t_1$       | $t_2-t_1$        | $t_2-t_1$       |  |
| External current account balance 1/ |                                     |                 |                 |                               |                |                 |                  |                 |  |
| Average $t_2-t_1$                   | 0.52<br>(0.01)                      | ...             | -0.95<br>(0.00) | 0.58<br>(0.00)                | ...            | -0.43<br>(0.04) | ...              | 0.07<br>(0.74)  |  |
| Average $t_2-t_9$                   | ...                                 | ...             | ...             | 0.46<br>(0.03)                | ...            | ...             | ...              | ...             |  |
| Average $t_2-t_5$                   | ...                                 | 0.43<br>(0.04)  | ...             | ...                           | 0.49<br>(0.02) | ...             | -0.41<br>(0.05)  | ...             |  |
| Average $t_6-t_9$                   | ...                                 | ...             | ...             | ...                           | 0.29<br>(0.16) | ...             | ...              | 0.16<br>(0.48)  |  |
| Adjustment $t_2-t_5$                | ...                                 | ...             | ...             | ...                           | ...            | 0.54<br>(0.01)  | ...              | ...             |  |
| Adjustment $t_6-t_9$                | ...                                 | ...             | ...             | ...                           | ...            | ...             | 0.30<br>(0.16)   | ...             |  |
| Total GDP growth                    |                                     |                 |                 |                               |                |                 |                  |                 |  |
| Average $t_2-t_9$                   | -0.28<br>(0.18)                     | ...             | ...             | -0.19<br>(0.36)               | ...            | ...             | ...              | ...             |  |
| Average $t_2-t_5$                   | ...                                 | ...             | 0.20<br>(0.36)  | ...                           | ...            | -0.14<br>(0.53) | ...              | -0.12<br>(0.57) |  |
| Average $t_6-t_9$                   | ...                                 | -0.28<br>(0.19) | ...             | ...                           | ...            | ...             | 0.17<br>(0.43)   | ...             |  |
| Unilateral Disbursements            |                                     |                 |                 |                               |                |                 |                  |                 |  |
| Average $t_6-t_1$                   | -0.39<br>(0.07)                     | ...             | 0.13<br>(0.54)  | ...                           | ...            | ...             | ...              | ...             |  |
| Average $t_2-t_9$                   | -0.57<br>(0.00)                     | ...             | ...             | ...                           | ...            | ...             | ...              | ...             |  |
| Average $t_2-t_5$                   | ...                                 | ...             | 0.42<br>(0.04)  | ...                           | ...            | ...             | ...              | ...             |  |
| Average $t_6-t_9$                   | ...                                 | -0.25<br>(0.24) | ...             | ...                           | 0.30<br>(0.16) | ...             | ...              | ...             |  |
| Adjustment $t_2-t_5$                | ...                                 | ...             | 0.35<br>(0.11)  | ...                           | ...            | ...             | ...              | ...             |  |
| Adjustment $t_6-t_9$                | ...                                 | ...             | ...             | ...                           | 0.01<br>(0.93) | ...             | ...              | ...             |  |

Source: Staff calculations.  
1/ In percent of GDP  
2/ Change in average during 4-year period compared to average in  $t_6-t_1$  or the previous 4-year period.

Table 5. Transition Countries: Ranking of Structural Reform Outcomes  
(Ranking based on end-of-period levels in structural reform index)

|                                               | Overall EBRD Structural Reform Index 2/ |                                |                                   |
|-----------------------------------------------|-----------------------------------------|--------------------------------|-----------------------------------|
|                                               | Initial                                 | End of Early                   | End of Second                     |
|                                               | Reform Level at<br>$t_0$                | Transition Period<br>( $t_5$ ) | Transition<br>Period<br>( $t_9$ ) |
| <b>Eastern European countries and Baltics</b> |                                         |                                |                                   |
| Albania                                       | 21                                      | 14                             | 17                                |
| Bulgaria                                      | 10                                      | 19                             | 8                                 |
| Croatia 1/                                    | 7                                       | 11                             | 8                                 |
| Czech Republic                                | 3                                       | 2                              | 3                                 |
| Estonia                                       | 7                                       | 3                              | 2                                 |
| Hungary 1/                                    | 2                                       | 1                              | 1                                 |
| Latvia                                        | 5                                       | 6                              | 7                                 |
| Lithuania                                     | 11                                      | 7                              | 5                                 |
| Macedonia                                     | 7                                       | 15                             | 16                                |
| Poland 1/                                     | 1                                       | 4                              | 3                                 |
| Romania                                       | 18                                      | 18                             | 10                                |
| Slovak Republic                               | 3                                       | 5                              | 6                                 |
| <b>Commonwealth of Independent States</b>     |                                         |                                |                                   |
| <b>CIS-7</b>                                  |                                         |                                |                                   |
| Armenia                                       | 13                                      | 16                             | 12                                |
| Azerbaijan                                    | 21                                      | 21                             | 20                                |
| Georgia                                       | 20                                      | 12                             | 11                                |
| Kyrgyz Republic                               | 12                                      | 9                              | 15                                |
| Moldova                                       | 14                                      | 13                             | 12                                |
| Tajikistan                                    | 15                                      | 22                             | 21                                |
| Uzbekistan                                    | 21                                      | 20                             | 22                                |
| <b>Others</b>                                 |                                         |                                |                                   |
| Belarus                                       | 15                                      | 23                             | 23                                |
| Kazakhstan                                    | 15                                      | 10                             | 12                                |
| Russia                                        | 6                                       | 8                              | 17                                |
| Turkmenistan                                  | 24                                      | 24                             | 24                                |
| Ukraine                                       | 18                                      | 17                             | 19                                |

Sources: European Bank for Reconstruction and Development, *Transition Report*, various issues.

1/ Data for  $t_1$  rather than  $t_0$ .

2/ The overall EBRD structural reform index is the unweighted average of sectoral reform indices; (data availability for some of the indices varies over time and country).

Table 6. Determinants of External Adjustment in Transition Countries<sup>1</sup>  
(Standard error in parentheses)

