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Compliance with IMF Program Indicators and Growth in Transition Economies

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Abstract

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This paper makes use of the IMF's Database for Monitoring Fund Arrangements (MONA) to investigate whether transition countries that more successfully implement the conditionality of IMF programs tend to show a better performance on recovery and growth. It is not possible to determine a clear-cut relationship between the index that determines the level of compliance with structural benchmarks in IMF programs and growth. However, the paper finds a definite, positive relationship between the index of compliance with performance criteria and growth, even after controlling for the extent of stabilization of the transition countries.

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I.   INTRODUCTION

Throughout this decade, virtually all transition economies have had a variety of Fund programs: from the early years of rapid change in the late 1980's, to more intense dialogue on stabilization and growth after 1990, and to the recent growing emphasis on structural reforms. With the benefit of nearly a decade of data, we have been able to observe that the initial recovery process has taken place at differing speeds for most countries (see table 1), and that the broadly similar problems faced by countries are gradually being overcome.

The purpose of this paper is to evaluate whether compliance with conditionality in Fund programs contributed to the output recovery in transition economies. We analyze two key conditionality aspects of these countries' Fund arrangements: structural benchmarks (SB)[2] and performance criteria (PC)[3]. Conceptually one could formulate two hypotheses. First, well-implemented Fund programs contribute positively to recovery of output--presumably by speeding and smoothing stabilization and structural reforms.[4] A second hypothesis would be that countries that more successfully implement the conditionality of Fund programs also tend to undertake policies which result in a better performance on recovery and growth. There is a correlation between these two phenomena because they are both 'caused' by a third set of factors, namely commitment to reform. The first hypothesis is extremely difficult to test, as the independent effect of Fund programs cannot be clearly distinguished from the effects of 'correct' policies. In this paper we test only the second hypothesis using the MONA database for structural benchmarks and performance criteria.

Given the characteristics of the data available on structural benchmarks, we find it difficult to draw any clear-cut conclusions regarding their association with economic growth. However, we find evidence in support of the second hypothesis, namely, that countries which implemented Fund programs *successfully* (as measured by successful compliance with performance criteria), were also more likely to experience 'sustained growth'[5]. The reasons for this finding are difficult to disentangle, but we postulate some possible explanations in

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[2] SB incorporate actions the country must undertake as part of its structural policies in order to ensure structural adjustment and long-term macroeconomic viability.

[3] PC usually consist of a set of numerical floors or ceilings placed on various macroeconomic policy instruments or outcomes. Abiding by them within the stated levels is expected to allow the country to achieve macroeconomic stabilization. Whereas SB vary depending on the country's specific needs for structural adjustment, PC tend to be generic across programs.

[4] See for example Havrylyshyn et al. (2000, forthcoming) and/or Havrylyshyn, Izvorski and van Rooden (1998).

[5] For our purposes 'sustained' growth is defined here as three or more consecutive years of positive real GDP growth. With less than a decade of transition and, therefore, only a few years of positive growth for any country, the study cannot focus on longer-term horizons.

Table 1. Real GDP Levels and Growth Rates in Transition Economies

	Index (1991 = 100)									Percent change from previous year							
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1990	1991	1992	1993	1994	1995	1996	1997
Central and Eastern Europe																	
Albania	154.3	138.9	100.0	92.8	101.7	111.2	121.2	132.2	122.9	-10.0	-28.0	-7.2	9.6	9.4	8.9	9.1	-7.0
Bulgaria	124.6	113.3	100.0	92.7	91.3	93.0	95.6	86.0	80.0	-9.1	-11.7	-7.3	-1.5	1.8	2.9	-10.1	-6.9
Croatia	136.4	126.7	100.0	88.3	81.2	86.0	91.9	97.4	103.7	-7.1	-21.1	-11.7	-8.0	5.9	6.8	6.0	6.5
Czech Republic	118.1	116.6	100.0	96.7	97.3	99.9	106.3	110.4	111.6	-1.2	-14.3	-3.3	0.6	2.7	6.4	3.9	1.0
FYR Macedonia	126.7	113.8	100.0	92.0	83.6	82.1	81.1	81.8	83.0	-10.2	-12.1	-8.0	-9.1	-1.8	-1.2	0.8	1.5
Hungary	117.6	113.5	100.0	96.9	96.4	99.2	100.7	102.1	106.5	-3.5	-11.9	-3.1	-0.6	2.9	1.5	1.3	4.4
Poland	121.6	107.5	100.0	102.6	106.5	112.1	119.9	127.2	136.0	-11.6	-7.0	2.6	3.8	5.2	7.0	6.1	6.9
Romania	121.6	114.8	100.0	91.2	92.6	96.2	103.0	107.0	100.0	-5.6	-12.9	-8.8	1.5	3.9	7.1	3.9	-6.6
Slovak Republic	120.0	117.0	100.0	93.5	90.0	94.5	101.0	107.6	114.6	-2.5	-14.6	-6.5	-3.7	4.9	6.9	6.6	6.5
Slovenia	119.4	109.8	100.0	94.5	97.2	102.4	106.6	109.9	113.9	-8.1	-8.9	-5.5	2.8	5.3	4.1	3.1	3.7
Average	126.0	117.2	100.0	94.1	93.8	97.6	102.7	106.2	107.2	-7.0	-14.7	-5.9	-0.4	4.1	5.2	3.3	1.0
Baltics																	
Estonia	...	...	100.0	78.4	72.0	70.7	73.7	76.7	84.9	...	...	-21.6	-8.2	-1.8	4.3	4.0	10.8
Latvia	...	...	100.0	64.8	54.4	55.5	55.7	57.5	61.3	...	...	-35.2	-16.1	2.1	0.3	3.3	6.5
Lithuania	...	...	100.0	78.7	66.0	59.5	61.5	64.3	68.0	...	...	-21.3	-16.2	-9.8	3.3	4.7	5.7
Average			100.0	74.0	64.1	61.9	63.6	66.2	71.4	...	...	-26.0	-13.3	-3.4	2.8	4.0	7.9
CIS																	
Armenia	...	...	100.0	47.7	40.7	42.8	45.8	48.4	50.0	...	...	-52.3	-14.8	5.4	6.9	5.8	3.3
Azerbaijan	...	...	100.0	77.9	59.9	49.1	43.7	44.2	46.8	...	...	-22.1	-23.1	-18.1	-11.0	1.3	5.7
Belarus	...	...	100.0	90.4	83.5	73.0	65.4	67.3	74.3	...	...	-9.6	-7.6	-12.6	-10.4	2.8	10.4
Georgia	...	...	100.0	55.2	41.2	36.5	37.4	41.3	45.8	...	...	-44.8	-25.4	-11.4	2.4	10.5	11.0
Kazakhstan	...	...	100.0	94.7	86.0	75.2	69.0	69.3	70.7	...	...	-5.3	-9.2	-12.6	-8.2	0.5	2.0
Kyrgyz Republic	...	...	100.0	86.1	72.8	58.2	55.0	58.9	62.8	...	...	-13.9	-15.5	-20.1	-5.4	7.1	6.5
Moldova	...	...	100.0	70.3	69.5	47.8	47.1	43.4	44.0	...	...	-29.7	-1.2	-31.2	-1.4	-7.8	1.3
Russia	...	...	100.0	85.5	78.1	68.2	65.5	63.7	63.9	...	...	-14.5	-8.7	-12.6	-4.0	-2.8	0.4
Tajikistan	...	...	100.0	71.0	63.2	51.3	44.9	42.9	43.8	...	...	-29.0	-11.0	-18.9	-12.5	-4.4	2.2
Turkmenistan	...	...	100.0	94.7	85.0	68.9	63.2	58.4	43.8	...	...	-5.3	-10.2	-19.0	-8.2	-7.7	-25.0
Ukraine	...	...	100.0	83.0	71.2	54.9	48.2	43.4	42.0	...	...	-17.0	-14.2	-22.9	-12.2	-10.0	-3.2
Uzbekistan	...	...	100.0	89.0	86.9	83.3	82.5	83.8	85.6	...	...	-11.0	-2.3	-4.2	-0.9	1.6	2.1
Average			100.0	78.8	69.8	59.1	55.6	55.4	56.1	...	...	-21.2	-11.4	-15.4	-5.8	-0.4	1.3

