IMF Staff Papers
Vol. 48, Special Issue

The Gains from Privatization in Transition Economies: Is "Change of Ownership" Enough?

CLIFFORD ZINNES, YAIR EILAT, and JEFFREY SACHS*

This paper seeks to clarify what factors contributed to the macroeconomic gains and losses from privatization in transition economies over the past decade. In contrast to the original "Washington Consensus," which had a tendency to equate change-of-title with privatization, we find that economic performance gains come only from "deep" privatization, that is, when change-of-title reforms occur once key institutional and "agency"-related reforms have exceeded certain threshold levels. We also find that as a result of different initial conditions the economic performance responses of countries to the same *policies are different.* [JEL: G38, L33, O11, P31, and P37]

This paper is the third in a series[1] that evaluates the first decade of economic reform in transition economies. Based on indicators developed in Sachs, Zinnes, and Eilat (2000a), the present paper contributes to the already large

*Clifford Zinnes is Director of Research Coordination at the IRIS Center, Department of Economics, University of Maryland, College Park. Yair Eilat is a PhD. candidate in the Department of Economics at Harvard University. Jeffrey Sachs is the director of the Center for International Development at the Kennedy School of Government and the Galen L. Stone Professor of International Trade at Harvard University. This research was funded under USAID Task Order PCE-Q–00–95–00016–00 and grants from the Harvard Institute for International Development and the Center for International Development, both at Harvard University. This paper was submitted to *IMF Staff Papers* in November 2000. We would like to thank Luis López-Calva, Lawrence Camp, Oleh Havrylyshyn, Orest Koropecky, Charles Mann, and Janos Szyrmer, and express appreciation for the tireless research assistance of Georgi Kadiev, Hongyu Liu, Chris Saccardi, and Irina Tratch.

[1]The other two are Sachs, Zinnes, and Eilat (2000a), which develops an initial conditions typology of countries in transition and creates indicators for gauging progress in reforms and performance over the transition period, and Zinnes, Eilat, and Sachs (2001), which benchmarks competitiveness of transition countries in the years 1997–98.

literature on transition by seeking to clarify what factors contributed, at the macro level, to the gains from privatization in transition economies over the past decade. In doing so, our goal is to point the way to a revised paradigm for privatization policy in transition economies.

We first summarize the paradigm debate and show how the issues of privatization play a central role. We find, as reflected in the original "Washington Consensus," that there has been a tendency to equate change-of-title with privatization, with the consequence of change-of-title becoming *the* policy imperative. Based on a review of the literature on the gains from privatization, however, we identify the importance of additional factors. These include institutions to address agency issues, hardening of budget constraints, market competition, and depolitization of firm objectives, as well as developing institutions and a regulatory framework to support them. In this paper we examine the empirical evidence across 24 countries to determine whether change-of-title alone has been sufficient to achieve economic performance gains or whether these other prerequisites found in the literature (which we refer to as "OBCA" reforms, see definition in Section II) are important.

We then introduce two key elements of our approach. These are the importance of initial conditions for economic performance and the significance of the transformational cycle of transition. For our econometric analysis below, we then introduce several indicators, which we developed in Sachs, Zinnes, and Eilat (2000a), to capture the degree of change-of-title, agency-related issues, the progress in other reforms, and alternative measures of economic performance.

We then proceed to examine econometrically the central concerns of the paper. We first show that privatization involving change-of-title alone is not enough to generate economic performance improvements. This result is robust to several alternative measures of economic performance that we utilize, including GDP recovery, foreign direct investment, and exports. We then introduce our OBCA indicator to capture the reforms directed at prudential regulation, corporate governance, hardening of enterprise budget constraints, and management objectives. We show that, while this measure on its own contributes to economic performance improvements, the real gains to privatization come from complementing (combining) change-of-title reforms with OBCA reforms. As Pistor (1999) underscores, it is only when the legal and regulatory institutions supporting ownership are in place and functioning that owners can exercise their prerogatives conferred by a change-of-title to pressure firms to improve their productivity and profitability. Only then will the economic performance of the country improve.