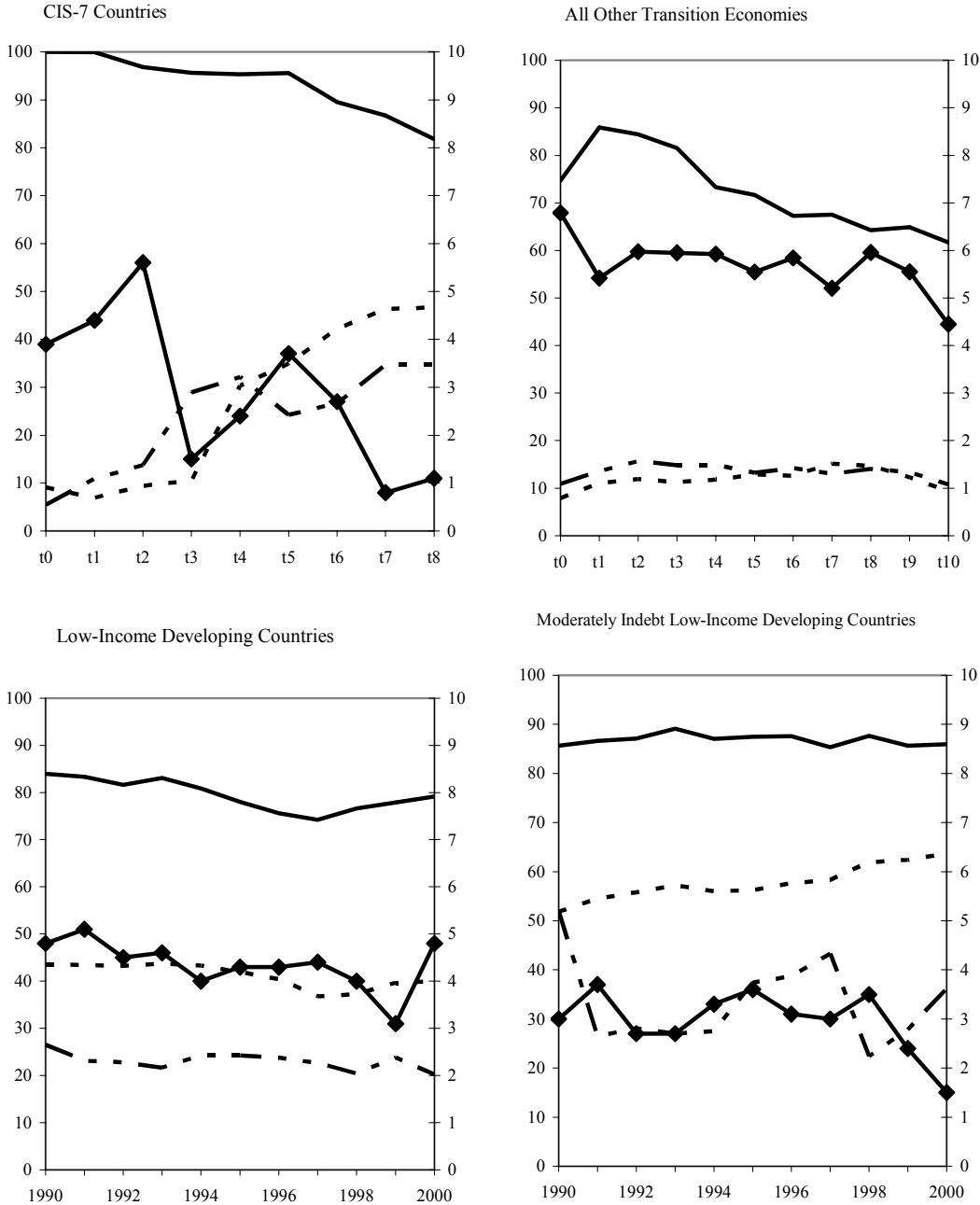
| Dependent Variable<br>Estimator<br>Explanatory<br>variables | $\overline{\Delta ca_{t+2,t+5}}$ |                    |                    |
|-------------------------------------------------------------|----------------------------------|--------------------|--------------------|
|                                                             | OLS                              | OLS                | Robust             |
| $\overline{ca}_{t-2,t-1}$                                   | -0.66<br>(0.087)                 | -0.64<br>(0.060)   | -0.79<br>(0.089)   |
| $\Delta \overline{gb}_{t,t+3}$                              | 0.37<br>(0.132)                  | 0.40<br>(0.100)    | 0.34<br>(0.129)    |
| $of_{t,t+3}$                                                | -0.91<br>(0.524)                 | -1.04<br>(0.547)   | -0.77<br>(0.423)   |
| $\Delta \overline{y}_{t,t+3}$                               | 0.16<br>(0.051)                  | 0.12<br>(0.051)    | 0.11<br>(0.052)    |
| $\Delta X_{t,t+3}$                                          | 5.32<br>(2.955)                  | 7.87<br>(3.461)    |                    |
| $\Delta \overline{TT}_{t,t+3}$                              | 175.74<br>(63.363)               | 156.17<br>(59.008) | 106.65<br>(48.935) |
| $PL_{t,t+3}$                                                | -3.791<br>(4.403)                |                    |                    |
| $FTL_{t,t+3}$                                               | -1.021<br>(0.901)                |                    |                    |
| $\overline{R^2}$                                            | 0.939                            | 0.936              |                    |
| $\sigma$                                                    | 2.699                            | 2.872              | 2.766              |

Source: Staff calculations.

<sup>1</sup>See text for details. Constant is not reported.

Figure 1. Comparison of Key External Debt Statistics  
(annual averages)

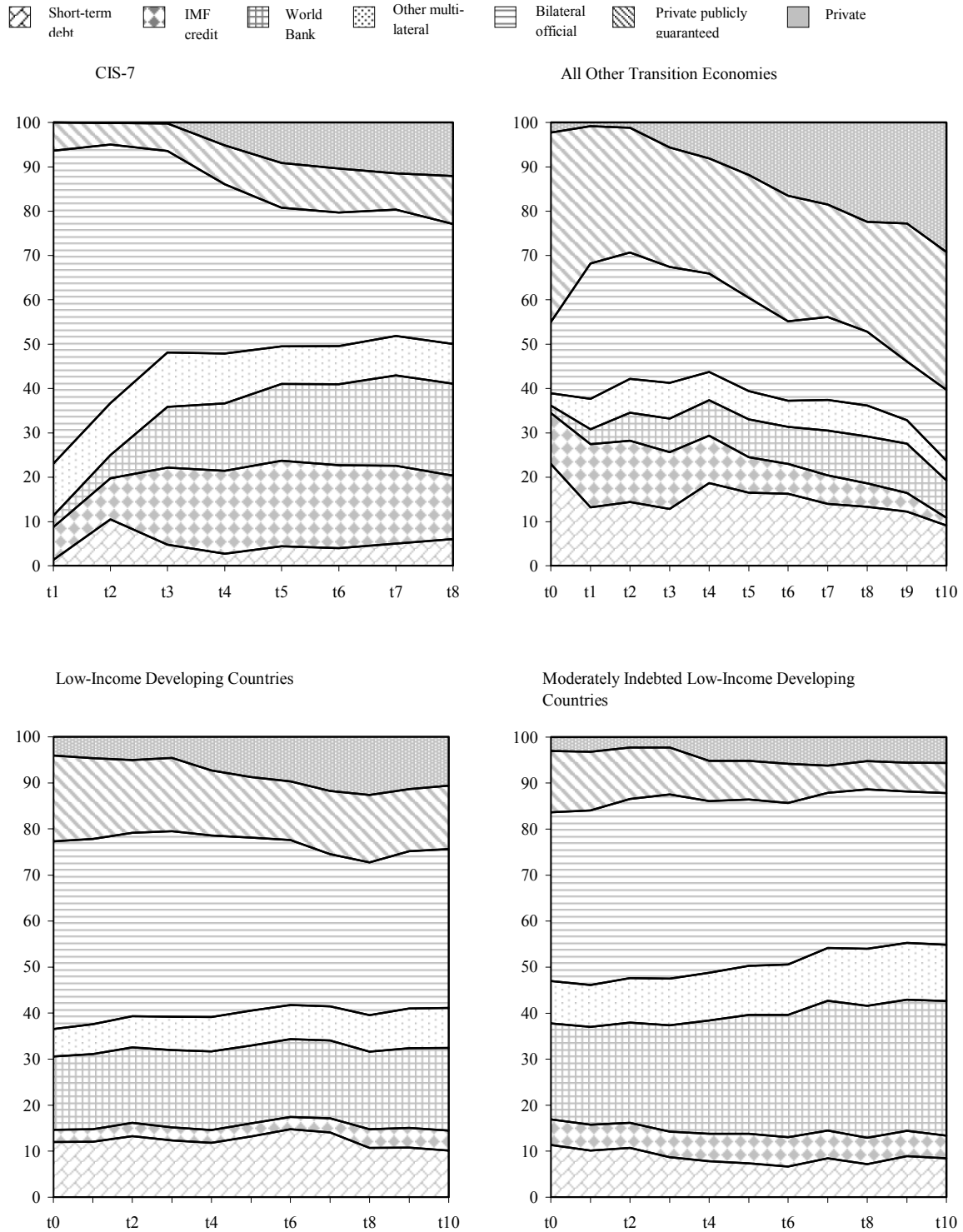
— Share of public and publicly guaranteed debt in total external debt (percent; left axis)  
 ..... Share of concessional debt in total debt (percent; left axis)  
 - - - Average maturity (years; left axis)  
 —◆— Average interest rate on external debt (percent; right axis)



Source: World Bank, *Global Development Finance*, various years.

Note: Time axes are in transition time.  $T_0$  denotes the year in which the transition started. The dates were taken from Fischer and Sahay (2000). *All other transition economies* include: Albania, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Macedonia, Mongolia, Poland, Romania, Russia, Slovak Republic, Slovenia, Turkmenistan, Ukraine.