Sources: National authorities; and Fund staff estimates.

the concluding remarks of the paper.

An important aspect of the paper is the attempt to test the usability of the IMF's MONA database[6] by applying it to the policy issue at hand. It is hoped that increased demand for this data by future researchers will foment a broadening and refinement of the database.

The paper is organized as follows. Section II surveys the literature. Section III briefly discusses the role of program design and examines evidence on whether countries which comply with structural benchmarks tended to experience growth early on. Section IV tests whether the transition economies which better complied with performance criteria also grew faster, and discusses some econometric evidence to explain why this may be the case. Section V presents the conclusions.

II.   Conceptual Framework for Testing the Impact of Fund Programs

While several earlier studies have examined the impact of Fund programs on economic growth and other macroeconomic variables in non-transition countries, to our knowledge this paper is the first one to examine the impact of Fund conditionality on growth in transition economies[7]. Earlier studies have taken four basic approaches. The first consists of examining the behavior of macroeconomic variables in several countries before and after adopting Fund programs (Killick, Malik and Manuel (1995) and Schadler et al. (1993)). However, as Polak (1991) points out, some of these findings may be biased because the approach implicitly attributes the (positive or negative) impact of extraneous factors to the programs in place. The second approach compares the program country with one or more similar non-program countries, with the difference in performance and policy attributed to program participation (see Pastor (1987) and Goldstein and Montiel (1986)). A variant of this approach is to run cross-country econometric estimations to construct a 'benchmark comparator' economy and compare it to the norm of countries with Fund programs at about the same level of development that are facing identical external shocks. The difficulty with this approach is that in general the group of program countries differs systematically from the group of non-program countries prior to the program period (the latter usually being worse off), so it is not a true random sample. The third approach is to compare program targets for macroeconomic variables with actual outcomes, but this assumes no flaws in program design. A fourth approach is to construct a comprehensive simulation model of the specific economy, with parametrization of the various channels through which a Fund program and external shocks can affect the outcome. Conway (1998) argues that this approach is likely to yield the least amount of bias.

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[6] MONA (Database for Monitoring Fund Arrangements) contains detailed information about programs for all countries, and has been compiled by the IMF's Policy Development and Review Department since 1993. See Appendix 1 for a description of the MONA database.

[7] For an excellent analytical survey of studies that assess the impact of IMF adjustment programs on economic outcomes see Ul Haque and Khan (1998).

The first three approaches are the most commonly used. Probably the most comprehensive study is that by Khan (1990), who uses the first three approaches with data for 259 programs over 1973-1988 for 69 countries. He finds that although Fund programs resulted in a significant improvement in the countries' external current account and balance of payments positions, the evidence on growth is generally negative[8]. Using the fourth approach mentioned above, Conway (1994) also finds that Fund programs have a negative contemporaneous effect on growth, but the effect turns positive after a sufficiently long horizon. A 1997 IMF study[9] examines the impact of ESAF programs on growth performance using a mixture of the first three approaches, and takes advantage of detailed information--among other macroeconomic indicators-- about how well the programs were implemented. The study suggests that about half of the growth that occurred in these countries between the early 1980s and early 1990s could be attributed to strengthened policies, although--in line with other work--it does not find a significant improvement on growth relative to similar non-ESAF countries.[10]

This paper takes a simpler and slightly different approach from the above literature. It attempts to determine whether program compliance for a group of countries with *similar* economic conditions has an effect on growth. Unlike many other studies, we cannot measure the difference between performance with and without a program (as in the second approach referred to above), since almost all transition economies have had programs with the Fund (in other words, we do not have an adequate control group.)[11] At the same time, to some extent, we are able to control for exogenous shocks--unlike the first approach mentioned above--mainly because transition economies experienced similar external and internal problems since 1990, as they all struggled to overcome inefficiencies of central planning[12].

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[8] During this period, the growth rate was significantly lower in program countries than in non-program countries, but the difference became smaller once a longer time horizon was considered.

[9] IMF (1997).

[10] Given the approach used in the study, however, this result does not necessarily imply that a Fund program by itself hinders growth.

[11] However, we are able to 'grade' countries depending on how well they performed on the program. In other words, having a Fund program *per se* in our study is not sufficient information to make inferences about the likelihood of economic growth. This differs from the method used in several other studies, which essentially divide the sample to be tested into two possible states of nature: having a Fund program and not having a Fund program.