We can quantify this result in the following way: the higher the level of OBCA, the more positive the economic performance impact from an increase in change-of-title privatization. In particular, where change-of-title has a positive impact, the impact will be even more positive the higher is the level of OBCA; where change-of-title has a negative impact, the impact will be *less* negative the higher is the level of OBCA. A corollary to this result is that there is a threshold level of OBCA for change-of-title privatization to have a *positive* economic performance response. Thus, if complementary OBCA reforms are not sufficiently developed, change-of-title privatization may have a *negative* performance impact. An explanation for the cases of worsening overall economic performance from

change-of-title privatization is that transfer of ownership without the institutional structures in place for owners to exercise their authority simply replaces poor government control of management with weak or no private-sector control. The paper indicates the countries and years that did not exceed these thresholds. This result also suggests that one size (policy) does *not* fit all; privatization policies must be tailored to the level of complementary reforms in place.

We close by cautioning that our results are hardly definitive. While we have made every effort to use the latest and best data—including a 25-country survey[2] especially conducted for this purpose—the amount of structural change occurring is enormous, the number of observations too few, and the data still too noisy to claim unconditional success. In addition, we believe that research at the macro level can be seen only as a supplement, not a substitute, to research at the firm level. Nevertheless, given that the results are in line with those predicted by agency theory and given that we have utilized a number of alternative economic performance measures and a variety of econometric specifications, we feel that future investigations will broadly support our central conclusions.

I. A Paradigm in Flux

It has not been unusual historically, during a time of major economic crisis, for policymakers to base key and often radical actions in a region upon a set of tenets. Sometimes the exact nature and underlying assumptions of the tenets are not even clear until well after the chaotic events. The twentieth century had its share of examples, including Lenin's "New Economic Program," Roosevelt's "New Deal," and the Marshall Plan for Europe.

It is fair to say that the first decade of transition to a market economy also has been based on a series of tenets or, as we shall refer to them here, a "paradigm." So well known did this paradigm become that it is often referred to as the "Washington Consensus" since it became the mantra of the donor community centered around Washington, D.C. Since a description and analysis of this consensus may be found elsewhere (Williamson, 1990, 1993, 1997; Kolodko 1998; Aziz and Wescott, 1997), we only summarily mention that its key tenets included fast privatization, immediate macrostabilization, quick liberalization and sustaining of financial discipline, and opening of the economy to foreign trade and investment.

In the realm of privatization, we may identify a further set of assumptions underlying the paradigm. First and foremost was the idea that the linchpin of transition was to transfer ownership of the firms in the economic sectors to private hands—and to do so as fast as possible. Once in private hands, a series of self-reinforcing, virtuous, though self-interested, forces would emerge to demand the creation of all the institutions required for private ownership, thereby locking in the market economy. Moreover, the new shareholder class would demand corpo-

[2]While this survey (see Sachs, Zinnes, and Eilat, 2000a) includes Albania, we have dropped it from the analysis in the present paper owing to lack of data for a number of key variables.

rate governance regulation to insure their ability to exert oversight on enterprise managers.

These tenets led to a debate of greater and greater vehemence over the past decade (Balcerowicz, 1993; Nellis, 1999; Dabrowski, 1996; Stiglitz, 1998), even while the obsessions with macro stabilization, privatization, and structural adjustment have given way to a fourth ingredient: systemic transformation (Åslund,1994; Kornai, 1994; Sachs, 1996).

Now that a decade has passed, enough data has become available to examine these concerns. In particular, this paper asks whether privatization has led to better economic performance, and what are the preconditions necessary for privatization to generate gains in economic performance. A common though implicit thread underlying these questions is the degree to which supporting institutions are necessary in order to achieve the full gains from privatization (Pistor, 2001). Such institutions might include, inter alia, those responsible for shareholder protection, banking adequacy, creditor protection and bankruptcy courts, capital market supervision, and commercial code enforcement. In the present paper, we focus on the supporting role institutions have in bringing out the full potential of privatization. We argue that policymakers should pursue "deep privatization"—that is, both change-of-title reform and a strengthening of supporting institutions.

II. The Theory of the Gains from Privatization

With excellent surveys already available (e.g., Havrylyshyn and McGettigan, 1998; Sheshinski and López-Calva, 1999), we only highlight here those aspects pertinent to the motivation of our theoretical framework. We start by discussing the relevant theoretical literature and then move on to review the empirical evidence.