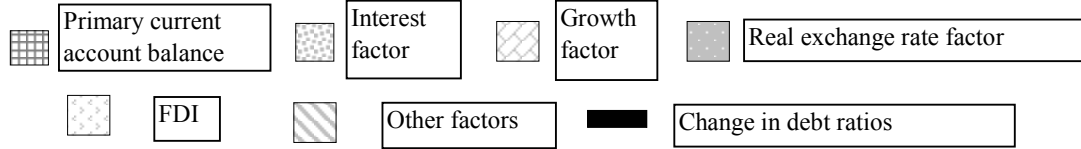
Figure 2. Comparison of External Debt by Creditors  
(percent of total external debt; annual averages)



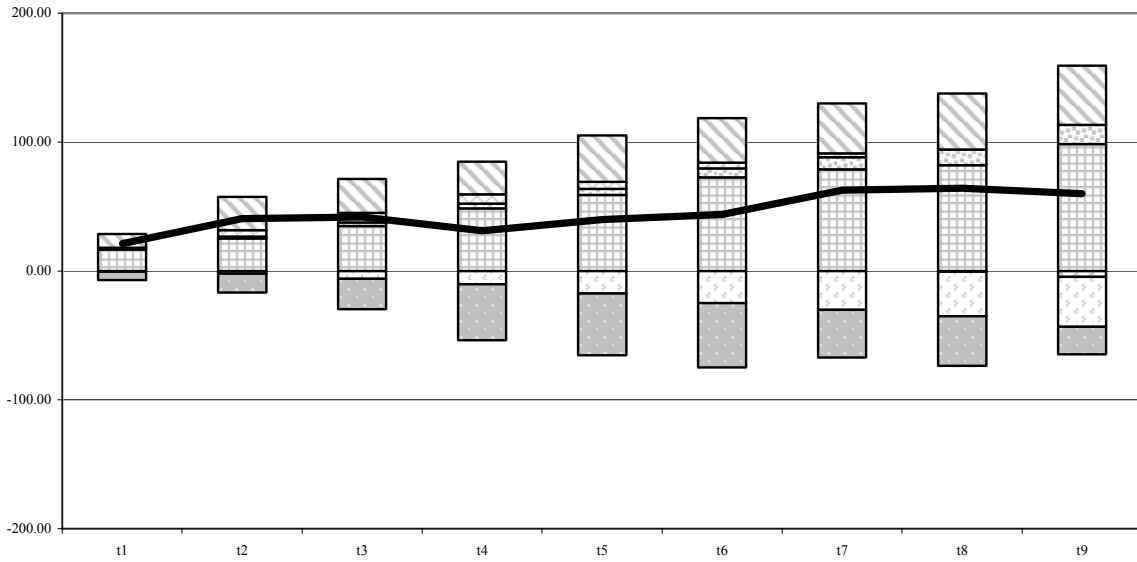
Source: World Bank, *Global Development Finance*, various years.  
Note: See Figure 1 for details on notation, time axes, and country groups.

Figure 3. Decomposing the External Debt Dynamics

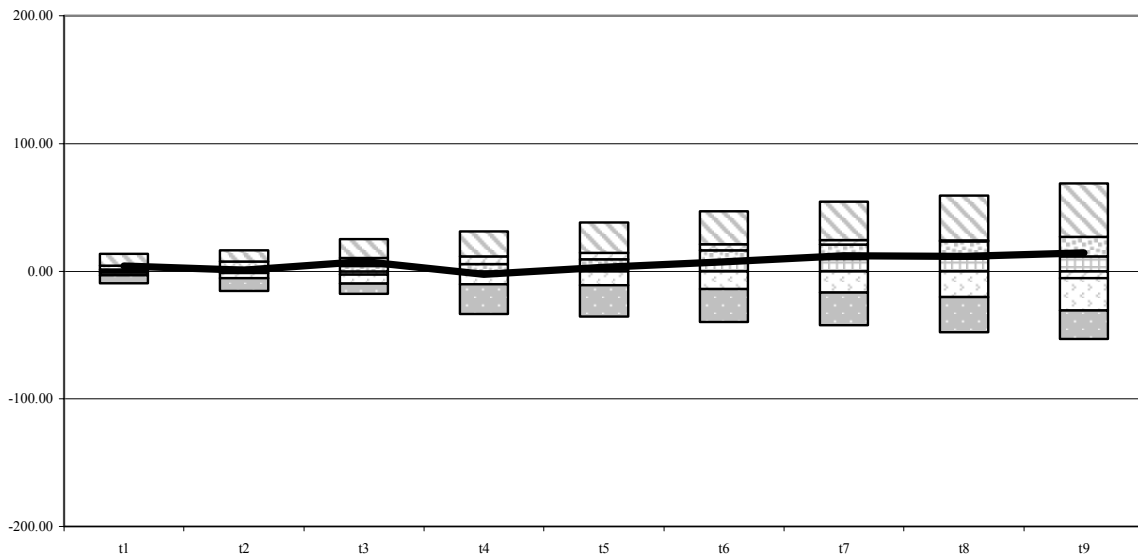
(As ratios to GDP in percent; cumulative values from  $t_0$ )



CIS-7 Countries (Average Values)



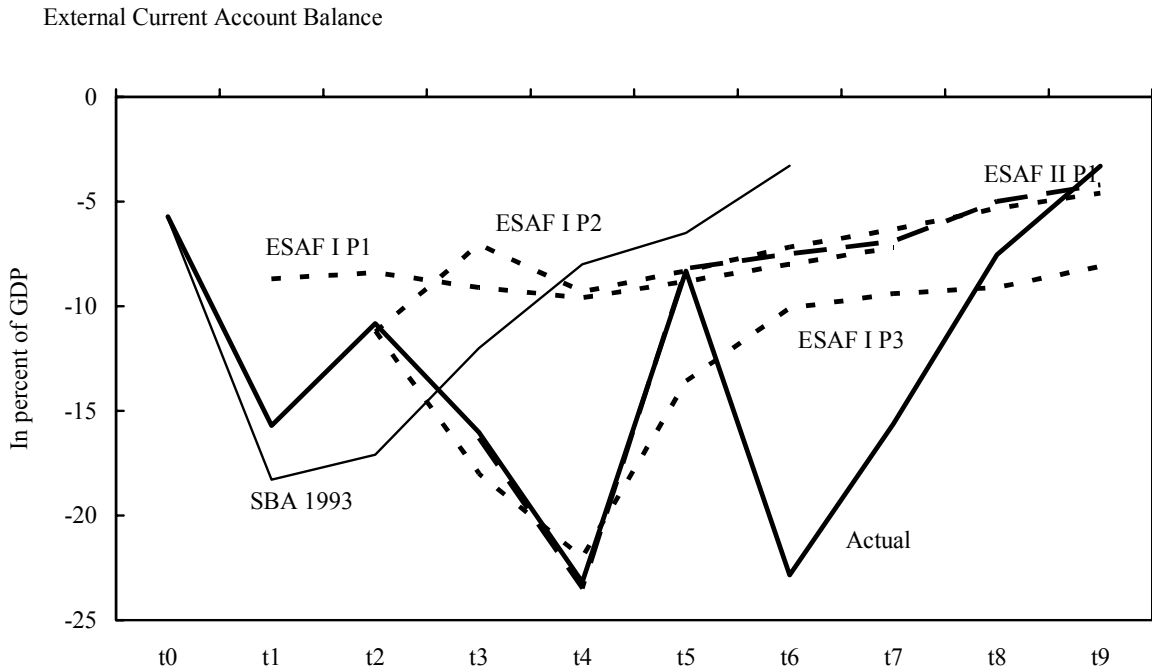
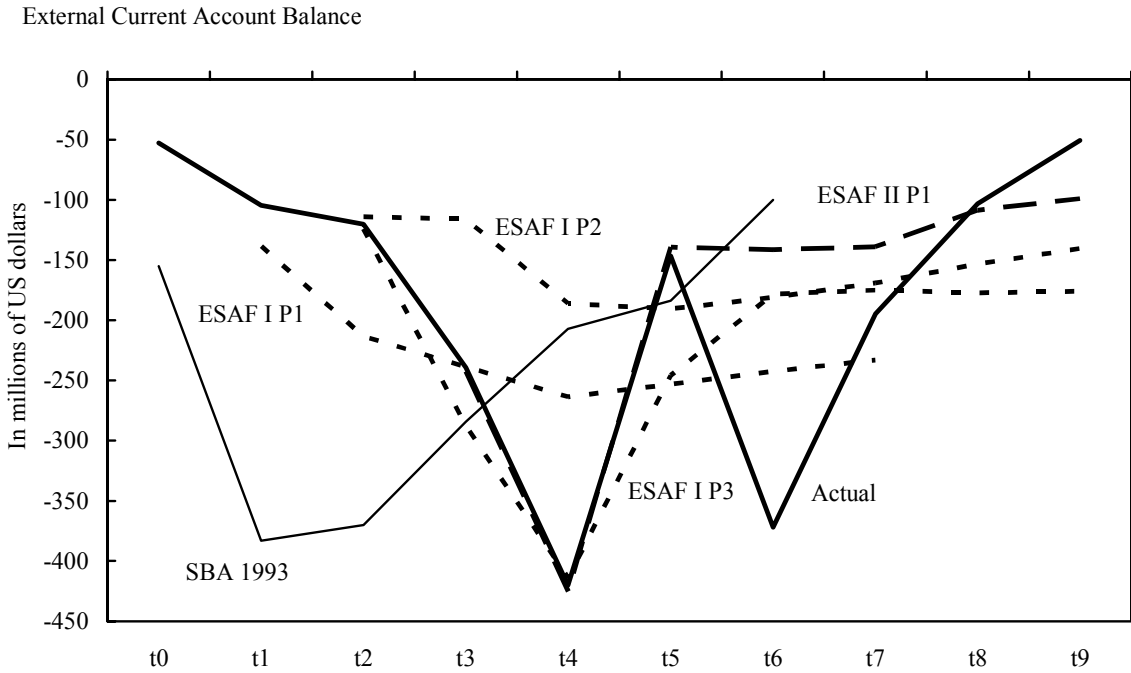
All Other Transition Countries (Average Values)



Source: Staff calculations; World Economic Outlook database.