[12] In the early 1990s most countries were at early stages of transition. Some countries, however, were at a more advanced stage (for example, Poland and Hungary experienced an earlier start of reforms), while other countries (such as Armenia, Georgia and Turkmenistan) could not proceed with reforms because they were experiencing internal conflicts. In the

In designing our approach, we took into consideration two issues: (i) our sample consists of a limited number of countries in a historically unique condition of transformation, from a centrally planned to a market economy, and (ii) information constraints allow us to look at the effects over a relatively short time horizon (the process of transition has been under way for less than a decade). With the data on compliance being sparse, and data on GDP growth in transition economies subject to large measurement errors[13], we do not attempt to go beyond making some broad qualitative observations.

III. Program Design and Structural Benchmarks

In this section we study the possible relationship between compliance with structural benchmarks in Fund programs and growth. Since there is some leeway in terms of number and type of structural benchmarks included in programs, we first consider whether there were *noticeable* differences in the design of programs among transition economies. If such differences exist, they should be taken into account when relating successful program completion to growth performance. An accurate measure of program design would require considering such factors as whether the targets are too ambitious, how quickly the institutional framework of a particular country allows structural measures to be adopted, and whether there is sufficient follow-up (for instance, through technical assistance or continued contact with staff). However, this would require the type of detailed information used in the recent review of countries with ESAF programs.[14] The analysis in this paper is less ambitious, and is limited to the examination of whether there are noticeable differences in the number of structural benchmarks--and in the actions required for structural benchmarks--across programs.

Table 2 shows the number of actions within each structural benchmark group for the transition economies in our sample, presented by type of Fund arrangement. Actions are classified into seven major groups of structural benchmarks on the basis of the economic sector to which reforms were targeted. The results show that the number of actions varies enormously across SBAs, whereas there is not a large difference in the number of actions requested across programs for EFF and ESAF arrangements. It is difficult to tell whether the large variation in actions across SBAs necessarily implies qualitative differences in program design, or whether

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[12](...continued)
analysis of this paper the differences *within* transition countries can be controlled by using dummy variables in regressions, as in Havrylyshyn, Izvorski and Van Rooden (1998). Note that none of the Asian transition economies, and only some of the former republics of Yugoslavia are considered in the paper.

[13] For an explanation of well-known caveats that apply to growth data for transition economies see Havrylyshyn, Izvorski and Van Rooden (1998).

[14] See also Mecagni (1999).

it is simply capturing the different needs of the program country.[15] We cannot rule out the hypothesis that such differences in design may affect the timing and sustainability of recovery in the early stages of transition. Also, the rough indicators presented in the table may not capture certain subtle differences in the design of structural benchmarks in the programs under consideration. In addition, even under the assumption that program design could be measured by the number of actions (for example, by postulating that less actions imply a better design), there seems to be *no correlation* between the number of actions contemplated in a program and performance in structural areas under the program.[16]

To examine whether there was a relationship between structural reforms and *sustained* growth, a structural benchmark index (*SBI*) was used (see appendix 1 for an explanation of how this index was constructed). The index assigns a grade (between 0 and 10) to each program depending on the number of successfully completed actions (the higher the completion rate, the higher the *SBI* (see tables 3 and 4)). The results show that the relationship between compliance with structural benchmarks and growth is at best weak. For example, countries such as Bulgaria, Poland and Latvia (which have experienced either a successful turnaround or strong growth) receive a relatively low *SBI* score, while countries such as Uzbekistan and Ukraine (with low or negative growth) receive a high score. Part of the results above may be due to some data problems that are discussed in more detail in Appendix 1, section 2.

One could argue that the successful implementation of structural benchmarks would have a positive effect on growth in the future, and that such effect has not yet been observed. In any event, for this reason and difficulties in comparing programs with differences in design, it is not possible to establish a correlation between the degree of implementation of structural benchmarks and growth.

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[15] Two interesting types of patterns emerge (Table 2): (i) A large difference on average between the number of actions requested under SBAs on the one hand, and under ESAF or EFF arrangements on the other. In general terms, the latter two arrangements require a greater number of actions. (ii) Many programs are quite comprehensive and require actions across several areas of structural reform. It is interesting to note that, on average, EFF programs tend to require more actions on financial sector reform than other arrangements, whereas ESAF programs tend to require more actions on tax and expenditure reforms.

[16] A small negative but statistically insignificant correlation of -0.036 was found between the number of actions and a structural performance index constructed by the authors (the so-called Structural Benchmark Index explained below).

Table 2. Indicators of Program Design: Distribution of Structural Benchmarks (SBs) According to
Structural Benchmark Groups for Countries in Transition