A principal reason for privatization has been the existence of information asymmetries and incomplete contracting problems, leading to severe incentive problems and therefore serious efficiency losses from public ownership. This incentive-efficiency link has been called the "agency" problem and, within the context of privatization, has two threads. The managerial view (Vickers and Yarrow, 1990) concerns the inability of the state to monitor enterprise managers. This inability stems from the lack of a market to price and instill discipline on firms through the threat of takeover or bankruptcy. The political view (Shapiro and Willig, 1990; Shleifer and Vishny, 1994, 1996) concerns the temptation of political interference to distort manager objectives away from profit maximization and toward others such as employment maximization. Moreover, this interference can also result in the perception among firm managers of a "soft" budget constraint (Kornai, 1986), in which they expect ex post subsidies or writeoffs to cover enterprise losses due to production inefficiencies.

What the agency view points out is that the gains from change of ownership (referred to below as change-of-title) will likely depend on how a country's legal, regulatory, and institutional environment addresses agency-related issues. For the purposes of the empirical work below, we classify these issues into three types. The first relates to the firm's objective (O) function and how closely it reflects

profit maximization. The second relates to the hardness of the firm's budget constraint (BC). The third relates to the legal and institutional framework through which firm owners are able to monitor and control enterprise managers, the so-called principal-agent (A) problem. For simplicity we combine the letters in parentheses to name this class of issues OBCA.

On the issue of the implementation of privatization, Havrylyshyn and McGettigan (1998) identify two schools of thought. The first school of thought stresses the importance of the competitive environment and market structure over ownership (Nellis, 1999). For transition economies, the creation of a competitive environment would occur through the hardening of enterprise budget constraints rather than a rush into privatization. This was thought to occur, according to Frydman and others (1997), as a result of pressures from macroeconomic stabilization on firms to restructure or go out of business. The second school of thought stresses the need for a headlong rush into privatization, though the need to *eventually* follow up with the development of supporting institutions is sometimes noted. Both these views underscore the insights from the preceding discussion regarding the importance of the hardness of the firms' budget constraints, as well as the likely importance of establishing a multitude of market institutions.

Much of the empirical literature on the impact of privatization on economic performance was inspired by Boardman and Vining (1989) and Megginson, Nash, and Van Randenburgh (1994) whose work is in the nontransition country context. This literature is of two types: case studies of a small sample of firms (Earle, Frydman, and Rapaczynski, 1993) and cross-industry econometric studies, either country-specific (Barberis and others, 1996) or multicountry (Frydman and others, 1998; Pohl and others, 1997). Based on either firm-level surveys or data on publicly traded firms, these studies are essentially microeconomic in nature and primarily analyze the effects on labor productivity, level of employment, enterprise revenues, and sometimes even profitability. These studies find privatization to have positive effects across these measures.[3] With the exception of Claessens and Djankov (1998),[4] this literature does not examine econometrically the contribution of the legal or institutional regime to enterprise performance.

While these studies are quite revealing, they can only provide a partial picture, mainly because even the largest of them covers only seven countries. There are currently over two dozen transition economies, but none of these papers deals with both Central and Eastern Europe and countries of the former Soviet Union. Part of the reason for this is the high cost of firm survey data collection in so many countries. Even where such firm-specific data exist they are hard to analyze, since little uniformity or consensus exists regarding the way to define, classify, collect, or treat such data, especially in the case of transition.

A natural, if imperfect, alternative to complement the firm-level studies would be to consider macroeconomic econometric evidence of gains from privatization. Turning first, however, to the macroeconomic theory literature on the subject, we

[3] See Havrylyshyn and McGettigan (1998) for a summary.

[4] Controlling for institutional differences, they test several propositions of Shleifer and Vishny (1994) regarding how privatization and stabilization affect firm behavior.

find that literature is much less developed (Blanchard, 1997) than on the microeconomic side. Still the literature carries two implications for our work.

First, it suggests that gains from privatization at the level of macroeconomic performance depend on complementary policies, and not just those related to appropriate institutions, as we described above (Aziz and Wescott, 1997). While privatization means the ending of subsidies, which drain state finances, privatization also means the state will lose its share of enterprise profits unless complementary reforms create an adequate tax code and administration. The potential for efficiency gains from privatization requires price and wage liberalization in order to create a price system that reflects economic scarcity. Finally, unless privatization is accompanied by reforms to liberalize the current and capital accounts, the newly privatized domestic firms may not be able to gain access to foreign skills, markets, and financing necessary for their success.