Note: See Figure 1 for details on notation, time axes, and country groups.

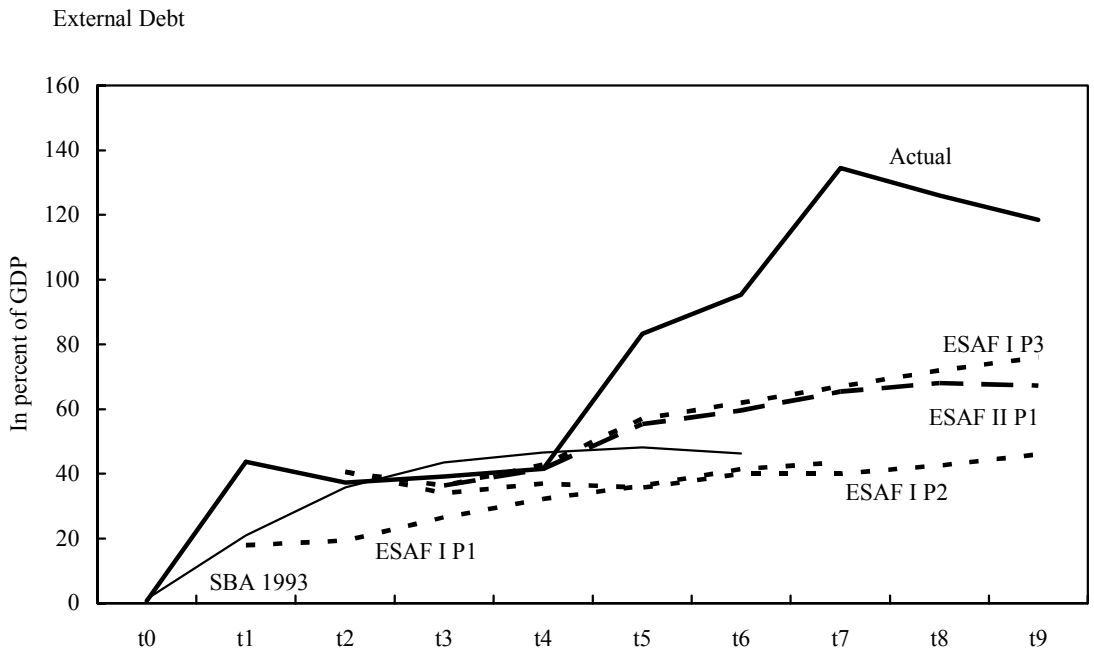
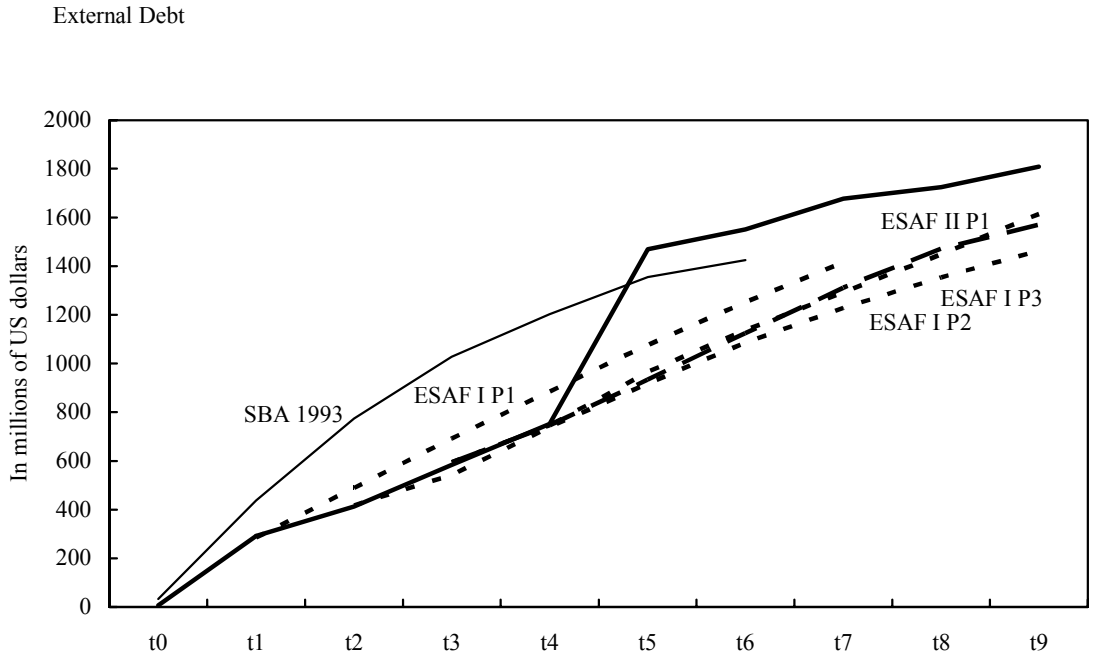
Figure 4. Kyrgyz Republic: External Current Account Balance  
 Medium-term projections under IMF programs compared with actual outcomes



Source: IMF Staff Reports; World Economic Outlook database; and Staff calculations.  
 Note: Time axis is in transition time. T<sub>0</sub> denotes the year in which the transition started. The dates were taken from Fischer and Sahay (2000). See Table 2 for definitions of labels in charts.