Country Name	Arrangement 1/	SBs															
		SB groups 2/							Total	SB groups 2/							Total
		1	2	3	4	5	6	7		1	2	3	4	5	6	7	
		In percent								*In numbers*							
Armenia	SBA	9	11	6	34	23	6	11	100	3	4	2	12	8	2	4	35
Azerbaijan	SBA	8	12	8	15	19	27	12	100	2	3	2	4	5	7	3	26
Belarus	SBA	5	5	24	24	10	14	19	100	1	1	5	5	2	3	4	21
Bulgaria	SBA	16	5	--	11	21	26	21	100	3	1	--	2	4	5	4	19
Macedonia	SBA	--	5	--	42	37	5	11	100	--	1	--	8	7	1	2	19
Romania	SBA	5	5	21	16	37	16	--	100	1	1	4	3	7	3	--	19
Estonia	SBA	11	17	6	33	11	17	6	100	2	3	1	6	2	3	1	18
Georgia	SBA	6	--	18	47	12	18	--	100	1	--	3	8	2	3	--	17
Hungary	SBA	7	--	--	80	--	13	--	100	1	--	--	12	--	2	--	15
Romania	SBA	--	--	27	27	27	20	--	100	--	--	4	4	4	3	--	15
Poland	SBA	14	--	7	29	29	14	7	100	2	--	1	4	4	2	1	14
Kazakhstan	SBA	--	--	8	--	23	62	8	100	--	--	1	--	3	8	1	13
Moldova	SBA	31	8	--	23	15	23	--	100	4	1	--	3	2	3	--	13
Ukraine	SBA	17	--	--	8	8	42	25	100	2	--	--	1	1	5	3	12
Uzbekistan	SBA	33	25	17	17	8	--	--	100	4	3	2	2	1	--	--	12
Croatia	SBA	--	--	--	36	36	27	--	100	--	--	--	4	4	3	--	11
Kazakhstan	SBA	9	9	18	9	27	27	--	100	1	1	2	1	3	3	--	11
Ukraine	SBA	9	18	18	9	18	9	18	100	1	2	2	1	2	1	2	11
Bulgaria	SBA	--	13	25	13	38	13	--	100	--	1	2	1	3	1	--	8
Kyrgyz Rep.	SBA	--	67	--	--	--	17	17	100	--	4	--	--	--	1	1	6
Russia	SBA	50	--	--	17	--	--	33	100	3	--	--	1	--	--	2	6
Moldova	SBA	40	--	20	--	--	40	--	100	2	--	1	--	--	2	--	5
Poland	SBA	33	--	--	33	--	33	--	100	1	--	--	1	--	1	--	3
Latvia	SBA	50	--	--	--	--	--	50	100	1	--	--	--	--	--	1	2
Bulgaria	SBA	--	100	--	--	--	--	--	100	--	1	--	--	--	--	--	1
Latvia	SBA	--	--	--	100	--	--	--	100	--	--	--	1	--	--	--	1
Average for SBA		14	12	9	24	15	18	9	100	1	1	1	3	2	2	1	13
Kyrgyz Rep.	ESAF	3	--	20	29	23	11	14	100	1	--	7	10	8	4	5	35
Albania	ESAF	12	3	12	15	12	12	35	100	4	1	4	5	4	4	12	34
Azerbaijan	ESAF	10	10	3	32	13	23	10	100	3	3	1	10	4	7	3	31
Georgia	ESAF	--	9	5	23	23	18	23	100	--	2	1	5	5	4	5	22
Armenia	ESAF	--	--	11	39	28	--	22	100	--	--	2	7	5	--	4	18
Macedonia	ESAF	--	--	--	29	18	18	35	100	--	--	--	5	3	3	6	17
Average for ESAF		4	4	8	28	19	14	23	100	1	1	3	7	5	4	6	26
Azerbaijan	EFF	7	7	2	24	10	17	32	100	3	3	1	10	4	7	13	41
Russia	EFF	5	3	3	49	19	16	5	100	2	1	1	18	7	6	2	37
Kazakhstan	EFF	4	13	--	35	22	17	9	100	1	3	--	8	5	4	2	23
Moldova	EFF	38	6	6	13	6	25	6	100	6	1	1	2	1	4	1	16
Lithuania	EFF	18	9	--	--	55	9	9	100	2	1	--	--	6	1	1	11
Croatia	EFF	11	--	--	--	44	33	11	100	1	--	--	--	4	3	1	9
Average for EFF		14	6	2	20	26	20	12	100	3	2	1	6	5	4	3	23

Source: MONA database.
1/ Arrangements such as Structural Transformation Facilities (STFs), Compensatory Financing Facilities (CCFF)
  or first tranche are not included in the sample.
2/ Numbers indicate the following structural benchmark groups:
        1 - Trade/exchange systems
        2 - Pricing and marketing
        3 - Public enterprise
        4 - Tax/expenditure reform
        5 - Financial sector
        6 - Privatization reform
        7 - Other

Table 3. Performance on Structural Benchmarks
(Ranked by Structural Benchmark index)

	Arrangement	All categories			TOTAL	Structural Benchmark Index 2/
	(1)	Done (2)	Other 1/ (3)	Not done (4)	(5)	$(6)=[10*(2)+5*(3)+0*(4)]/100$
				In percent		
Lithuania	EFF	91	9	--	100	9.5
Croatia	SBA	86	14	--	100	9.3
Moldova	EFF	90	--	10	100	9.0
Kazakhstan	EFF	76	19	5	100	8.6
Ukraine	SBA	75	17	8	100	8.3
Azerbaijan	ESAF	79	7	14	100	8.3
Azerbaijan	EFF	72	18	10	100	8.1
Kazakhstan	SBA	62	38	--	100	8.1
Moldova	SBA	62	38	--	100	8.1
Uzbekistan	SBA	58	42	--	100	7.9
Macedonia	SBA	67	25	8	100	7.9
Georgia	ESAF	62	33	5	100	7.9
Kyrgyz Rep.	ESAF	69	20	11	100	7.9
Georgia	SBA	54	46	--	100	7.7
Moldova	SBA	50	50	--	100	7.5
Russia	EFF	54	38	8	100	7.3
Poland	SBA	45	55	--	100	7.3
Albania	ESAF	54	32	14	100	7.0
Armenia	ESAF	38	62	--	100	6.9
Azerbaijan	SBA	46	46	8	100	6.9
Ukraine	SBA	45	45	9	100	6.8
Hungary	SBA	50	36	14	100	6.8
Macedonia	ESAF	53	27	20	100	6.7
Armenia	SBA	33	56	11	100	6.1
Kazakhstan	SBA	27	55	18	100	5.5
Bulgaria	SBA	--	100	--	100	5.0
Latvia	SBA	--	100	--	100	5.0
Romania	SBA	50	--	50	100	5.0
Russia	SBA	--	100	--	100	5.0
Romania	SBA	7	79	14	100	4.6
Poland	SBA	--	67	33	100	3.3
Bulgaria	SBA	--	--	100	100	0.0
Kyrgyz Rep.	SBA	--	--	100	100	0.0

Source: MONA database.

1/ "Other" means that the action was only completed to a certain extent.

2/ See Appendix 1 for the detailed explaination of how the SBI was constructed.

Table 4. Performance on Structural Adjustment under Fund
Programs: Structural Benchmarks Index

	Average Structural Benchmark Index 1/
Lithuania	9.5
Croatia	9.3
Moldova	8.2
Uzbekistan	7.9
Georgia	7.8
Azerbajan	7.8
Ukraine	7.6
Kazahstan	7.4
Macedonia	7.3
Albania	7.0
Hungary	6.8
Armenia	6.5
Russia	6.1
Poland	5.3
Latvia	5.0
Romania	4.8
Kyrgyz Rep.	3.9
Bulgaria	2.5

Source: MONA database.
1/ See definition and full data in table 2.

IV   Program Implementation and Performance Criteria

The second hypothesis to be tested deals with the issue of whether transition countries which successfully complied with performance criteria recovered faster than those with a poor record of compliance. This hypothesis was tested by using an Index of Fund Program Implementation (*IFI*) that measures the extent of compliance with performance criteria (PC) for each program in each transition country since 1993. This index takes a value of 0 if no PC are met–even after modification–, and a value of 100 if all performance criteria are met for all test dates. Other variants receive a score between 0 and 100, with higher scores indicating a higher degree of compliance. For instance, if many PC's in a particular program are met after modification or waived, the *IFI* score may be closer to 50 (see appendix 1 for a more detailed explanation of how this indicator works).