Second, privatization may have opposite short-term and long-term economic performance impacts (Aghion and Blanchard, 1993; Roland, 1994). For example, unemployment may increase over and above what would be expected from the resource reallocation associated with enterprise restructuring suggested by the microeconomic perspective. This may occur if privatization leads to employment shedding as managers are freed from political interference and return to profit maximization as their principal objective.

A healthy macroeconomic empirical literature does exist on the determinants of transition paths (de Melo, Denizer, and Gelb, 1995; Fischer, Sahay, and Végh, 1996; Havrylyshyn, Izvorski, and van Rooden, 1998), often with real GDP growth as an explanatory variable. Sheshinski and López-Calva (1999), however, indicate that little macroeconomic econometric evidence exists on the effects of privatization. It is precisely this gap that we aim to redress in the present paper. For this purpose, we make use of the indicators created in Sachs, Zinnes, and Eilat (2000a). The indicator approach is predicated on the assumption that economic concepts can be captured—especially when data are poor or intermittent—by aggregating several imperfectly reported data series, in order to "put the law of large numbers to work."[5]

III. Data and Empirical Approach

The first element of our framework is the use of an initial conditions cluster typology. As explained in Sachs, Zinnes, and Eilat (2000a), we assign countries to groups based on similarities in variables at the start of transition. These variables represent various aspects that may be relevant for a country's prospects of transition performance.[6] The clustering exercise resulted in seven clusters of transition countries, as listed in Table 1.

[5]See Zinnes, Eilat, and Sachs (2001) for a discussion of the indicator approach.

[6]For this purpose, we used a computer program that assigns countries to clusters in a way that minimizes intracluster differences and maximizes inter-cluster differences according to a chosen list of variables. The categories of initial condition variables we used include physical geography, macroeconomics, demographics and health, trade and trade orientation, infrastructure, industrialization, wealth, human capital, market memory, physical capital, culture, and political situation.

Table 1. Summary of the Initial Conditions–Based Typology

Cluster Name (Number)*	Country Membership
EU border states (1)	Croatia, Czech Republic, Hungary, Poland, Slovakia, Slovenia
The Balkans (2)	Bulgaria, Macedonia, Romania
The Baltics (3)	Estonia, Latvia, Lithuania
Albania (4)	Albania
Western FSU (5)	Belarus, Moldova, Russia, Ukraine
Caucasus (6)	Armenia, Azerbaijan, Georgia
Central Asia (7)	Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan

*Figures 1 and 2 use these numbers to refer to the clusters.

The cluster approach, by considering groups of countries based on their initial conditions, permits a more controlled basis for comparing "successful" and "failed" policies implemented during transition. By using cluster-fixed effects we can analyze within-cluster differences and thereby assess policy effectiveness.[7] A second element of our approach is acknowledging that the important factor in the time domain is the elapsed time since transition and not calendar time. Our hypothesis, which we base on Sachs (1996) and Kornai (1994), is that each country, regardless of the actual calendar date, passed through a sequence of recessions, typically first from macrostabilization and then from restructuring. We capture these in our regressions through the use of transition year dummy variables for each year of transition.[8] We also use dummy variables to take explicit account of the effects of macrostabilization on economic performance (Sachs, 1997).

In this work we take advantage of a unique panel dataset of indicators for the period 1990–98 developed in Sachs, Zinnes, and Eilat (2000a).[9] The dataset includes a series of indicators representing the components of the depth of privatization and progress in transition. These indicators were constructed using two types of sources. We first used virtually all published data sources available at the time for which substantial country coverage existed for the transition countries. Second, we developed and administered a 100-question survey to research institutes in all 25 transition countries. The goal of the survey was to augment published sources with data sources not reported by international collection agencies.

[7]An alternative approach to control for initial conditions is to explicitly include initial condition variables in the regression. See, for example, de Melo, Denizer, and Gelb (1995), who use principal components analysis to cluster (i.e., reduce the number of) variables rather than countries.

[8]Year of beginning of transition: 1990: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia; 1991: Croatia, Macedonia, Slovenia; 1992: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Lithuania, Latvia, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

The values of these dummies are available from the authors. Our analysis shows that most of the cluster and transition year dummies are statistically significantly different from one another, providing support for their inclusion in the regressions. See Sachs, Zinnes, and Eilat (2000b) for a detailed discussion of the methodology and interpretation of results.

[9]All indicators are scaled to have a mean of zero and a variance of unity across the 25 countries and years 1990–98 of transition.