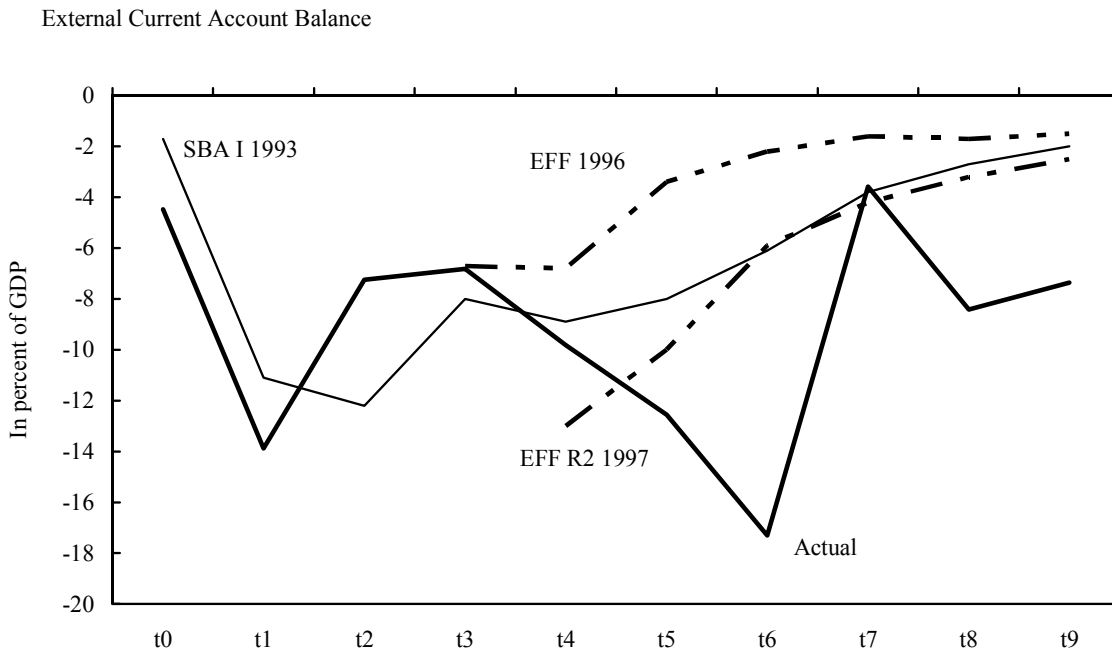
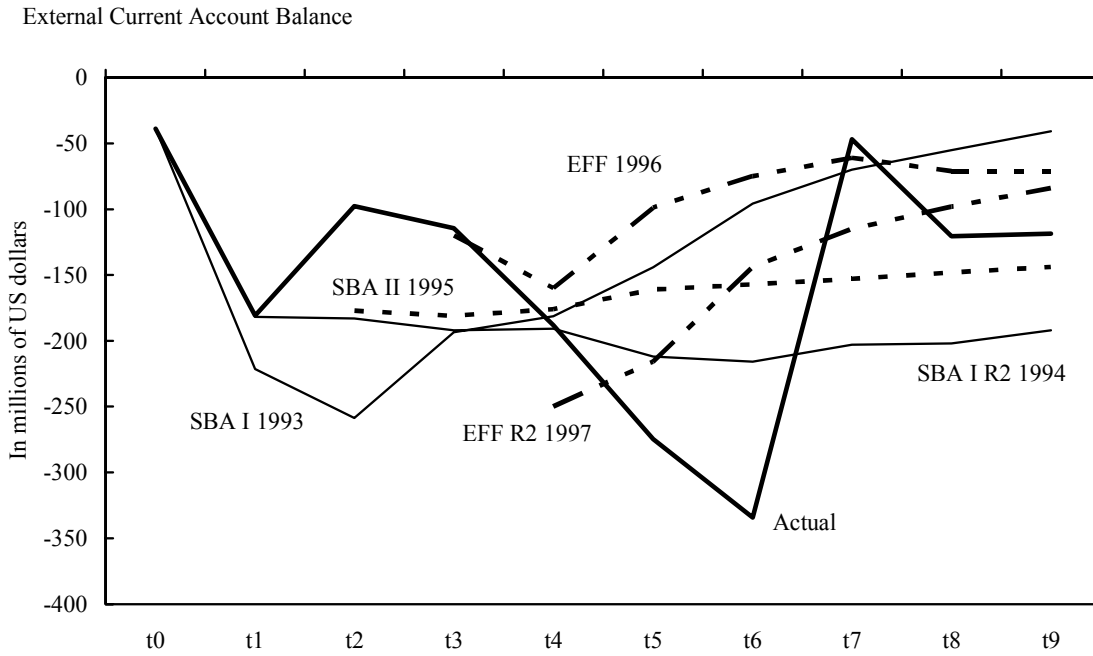


Figure 5. Kyrgyz Republic: External Debt  
 Medium-term projections under IMF programs compared with actual outcomes



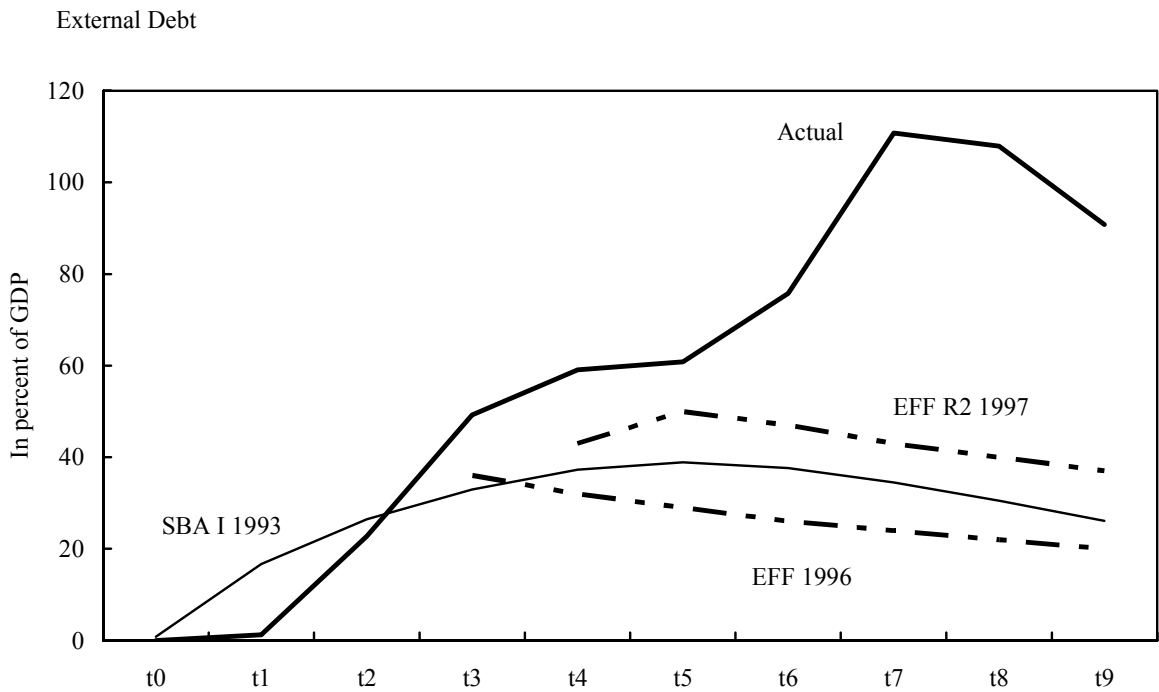
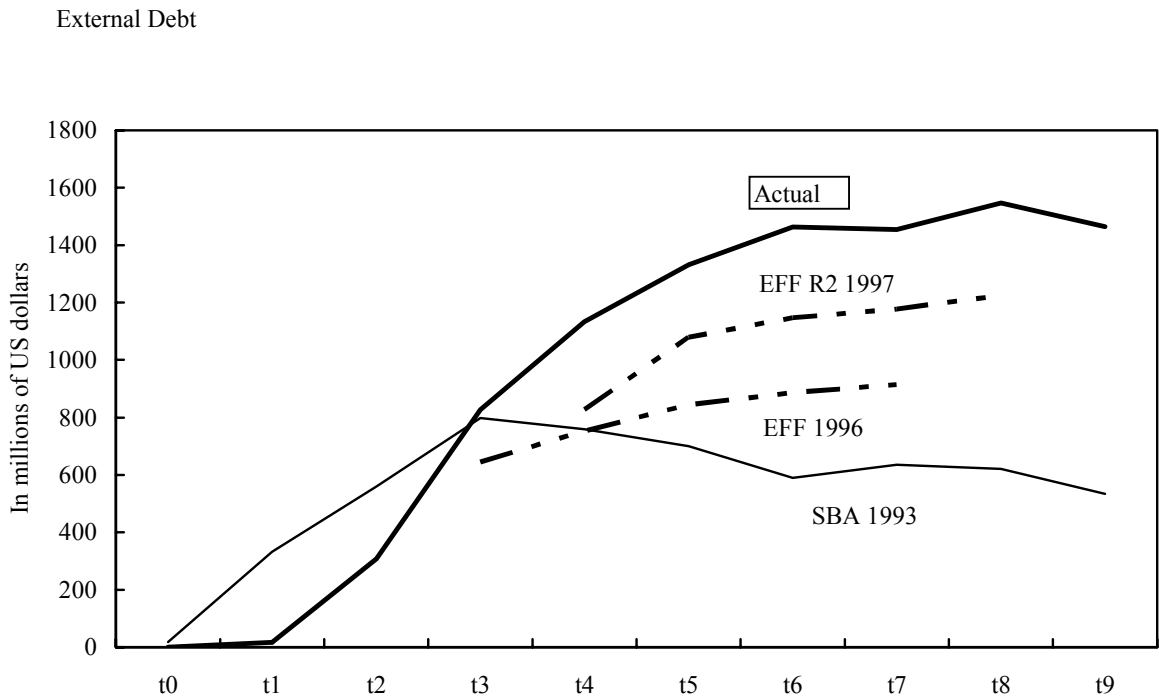
Source: IMF Staff Reports; WEO database; and staff calculations.  
 Note. See Figure 4 for details on notation, labels, time axes, and country groups.