Several caveats regarding the precision of this indicator are worth mentioning. In particular, there are many test dates for which data on compliance with performance criteria are not available. Data for those test dates were not used to calculate the *IFI* indicator, but this should not bias the results under the assumption that the lack of information occurs randomly across programs. However, information in the MONA database tends to become more scattered during test dates immediately preceding or during a program cancellation, or before the program goes off track. We try to correct for this problem partially by subtracting 10 percentage points from the *IFI* score of a country which went off track early on in at least 60 percent of its programs[17], to capture this aspect of poor implementation performance. This was done for Belarus, Uzbekistan and Ukraine.[18]

Even when abstracting from these problems, the relative values or ranking of the indicators should not be interpreted in too strict a manner; instead, it is preferable to compare ranges, given the way the index was constructed. For example, the *IFI* score for a program that was cancelled because 2 or 3 PCs were missed may be the same as that of another in which several PCs were waived or met after modification.[19]

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[17] The amount of points subtracted was loosely based on the compliance scoring units (see appendix 1 section 4).

[18] Belarus and Uzbekistan each had only one Fund program, which went off track within the first six months. In the case of Ukraine, two out of its three programs went off track.

[19] For example, Bulgaria adopted an SBA in July 1996 which went off track almost immediately, obtaining an *IFI* score of 0. At the same time, a subsequent program (the only one for which data are available) received a perfect *IFI* score. Accordingly, the average score is somewhat weak. Since then, stabilization has been successful and positive growth of 4 percent was recorded in 1998.

Table 5 summarizes the indicators, where each country's *IFI* score has been calculated as the average (unweighted) score for all its Fund programs. With the exception of Armenia and Azerbaijan, the countries with the highest *IFI* scores are the high-growth Central European countries and the Baltics. There are a few countries whose index of implementation does not completely conform to expectations regarding the extent of reforms. For example, Uzbekistan and the Russian Federation have relatively generous scores, whereas Croatia, Kazahkstan and Bulgaria have scores that are somewhat weaker than expected. Nonetheless, when grouped within the structure of a growth-region matrix (table 6)[20], a relatively strong positive relationship between average *IFI* scores and growth performance emerges, independently of the region where the country is located. Since the *IFI* includes only fairly recent data, it is quite possible that this positive relationship reflects the fact that most of the effect of 'initial conditions' has worn off[21]. Overall, this suggests that the more successfully a program is implemented, the sooner sustained growth is likely to occur.

Table 7 places countries into groups designed to capture the extent to which program implementation has improved or worsened over time. One would expect countries that consistently had a high *IFI* score or a high score early on in the transition process (in other words, during the first few programs), to have recovered sooner. This is indeed the general pattern that emerges in table 6. All the countries with high or intermediate overall scores of *IFI* (more than 90 percent) have experienced at least one year of positive growth. Macedonia and Russia, whose *IFI* score deteriorated only recently, have also resumed positive growth[22]. The relationship between the *IFI* and growth is not so straightforward for countries which got off to a bad start in terms of the *IFI* score, but later improved. For instance, Romania and Bulgaria whose earlier programs went off track, experienced a reversal of growth, while Kazahkstan and the Kyrgyz Republic, whose earlier programs also went off track experienced positive growth without having setbacks. Finally, the relationship for Belarus and Uzbekistan

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[20] In this matrix, each column represents a region and each row represents the number of years of continuous positive real GDP growth the country has experienced. Studies have shown that, in general, Central and Eastern European countries recovered faster and sooner than the Baltics, which in turn recovered faster than the CIS countries. Research continues on how much of this was due to initial conditions, speedy implementation of reforms, or proximity to Western Europe.

[21] For an early analysis of the effects of initial conditions on growth in transition economies, see De Melo et al. (1997). Initial conditions are defined as a series of variables measuring the extent of macroeconomic distortions before transition and the degree of overindustrialization.

[22] However, by end-1998 the growth prospects for Russia had considerably worsened, after barely growing during 1997.

Table 5. Average Index of Program Implementation *(IFI)*
for Transition Economies, 1993-1997 1/

(Non-weighted index; countries ranked by *IFI*)

Country name	*IFI*
Estonia	100.0
Hungary	98.1
Poland	96.4
Czech Republic	96.0
Georgia	94.6
Armenia	94.4
Azerbaijan	93.4
Latvia	93.1
Lithuania	92.6
Albania	90.9
Moldova	89.5
Russian Federation	88.5
Macedonia (FYR)	83.5
Croatia	80.0
Kyrgyz Republic	78.0
Romania	76.7
Kazakhstan	75.4
Uzbekistan 1/	70.6
Ukraine 1/	69.1
Belarus 1/	62.2
Bulgaria	50.0

Source: MONA database; and staff estimates

1/ Measures percentage of performance criteria met (100 equals
all performance criteria met). *IFI*s have been adjusted by
discounting 10 points in the case of countries with programs
that went consistently off track.

Table 6. Index of Program Implementation, 1993-97 1/
(By region and growth performance)

	Central Europe	Baltics	Southeast Europe	CIS
Sustained growth (have grown for >3 years)	Croatia (80%) Czech Rep.(96%) Hungary (98.1%) Poland (96.4%) Slovak Rep.(NA) 2/ Slovenia (NP) 3/ *Average (92.6%)*	Estonia (100%) Latvia (93.1%) Lithuania (92.6%) *Average (95.2%)*		Armenia (94.4%) Georgia (94.6%) *Average (94.5%)*
Growth for 1 or 2 years			Macedonia (83.5%)	Azerbajan (93.4%) Belarus (62.2%) Kazakhstan (75.4%) Kyrgyz Rep.(78%) Moldova (89.5%) Russia (88.5%) Tajikistan (NA) 2/ Uzbekistan (70.6%) *Average (79.7%)*
Growth earlier, but reversed in 1996 and/or 1997			Albania (90.9%) Bulgaria (50%) Romania (76.7%) *Average (72.5%)*	
No growth				Turkmenistan (NP) 3/ Ukraine (69.1%) *Average (69.1%)*

1/ Index ranges from 0 to 100 percent, where 100 percent implies that the country had complied with all
performance criteria under all Fund programs without modifications or waivers (see explanation in text box 1)
2/ No information available.
3/ No program in place as of end-1997.