To capture the depth of privatization, we follow the theoretical framework presented above and break "depth" into two major components. The first we call change-of-title. This indicator consists of the European Bank for Reconstruction and Development (EBRD) large-scale and small-scale privatization indices, the private sector share of GDP, the percentage of state firms privatized, and the private sector share of employment. The second we call OBCA (see above) which aims to capture the firm management objectives, the hardness of its budget constraint and the quality of corporate governance, and shareholder protection regulation. The indicator consists of the share of tax arrears in GDP, the ratio of budget subsidies to average GDP over the period, the share of bad loans to total loans, the electricity tariff collection ratio, the likelihood of a government bailout of a midsized private-sector firm, the existence of bankruptcy courts, and the EBRD restructuring and legal system indices. Figures 1 and 2 present the progress in change-of-title and OBCA over the transition cycle averaged by cluster (see Table 1) as well as the scores of the different countries in 1998. The Appendix provides the "recipes" used for constructing these variables.

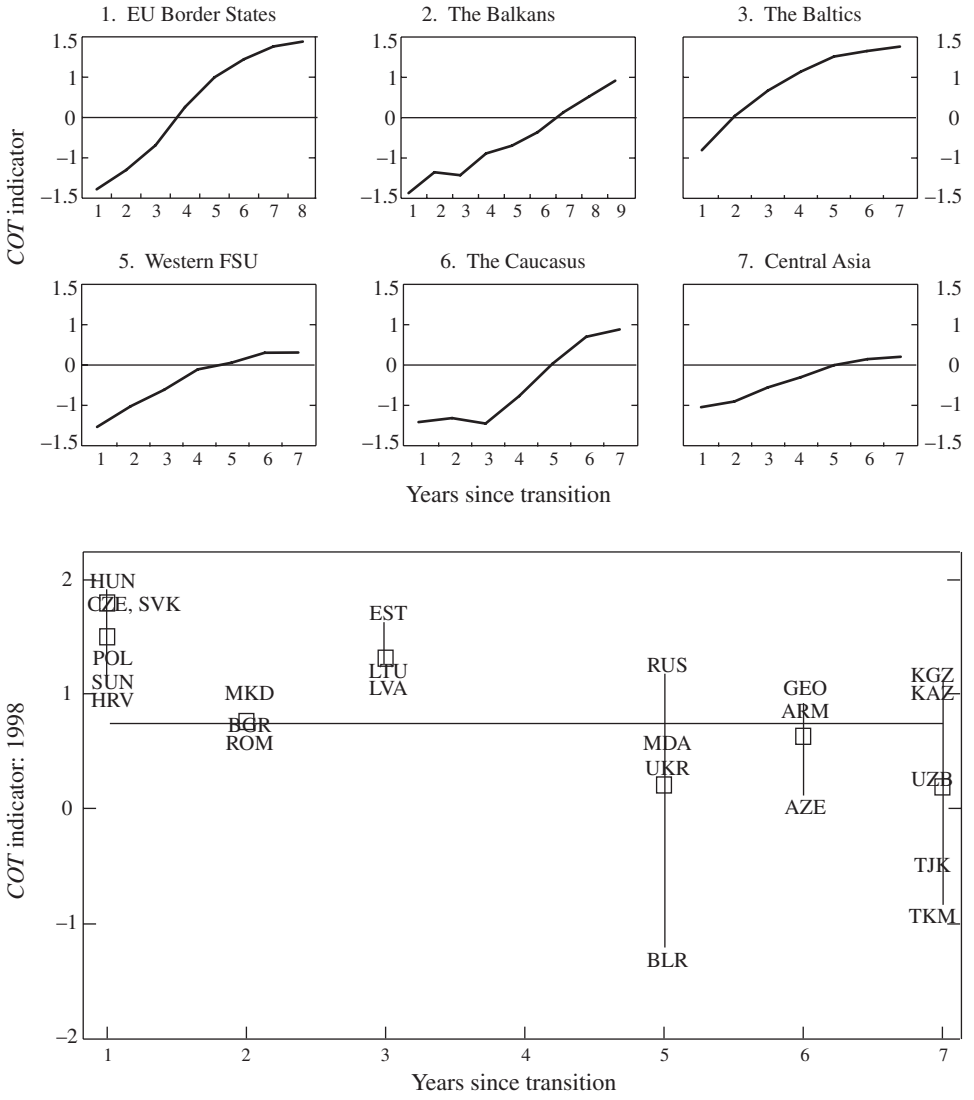
In addition to the change-of-title and OBCA indicators, we also developed an aggregate reform indicator (*REF*) of the other reforms under way. We use *REF* as a control to ensure that our privatization variables do not proxy for other reforms. REF comprises several components. The social safety net component captures several aspects of the government's attempt to soften the negative social impacts of transition. The price liberalization component comprises goods and services prices, as well as wages and the degree of competition in the price formation process. The capital markets component comprises subindicators for the stock market, securities market, and the nonbank financial institutions. The tax reform component includes improvements not just in the tax code but also in its administration. The banking sector component focuses on the degree of competition in the sector and the degree to which the sector is providing economic agents with adequate credit and services. Finally, the land reform component concentrates on measuring the degree that land markets function in a way consistent with the needs of a market economy.