Figure 6. Moldova: External Current Account Balance  
Medium-term projections under IMF programs compared with actual outcomes



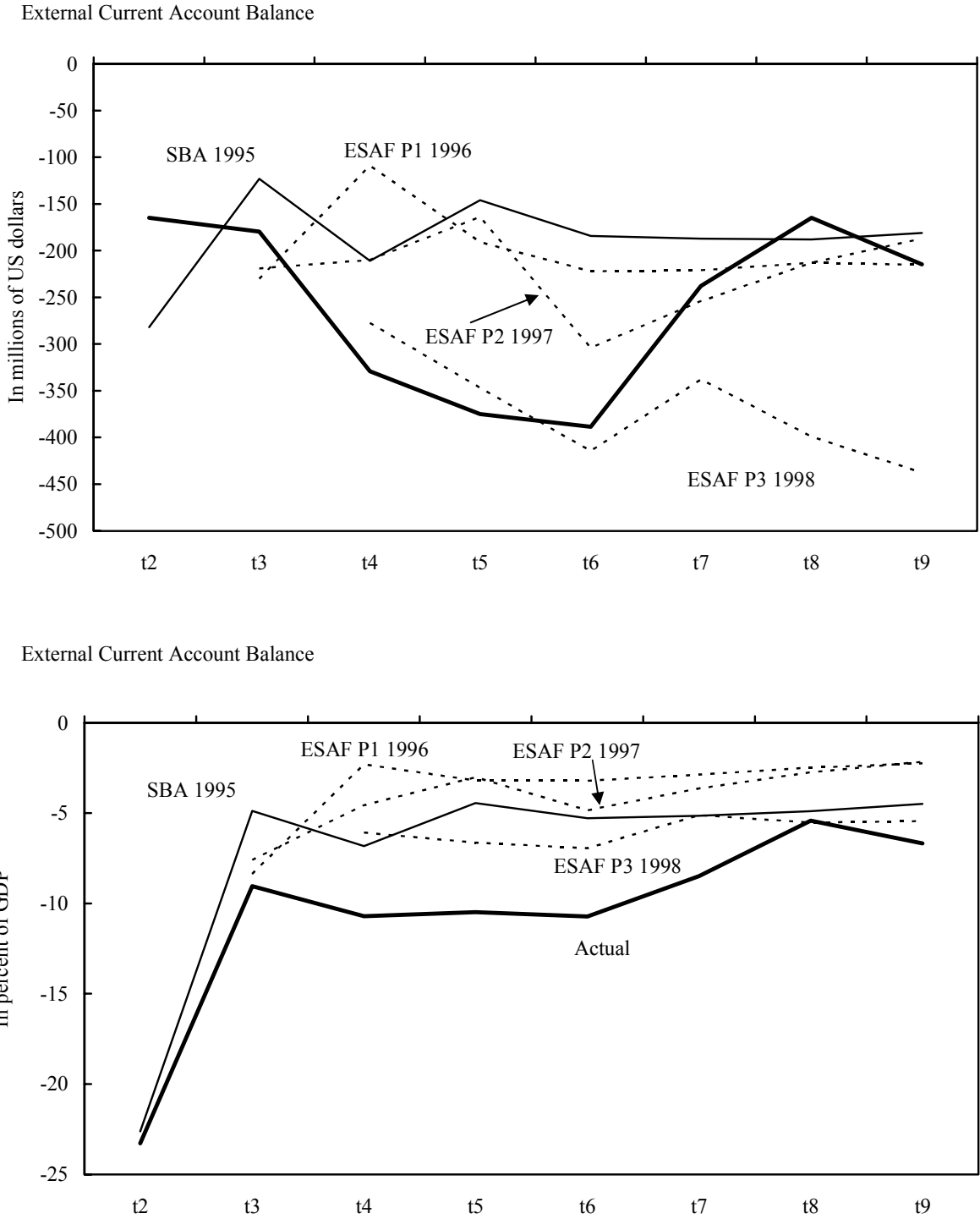
Source: IMF Staff Reports; World Economic Outlook database; and staff calculations.  
Note. See Figure 4 for details on notation, labels, time axes, and country groups.

Figure 7. Moldova: External Debt  
Medium-term projections under IMF programs compared with actual outcomes



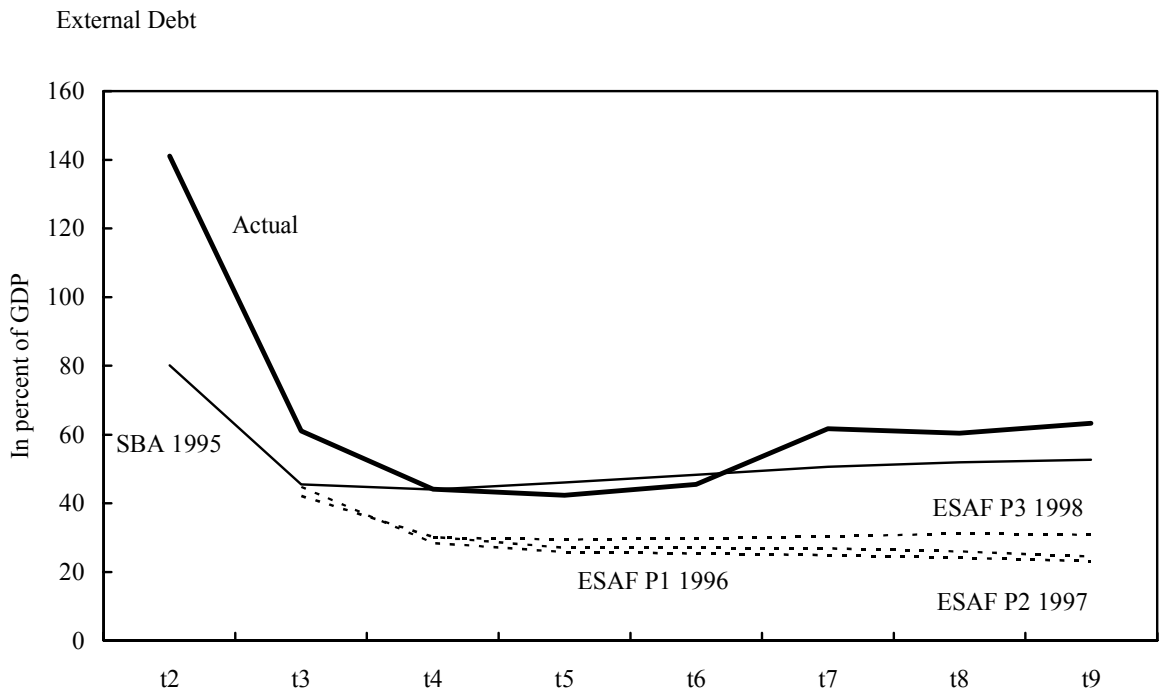
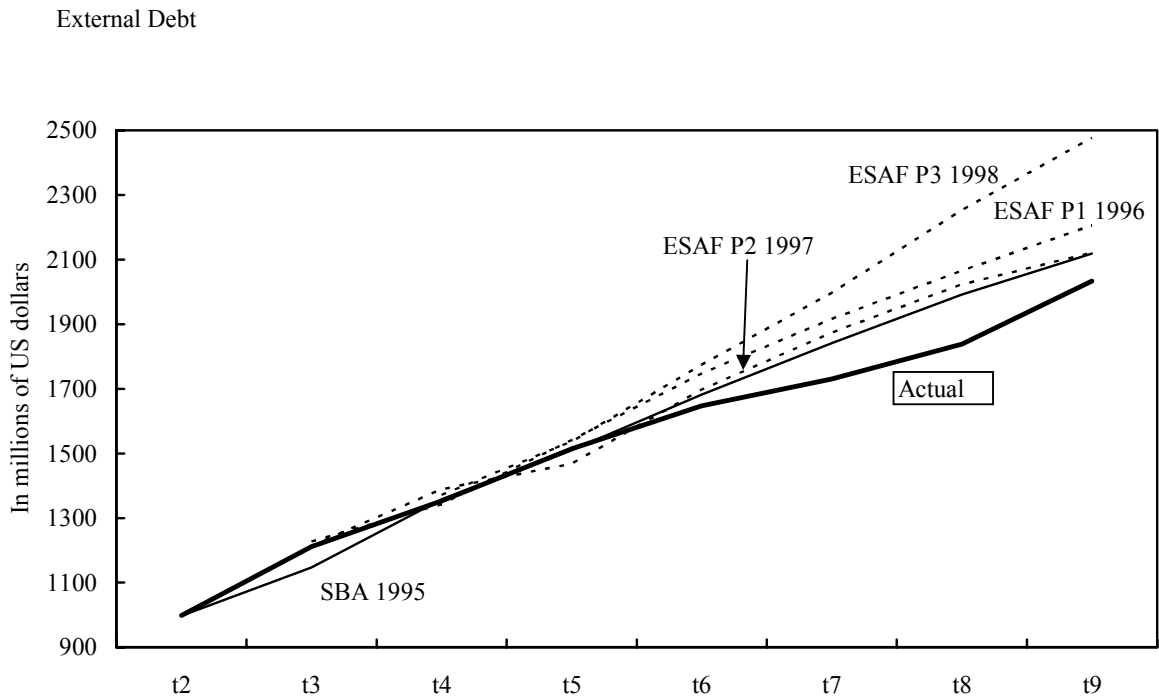
Source: IMF Staff Reports; World Economic Outlook database; and staff calculations.  
Note. See Figure 4 for details on notation, labels, time axes, and country groups.