Table 7.   Performance of Index of Program Implementation (*IFI*) for IMF Programs 1/

Countries with consistently high values of *IFI* (*IFI* greater than 95 percent on average)	Estonia Hungary Poland Czech Republic
Countries with relatively high values of *IFI* (*IFI* between 90 and 95 percent on average)	Georgia Armenia Azerbaijan Latvia Lithuania Albania
Countries with moderate to low values of *IFI* (*IFI* less than 90 percent on average)	Moldova Kazakhstan 3/ Croatia
Countries with deterioration over time 2/	Russian Federation Macedonia
Countries with substantial improvement over time 2/	Kyrgyz Republic 4/ Romania 4/ Bulgaria 4/
Countries which had subsequent (or sole) program go off track	Uzbekistan Belarus Ukraine 5/

Sources: MONA Database; and Fund staff estimates.

1/ Countries excluded from sample are: Slovak Republic and Tajikistan (for which data were not available), and Slovenia and Turkmenistan (which have not had Fund programs).
2/ Countries with change in *IFI* of more than 15 percentage points.
3/ Kazakhstan had three programs. Second program went off track.
4/ Improved during latest programs. Had earlier programs gone off track.
5/ *IFI* substantially improved during second program but worsened during third program.

Table 8. Countries in Transition: Use of Fund
Resources, 1990-98

Country	Cumulative Purchase as % of quota
A. Countries which had no programs going "off track" (Ranked by size of cummulative purchase as % of quota)	
Slovenia	-
Turkmenistan	-
Czech Republic	11.9
Slovak Republic	12.5
Croatia	16.0
Tajikistan	25.0
Macedonia (FYR)	81.6
Armenia	95.0
Latvia	100.0
Estonia	115.0
Azerbaijan	119.0
Georgia	120.0
Poland	128.6
Moldova	135.2
Hungary	136.5
Albania	140.5
Lithuania	197.5
Russian Federation	213.9
B. Countries which had programs going "off track" at least once	
Belarus	17.8
Bulgaria	225.5
Kazakhstan	105.0
Kyrgyz Republic	154.7
Romania	139.3
Ukraine	132.2
Uzbekistan	33.1

Sources: MONA; IFS Transactions with the Fund.

is the opposite of what would be expected, as these two countries experienced high growth despite consistently low *IFI* scores[23].

This evidence partially supports the hypothesis that the more quickly a transition country successfully graduates from a Fund program, the sooner sustainable growth is likely to occur. However, good performance in a Fund program seems to be a necessary but not a sufficient condition for high growth, as demonstrated by Belarus and Uzbekistan. Nonetheless, it is too early to tell whether the growth performance of these particular countries is sustainable[24]. At the other end of the spectrum, there are several countries for which the index of implementation does not adequately reflect performance under Fund programs; these countries have 'graduated' quickly or have required few or no Fund resources. In particular, table 8 shows that Croatia, the Czech Republic and the Slovak Republic have drawn resources equivalent to only a small part of their quotas since they became Fund members, while Slovenia has not used Fund resources at all.

The above relationship between the Index of Implementation (*IFI*) and growth does not by itself imply causation from good compliance to growth; it is possible that countries which have grown quickly may have found it easier to implement Fund programs successfully. Nonetheless, the literature on growth in transition economies has shown that countries that implement reforms early--whether with or without Fund programs--have also experienced a strong resumption of growth. To examine the issue of causation, we analyze whether the Index of Fund Program Implementation (*IFI*), besides measuring compliance with IMF programs, may also be measuring the extent of reform and adjustment of transition economies. In this connection, the European Bank for Reconstruction and Development has constructed a well-known set of transition indicators[25]. Based on these indicators, Havrylyshyn, Izvorski and Van Rooden (1998) constructed the overall index of reform (*RI*), as representative of the degree of liberalization and structural reform conducted by transition economies (see appendix 1). The index consists of a normalized weighted average of all transition indicators, with equal weights of 2/3 assigned to the EBRD indicators of price and foreign trade regime liberalization, and 1/3

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[23] See Taube and Zettelmeyer (1998) for the case of Uzbekistan, and Havrylyshyn et al. (1999, forthcoming) for explanations of why these two countries have experienced positive growth despite lagging behind in reforms.

[24] See Havrylyshyn et al. (1999, forthcoming).

[25] These indicators measure on a scale from 1 to 4 the progress achieved in areas such as price liberalization, trade and foreign exchange system, small and large scale privatization, governance and restructuring, banking reform and interest rate liberalization and the securities market. The indicators are available every year since 1994 and are calculated for all transition countries.

to remaining indicators (including those on privatization and banking reform)[26]. The *RI*, as well as a variable capturing the degree of inflation stabilization, turned out to be highly and consistently significant when included in regressions with growth as a dependant variable (see equation 1 in table 9)[27]. How well does the *IFI* perform in the econometric results compared to the reform index variable (*RI*)?

To test whether the *IFI* has explanatory value and how it compares to the *RI* in predicting growth, we performed two regressions. The first panel regression uses the *IFI*, together with the log of inflation (*LNP*) and *RI* as independent variables; while the second panel regression only includes the *IFI* and the log of inflation (*LNP*) as independent variables. The results show that including the *IFI* indicator reduces the fit of the equation ($R^2 = 0.67$), and the coefficient on the *IFI* variable, although positive, is not significant (table 9, equations 1 and 2). At the same time, equation 3 shows that after excluding the reform indicator (*RI*), the coefficient on *IFI* becomes high and positive, being significant at the 5 percent level. [28]This suggests that (i) the variables *RI* and *IFI* are highly correlated, either because they are capturing the same effect (the extent of adjustment and reforms by transition countries), or because they are related to a third, unobserved variable, such as the willingness of the authorities to push ahead on reform; and (ii) countries that have been able to stabilize prices and comply with Fund programs have generally been able to improve their growth performance. This is consistent with findings from the economic literature on growth in

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[26]Havrylyshyn, Izvorski and Van Rooden (1998) employed a methodology similar to that of De Melo et al. (1996) who constructed a so-called 'liberalization index' using EBRD transition indicators. De Melo et al. divided indicators into three major areas: (i) price liberalization, (ii) foreign trade liberalization, and (iii) privatization and banking reform, which they found crucial for achieving growth.

[27] These regressions are taken from a study by Havrylyshyn, Izvorski and Van Rooden (1998), in which panel regressions were conducted to examine various determinants of growth in transition economies. The study found that between 1990 and 1993, the relationship between reform and growth has a U-shape, but that after 1993 it becomes positive. The authors argue that this may be due to the initial 'destructive' effects of price liberalization. Once the adverse effects of initial conditions 'wear off', reforms begin to have a positive, 'constructive' effect for the region as a whole.