For measuring economywide, macroeconomic performance, we have chosen four measures. These include real GDP per capita, foreign direct investment (FDI) per capita, FDI per unit GDP in 1989, and exports per unit GDP in 1989. We now look at these measures in more detail.

The first economic performance measure, *IGDP*, describes domestic output. Using GDP growth rates from EBRD (1999, p. 73), we construct an index of real GDP relative to 1989 (so that the value for each country is 100 in 1989). The index therefore indicates the degree of economic recovery by showing the percent of pretransition output attained in a given year. This approach facilitates the comparison of performance across countries with vastly different initial per capita figures.[10] We also test the logarithmic transformation of this variable (Log*IGDP*) as a dependent variable.

[10]This approach differs from other papers in the literature—for example, de Melo, Denizer, and Gelb (1995); Havrylyshyn, Izvorski, and van Rooden (1998); and Fischer, Sahay, and Végh (1996), who use the *annual* growth rate of real gross domestic product as a dependent variable and not growth since 1989.

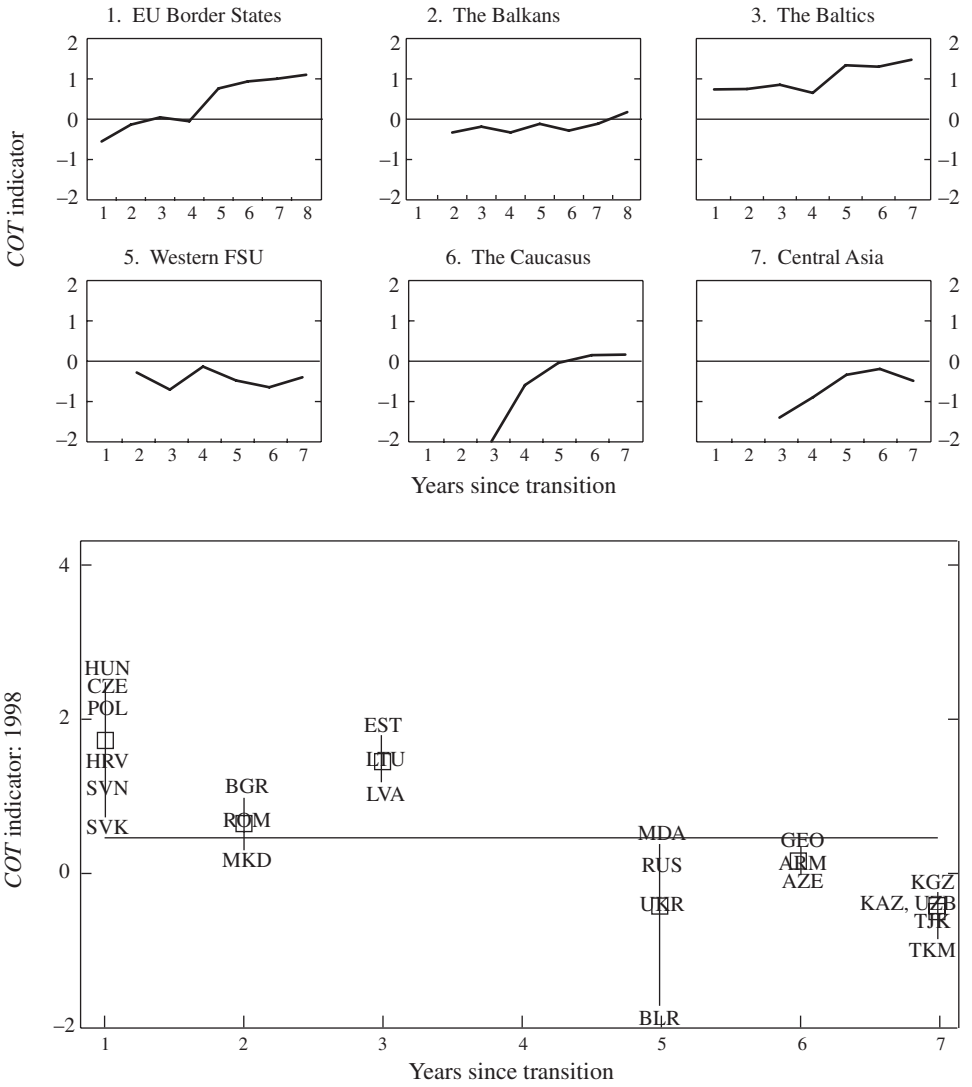
Figure 1. Inter- and Intra-Cluster Variation of *COT* Indicator of Privatization over the Transition Cycle and for 1998, Respectively