Figure 8. Georgia: External Current Account Balance  
Medium-term projections under IMF programs compared with actual outcomes



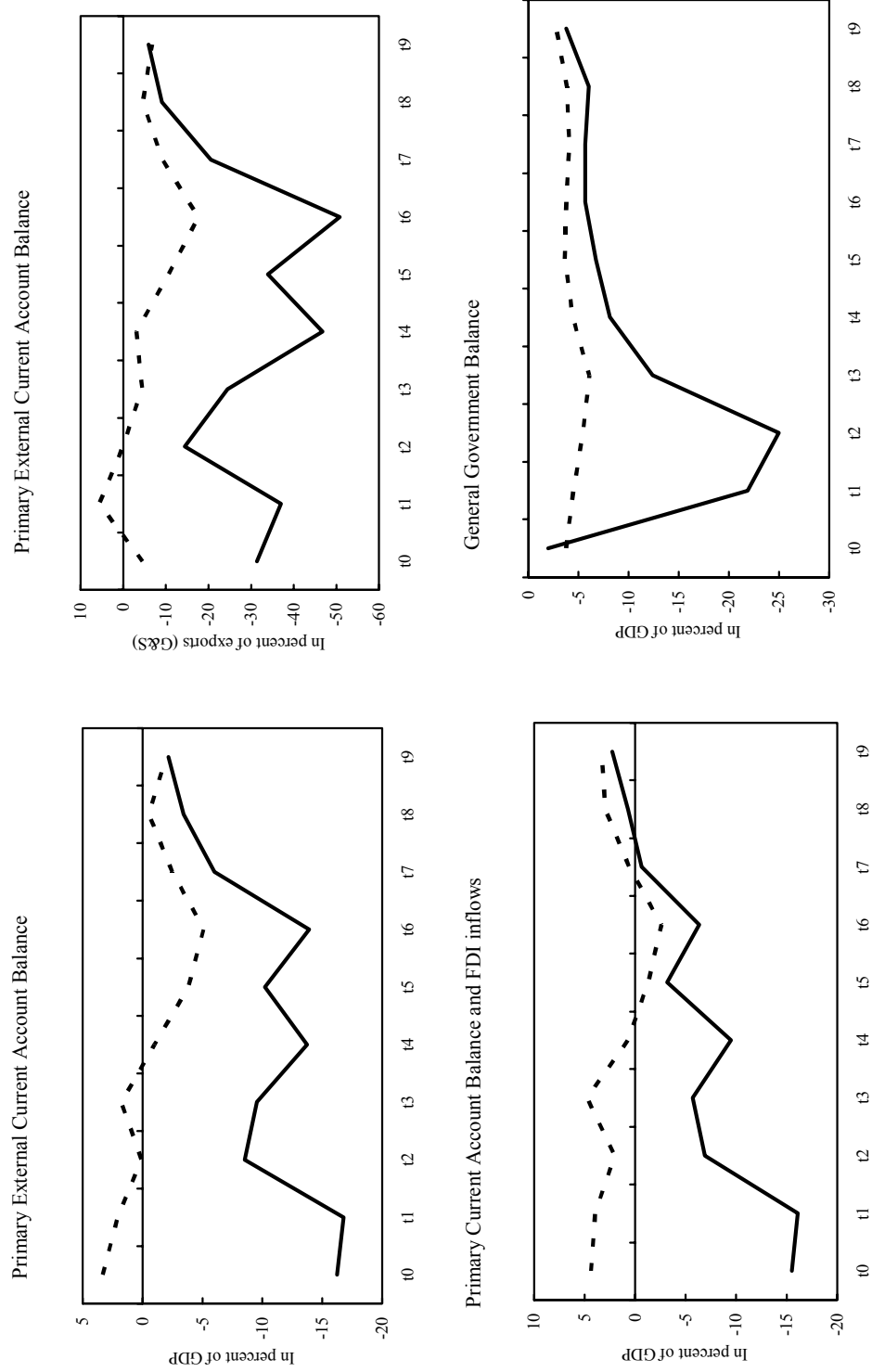
Source: IMF Staff Reports; World Economic Outlook database; and staff calculations.  
Note. See Figure 4 for details on notation, labels, time axes, and country groups.

Figure 9. Georgia: External Debt  
Medium-term projections under IMF programs compared with actual outcomes



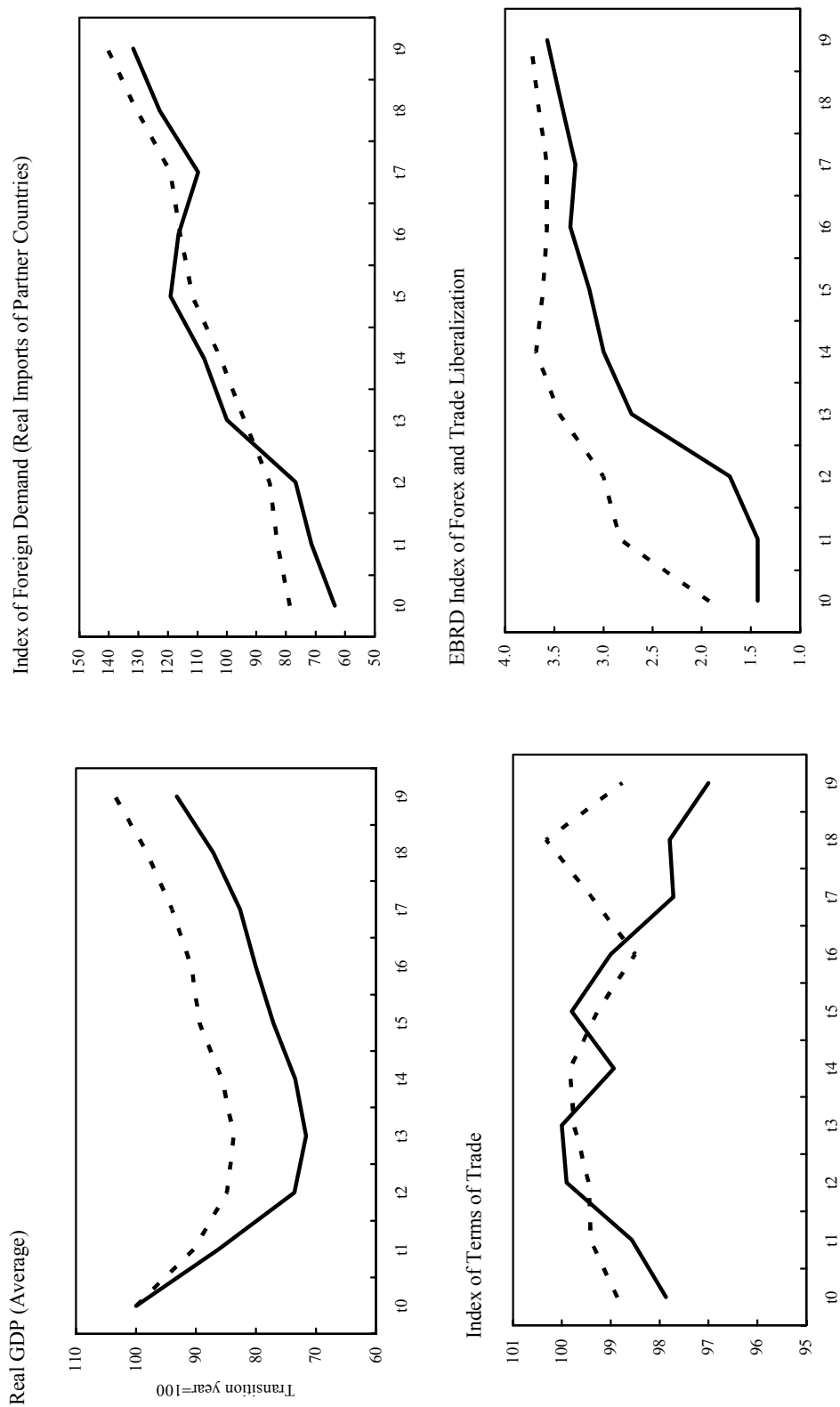
Source: IMF Staff Reports; World Economic Outlook database; and staff calculations.  
Note. See Figure 4 for details on notation, labels, time axes, and country groups.