[28] A fixed-effect panel regression model with these equations was also run with country-specific constants. Although the goodness of fit increased, it was difficult to give an objective interpretation of the factors explaining the variation in economic performance across countries. For this reason, and noticing that the statistical significance of the coefficients generally remained intact, the regressions without constants were preferred. Tests for stability of the equations for the period 1993 to 1997 yielded good results. See Havrylyshyn, Izvorski and van Rooden (1998) for a more detailed discussion of the econometric tests.

transition economies. Thus, we are able to conclude that countries which successfully implemented Fund programs (as measured by compliance with performance criteria) are also more likely to experience growth.

Table 9. Regression Analysis Using the Index of an Implementation *(IFI)*

	Panel Data Sample: 1994–97 Dependent Variable is GDP Growth		
	(1) 1/	(2)	(3)
LNP	-2.44* (-16.05)	-2.43* (-9.84)	-2.59* (-10.98)
RI	14.11* (21.12)	9.15 (2.20)	
IFI		0.04 (1.00)	0.11* (12.36)
Weighted R² Adj.R² n Standard error	0.82 0.81 84 6.41	0.68 0.67 84 6.34	0.64 0.64 84 6.347
(t-statistics in parentheses). * Indicates significance at the 5 percent level 1/ From table 4, Havrylyshyn, Izvorski and van Rooden (1998).			

V. Conclusions

This study is an initial attempt to look at the association between Fund program implementation and economic growth in transition economies. The paper uses the fairly extensive MONA database to construct quantitative indicators of performance under Fund programs for transition economies. Unfortunately, we do not find evidence that compliance with structural benchmarks as measured by the structural benchmark index *(SBI)* has an effect on growth. This result may be due to factors such as data, difficulties in comparing programs that differ in design, and the short time horizon over which data are available (which does not allow us to examine the impact of compliance with structural benchmarks on long run growth).

We do, however, find evidence that countries which implemented programs early on, and completed them successfully as measured by the *IFI*, tended to have the best growth performance. The high correlation between *IFI* and an index of reform suggests that these

variables are related to a third, unobserved variable such as the willingness of the authorities to push ahead on reform.

This result does not necessarily imply that all countries that experienced strong growth implemented programs successfully. In other words, the implication only goes one way. Moreover, it *does not* mean either that successful implementation in and of itself causes good performance. Rather, successful implementation seems to be related to other elements, which taken together lead to a resumption of growth. Figuring out what these elements are is difficult, and requires further research. One possibility is that countries which have the will to reform may find it institutionally convenient to have a Fund program in place as a way of reinforcing their intentions and signaling to the outside world that they are serious. If the authorities have ownership of their program, the notion that the Fund could be working in opposition to their wishes disappears, and implementation is more likely to be successful. At this stage we can only speculate on these elements. Our methodology does not allow us to distinguish between two situations: (i) a country which was already consistently applying good policies, and uses a Fund program to legitimize its reforms (perhaps in order to improve its reputation and credit rating in international markets); and (ii) a country which requires using the Fund's expertise and direction in order to execute a successful economic program.

In addition, the relationship we find between program implementation and growth may well reflect the result—discussed extensively in the literature on growth in transition—that liberalization and stabilization reforms in general lead to a speedy resumption of growth in transition economies. Although other studies that have examined this association for non-transition economies had inconclusive results, the explanation may be that the type of reforms supported by Fund programs have a much greater 'payoff'--in terms of early resumption of growth--in transition countries; whereas in non-transition economies the traditional long-run growth determinants (such as private physical investment and investment in human capital) could be the most important factors. Future research could consider whether this association still holds in the coming years, as more and better data should allow us to establish a more clear-cut relationship between structural adjustment conditionality in Fund programs and growth.

Appendix 1: Data and Methodology

1. The Database for Monitoring Fund Arrangements (MONA)

MONA provides information on key aspects of Fund programs such as the amount of financial support, the dates of scheduled and actual drawings, conditions for these drawings (prior actions, structural benchmarks and performance criteria), their test dates, and the status of their implementation. MONA contains information on all Fund-supported programs under Stand-By, EFF, SAF and ESAF arrangements that have been approved since January 1, 1993. The MONA database is updated using information from desk economists upon agreement on a program or completion of a review. This paper uses MONA as the main source of information in constructing the *SBI* and the *IFI*.

2. The Structural Benchmark Index (SBI)

The structural benchmark index *(SBI)* is calculated for each country and each program as follows:

$$ SBI = \frac{\sum_{i=1}^{n} sb_i}{n} $$

where *n* is the number of structural benchmarks, and *sb_i* refers to the result value for structural benchmark *i* and takes values determined by implementation as follows:

> Done = 10
> Done to certain extent or with insignificant delay = 5
> Insufficient information about outcome = 5[29]
> Not done = 0

The value of the *SBI* should equal 10 when all structural benchmarks are implemented and 0 when none of the structural benchmarks is implemented.

3.   Caveats regarding the Interpretation of the SBI

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[29] Provided the gaps in the data are random, assigning the score 5 to cases when information is lacking should not create a systematic bias in the SBI. Another equally valid option would be to exclude such cases from the observation sample used in calculating the SBI.

The following caveats need to be considered when interpreting the *SBI* results presented in tables 3 and 4.

(i) The sample may be truncated, since countries which have successfully stabilized their economies but have yet to implement structural reforms may depend much less on Fund resources, as discussed in section IV (these countries are not included in the sample).

(ii) It is difficult to design a structural implementation indicator which is readily comparable across countries (since actions differ qualitatively). Moreover, EFF or ESAF programs tend to have more conditions than SBA programs; thus, completing a great percentage of actions under the former programs is more of a challenge than completing them under a SBA program.

(iii) The information in the MONA database used for calculating the *SBI* is incomplete and/or ambiguous in certain instances: not all structural benchmarks are well recorded and implementation of certain actions is not always carefully traced and reflected in the database. In such cases, the category 'Other' is used in table 3. This may explain why countries such as Bulgaria, Poland and Latvia received a low *SBI* score.

(iv) MONA contains data beginning in 1993. By then countries which have experienced sustained growth--such as Czech Republic and Hungary--had had programs with the Fund for several years.