Source: Sachs, Zinnes, and Eilat (2000a).

Notes: **Upper panel:** ***Year transition began:*** 1990: Bulgaria, Czech Republic, Hungary, Poland Romania, Slovakia. 1991: Croatia, Macedonia, Slovenia. 1992: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Lithuania, Latvia, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. ***Data Exclusions:*** Macedonia was excluded from the Balkans for the figure above due to lack of data on COT. EU border is missing transition year 9 since observations for Croatia and Slovenia are missing. **Lower panel:** ***Symbols:*** Hollow square: average of the cluster for 1998. Horizontal line: average of the entire sample for 1998. ***Country codes:*** ALB—Aalbania, ARM—Armenia, AZE—Azerbaijan, BGR—Bulgaria, BLR—Belarus, CZE—Czech Republic, EST—Estonia, GEO—Georgia, HUN—Hungary, HRV—Croatia, KAZ—Kazakhstan, KGZ—Kyrgyz Republic, LAV—Latvia, LTU—Lithuania, MDA—Moldova, MKD—Macedonia, POL—Poland, ROM—Romania, RUS—Russia, SVK—Slovakia, SVN—Slovenia, TJK—Tajikistan, TKM—Turkmenistan, UKR—Ukraine, UZB—Uzbekistan. ***Cluster numbers:*** See Table 1.

Figure 2. Inter- and Intra-cluster Variation of *OBCA* (Firm Incentive) Indicator of Privatization over the Transition Cycle and for 1998, Respectively



Source: Sachs, Zinnes, and Eilat (2000a).

Notes: **Upper panel:** ***Year transition began:*** 1990: Bulgaria, Czech Republic, Hungary, Poland Romania, Slovakia. 1991: Croatia, Macedonia, Slovenia. 1992: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Lithuania, Latvia, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. ***Data Exclusions:*** EU border is missing transition year 9 since observations for Croatia and Slovenia are missing. The Balkans are missing transition years 1 and 9 since Macedonia gained independence only in its second year of transition. **Lower panel:** ***Symbols:*** Hollow square: average of the cluster for 1998. Horizontal line: average of the entire sample for 1998. ***Country codes:*** ALB—Albania, ARM—Armenia, AZE—Azerbaijan, BGR—Bulgaria, BLR—Belarus, CZE—Czech Republic, EST—Estonia, GEO—Georgia, HUN—Hungary, HRV—Croatia, KAZ—Kazakhstan, KGZ—Kyrgyz Republic, LAV—Latvia, LTU—Lithuania, MDA—Moldova, MKD—Macedonia, POL—Poland, ROM—Romania, RUS—Russia, SVK—Slovakia, SVN—Slovenia, TJK—Tajikistan, TKM—Turkmenistan, UKR—Ukraine, UZB—Uzbekistan. ***Cluster numbers:*** See Table 1.

The second economic performance measure is an indicator of foreign revealed preference on the quality of a country's environment for economic activity. Here we construct two related measures. The first, *FDIpop*, is constructed by dividing foreign direct investment by total population, both from EBRD (1999). The second, *FDIrel*, has the same numerator but uses pretransition GDP in 1989 at purchasing power parity (from de Melo, Denizer, and Gelb, 1995) as the denominator. We deflate by population and by 1989 GDP to provide two perspectives on what might be comparable indicators of foreign investor activity across countries. In the *FDIpop* regressions we include *INCpc89* (de Melo, Denizer, and Gelb's per capita income in 1989 at purchasing power parity) as an additional explanatory variable to reflect the fact that higher income countries generally attract more foreign direct investment.