Figure 10. Macroeconomic Adjustment in CIS-7 Countries Compared with Other Transition Countries  
 (Average of CIS-7 countries (solid line) compared with average of other transition economies (dashed line))



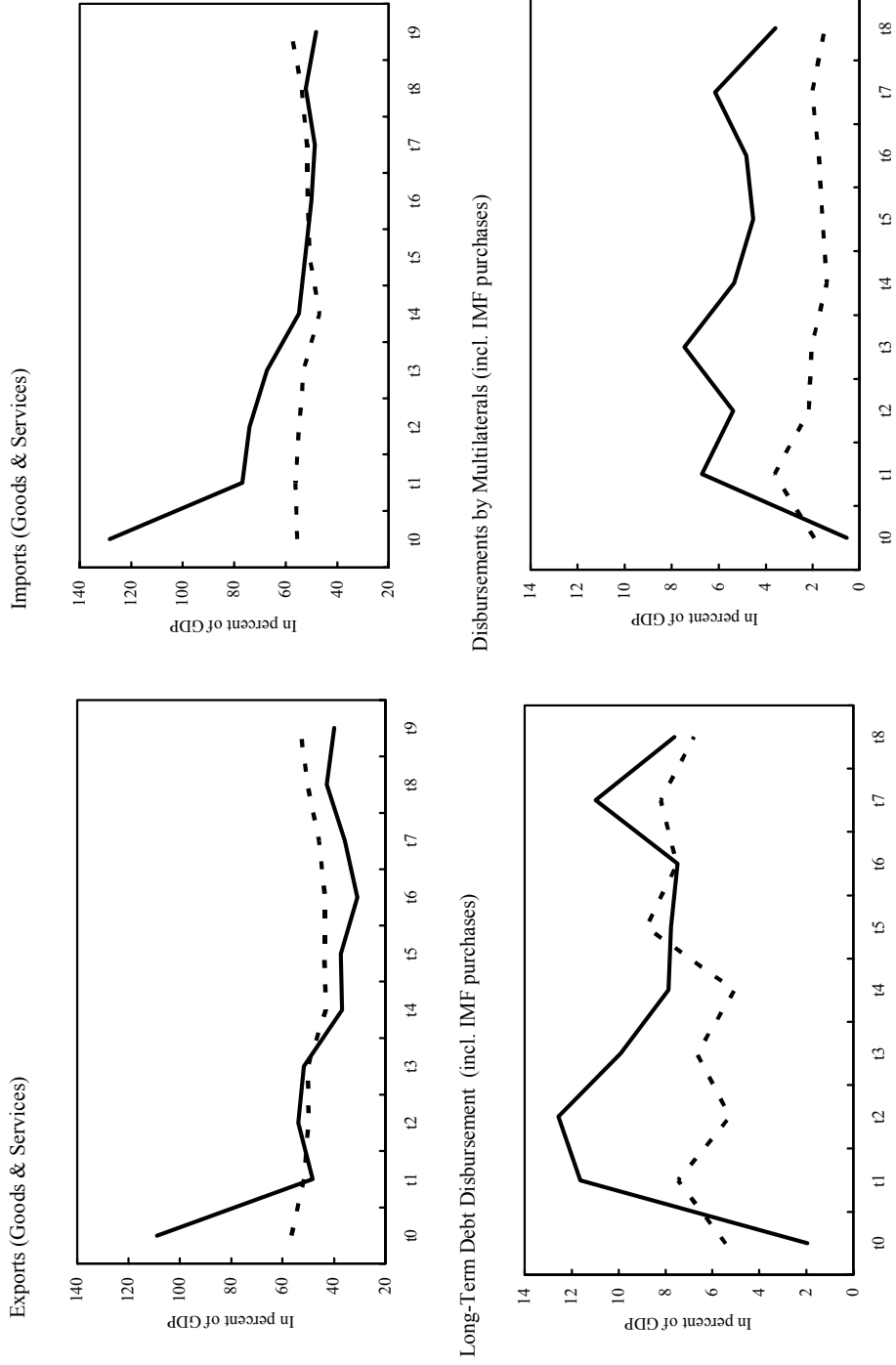
Source: World Economic Outlook database.  
 Note: See Figure 1 for details on notation, time axes, and country groups.

Figure 11. Macroeconomic and Structural Indicators in CIS-7 Countries Compared with Other Transition Countries  
(CIS-7 countries (solid line) compared with average/median of other transition economies (dashed line))



Source: World Economic Outlook database; and European Bank for Reconstruction and Development, *Transition Report*, various issues.  
Note: See Figure 1 for details on notation, time axes, and country groups.

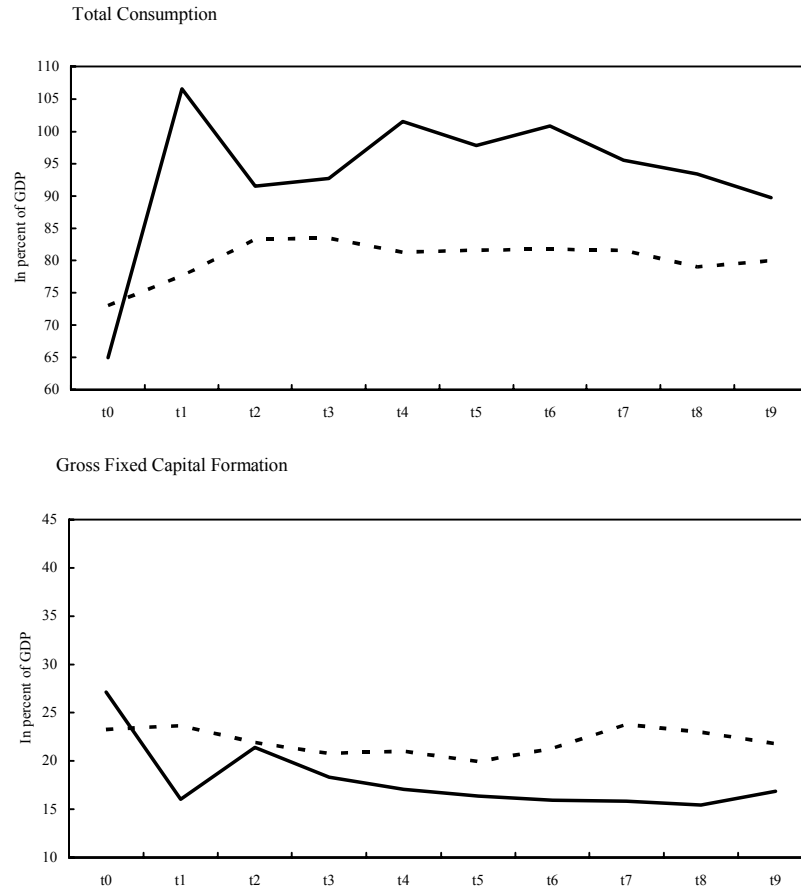
Figure 12. Exports, Imports, and Multilateral Disbursements in CIS-7 Countries Compared with Other Transition Countries  
 (Averages of CIS-7 countries (solid line) compared with averages of other transition economies (dashed line))



Source: World Economic Outlook database.  
 Note: See Figure 1 for details on notation, time axes, and country groups.



Figure 13. Consumption and Investment in CIS-7 Countries Compared with Other Transition Countries 1/  
(Averages of CIS-7 countries (solid lines) compared with averages of other transition economies (dashed lines))



Source: World Economic Outlook database.

1/ The averages were computed on the basis of incomplete data. For some countries, consumption data are not available. For many, they were not available for the later stages of the transition. Annual averages were computed with the available data. See Figure 1 for details on notation, time axes, and country groups.

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