4.   The Index of Fund Program Implementation *(IFI)*

The *IFI* is constructed using information from MONA. It is defined for each country and each program (sum for all test dates). If there are *n* performance criteria in each test date, and *T* test dates in each program, the index of implementation (*IFI*) is calculated as follows:

$$II = \frac{\sum_{t=1}^{T}\sum_{i=1}^{n} pc_{it}}{10Tn}$$

where pc_{it} refers to the result value for performance criteria *i* in test date *t* and takes values determined by compliance as follows:

> Met = 10
> Waived = 5
> Met after modification = 5
> Waived after modification = 3
> Not met after modification = 0
> Not Met = 0

Note that *IFI* takes a value of 0 if all PC at all test dates are not met--or not met after modification. Subtracting 10 points from Belarus and Uzbekistan was consistent with the scoring units. Moreover, appendix table 2 shows that the ordering according to the *IFI* and the more well-known reform index *RI* shows quite similar rankings for all countries. This would

reinforce the notion that the units chosen for these two countries did not significantly affect the ordering that would be expected and thus the robustness of the econometric results.

5.   The Structural Reform Index (RI)

The index was constructed for 1994-97 using the transition indicators of the EBRD Transition Reports, as follows:

$$RI = (LIP + LEX + LEN)/3$$

where

LIP stands for the EBRD price liberalization indicator, normalized between 0 and 1;
LEX stands for the EBRD price and foreign exchange system indicator, normalized between 0 and 1;
LEN is the average of several EBRD indicators, including the indicators of small-scale privatization, large-scale privatization, governance and restructuring, banking reforms and interest rate liberalization, and the securities market. LEN is normalized between 0 and 1.

Appendix table 1. Index of Implementation *(IFI)* of IMF Programs for Transition Economies 1/

Country Name	Arrangement Type	Approval Date	Program Implementation data 2/	*IFI*
Albania	ESAF	14-Jul-93	P2R1	90.9
Armenia	SBA	28-Jun-95	P1OC	93.3
Armenia	ESAF	14-Feb-96	P2	95.5
Azerbaijan	SBA	17-Nov-95	P1R3	93.5
Azerbaijan	ESAF	20-Dec-96	P2	90.7
Azerbaijan	EFF	20-Dec-96	P1R2	96.2
Belarus	SBA	12-Sep-95	P1-off track	...
Bulgaria	SBA	11-Apr-94	P1	...
Bulgaria	SBA	19-Jul-96	P1OC-off track	0.0
Bulgaria	SBA	11-Apr-97	P1	100.0
Croatia	SBA	14-Oct-94	P1R1	80.0
Croatia	EFF	12-Mar-97	P1	...
Czech Republic	SBA	17-Mar-93	P1OC	96.0
Estonia	SBA	27-Oct-93	P1OC	100.0
Estonia	SBA	11-Apr-95	P1R1	100.0
Estonia	SBA	29-Jul-96	P1	...
Georgia	SBA	28-Jun-95	P1R1	100.0
Georgia	ESAF	28-Feb-96	P2R1	89.1
Hungary	SBA	15-Sep-93	P1-disagreement	...
Hungary	SBA	15-Mar-96	P1R2	98.1
Kazakhstan	SBA	26-Jan-94	P1OC-off track	52.0
Kazakhstan	SBA	05-Jun-95	P1OC	94.8
Kazakhstan	EFF	17-Jul-96	P1R2	79.3
Kyrgyz Republic	SBA	12-May-93	P1OC-off track	70.0
Kyrgyz Republic	ESAF	20-Jul-94	P3R1	86.0
Latvia	SBA	15-Dec-93	P1OC	85.7
Latvia	SBA	21-Apr-95	P1	...
Latvia	SBA	24-May-96	P1R2	98.7
Latvia	SBA	10-Oct-97	P1R1	95.0
Lithuania	SBA	22-Oct-93	P1OC	90.0
Lithuania	EFF	24-Oct-94	P1R5	95.2
Macedonia (FYR)	SBA	05-May-95	P1R1	93.3
Macedonia (FYR)	ESAF	11-Apr-97	P1R1	73.6
Moldova	SBA	17-Dec-93	P1R2	86.4
Moldova	SBA	22-Mar-95	P1OC	100.0
Moldova	EFF	20-May-96	P1R2	82.1
Poland	SBA	08-Mar-93	P1R2	92.9
Poland	SBA	05-Aug-94	P1R1	100.0
Romania	SBA	11-May-94	P1OC-off track	59.0
Romania	SBA	22-Apr-97	P1R1	94.4
Russian Federation	SBA	11-Apr-95	P1R2	100.0
Russian Federation	EFF	26-Mar-96	P1R5	77.1
Ukraine	SBA	07-Apr-95	P1OC-off track	75.9
Ukraine	SBA	10-May-96	P1R3	99.0
Ukraine	SBA	25-Aug-97	P1R1-off track	62.5
Uzbekistan	SBA	18-Dec-95	P1R2-off track	80.6

Source: Mona Database; and PDR calculations.

1/ Measures percent of performance criteria met (equals 100 when all performance criteria are met).

2/ Stage of program up to which information on program implementation is available.

Legend: Pi = i th year in which program is in place; Rj = j th review in year i; OC=program outcome.

**Appendix Table 2: Rannking of Countries According to the Reform Index *(RI)* and
Index of Fund Program Implementation *(IFI)*
(Average value, 1993-1997)**

Country	Value of *RI*	Country	Value of *IFI*
Czech Republic	0.85	Estonia	100.0
Hungary	0.83	Hungary	98.1
Poland	0.81	Poland	96.4
Estonia	0.80	Czech Republic	96.0
Croatia	0.76	Georgia	94.6
Lithuania	0.75	Armenia	94.4
Latvia	0.71	Azerbaijan	93.4
Macedonia	0.69	Latvia	93.1
Kyrgyz Republic	0.68	Lithuania	92.6
Russian Federation	0.67	Albania	90.9
Albania	0.64	Moldova	89.5
Romania	0.64	Russian Federation	88.5
Bulgaria	0.63	Macedonia (FYR)	83.5
Moldova	0.59	Croatia	80.0
Armenia	0.53	Kyrgyz Republic	78.0
Kazahkstan	0.51	Romania	76.7
Uzbekistan	0.50	Kazakhstan	75.4
Georgia	0.49	Uzbekistan	70.6
Ukraine	0.43	Ukraine	69.1
Belarus	0.41	Belarus	62.2
Azerbaijan	0.40	Bulgaria	50.0

Source: MONA, EBRD (various issues) and De Melo et. al.(1996)

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