The last economic performance measure, *EXPrel*, refers to exports (as reported by the balance of payments statistics) and proxies a country's international competitiveness. This has been deflated by GDP in 1989 (again, de Melo, Denizer, and Gelb, 1995). In these regressions we use Log*POP* (log of population) to capture the fact that small countries are more export intensive than big countries.

While each of these performance measures is a highly imperfect measure of a country's true economic performance, our hope is that taken together, they provide a more realistic window into what is actually happening in these countries.

IV. Is "Change of Title" Enough?

Perhaps the most straightforward test of the Washington Consensus—that change-of-title per se yields economic performance gains—is to place change-of-title (COT) in regressions with performance measures as dependent variables. Consider the equation:

$$\begin{aligned} PERF_{i,t} &= g_1\, COT_{i,t} + g_2\, COT_{i,t-1} + g_3\, REF_{i,t} \\ &\quad + \sum_k [g_{4k} CLUST(k)_i] + \sum_j [g_{5j} TrYEAR(j)_{i,t}] \\ &\quad + \sum_m [g_{6m} STAB(m)_{i,t}\,] + g_z Z_{i,t} + \gamma_{i,t}\,, \end{aligned} \tag{1}$$

where the i and t subscripts are for country and year, respectively, the g parameters are to be estimated, and $\gamma_{i,t}$ is the regression's error term. *PERF* stands for our five performance measures described in Section III, namely, *IGDP*, Log*IGDP*, *FDIpop*, *FDIrel*, and *EXPrel*. *REF* measures other reforms. The k, j, and m are summation indexes over six clusters, eight transition periods, and three macrostabilization periods, respectively. $CLUST(k)_i$ are dummy variables for each of the clusters. For example, $CLUST(k)_i$ is equal to one if country i belongs to cluster k and it is zero otherwise. These capture our beliefs about the importance of initial conditions. $TrYEAR(j)_{i,t}$ are dummy variables for years since the start of transition. For example, $TrYEAR(j)_{i,t}$ is equal to one if t is the jth year of transition for country i, and it is zero otherwise. These capture our belief that systemic trans-

formation, population expectations, learning-by-doing, and other factors cause countries to follow an adjustment process linked to the years since transition began. $STAB(m)_{i,t}$ comprises three dummy variables that capture the impact of macrostabilization. $STAB(1)_{i,t}$ is one for country i during the first two years of macrostabilization and it is zero before and after; $STAB(2)_{i,t}$ is one for years three through five after macrostabilization and zero before and after; $STAB(3)_{i,t}$ is one for the sixth year and beyond of macrostabilization and zero otherwise.[11] Z represents other variables we use as controls, as described in the previous section.

Table 2 provides estimates of the regressions for the alternative specifications implied by equation (1) for the panel of 24 countries from the start of transition through 1998. Regardless of performance measure used, the results are similar. We find that the level of reforms contributes to recovery and performance across most specifications, though this effect is somewhat muted once stabilization dummies are included in the regression.[12] The main result here, however, is a negative one: change-of-title does not seem to have a significant impact. This suggests that change-of-title alone is not enough to generate economic performance gains.[13]

V. Complementary Reforms to Deepen Privatization Gains

Given the tenor of the paradigm debate as described at the start of this paper, the results of the previous regressions may come as no surprise. The literature suggests institutions, in the broad sense, as the leading candidates for the missing elements. These include those institutions related to prudential, regulatory, and budgetary authorities. For this reason and as described in the introduction, we created our *OBCA* variable to capture the firm's management objective, corporate governance, shareholder protection, and the hardness of the firm's budget constraint.

To test the importance-of-institutions hypothesis, we add *OBCA* to equation (1) to get

$$PERF_{i,t} = f_1\ COT_{i,t} + f_2\ OBCA_{i,t} + f_3\ REF + ... + \gamma_{i,t}\ , \qquad (2)$$

where, as before, *PERF* refers to each of the five performance measures and the "..." refers to Z and the dummy variables $CLUST(k)$, $TrYear(j)$, and $STAB(m)$. The fs denote parameters to be estimated.

Table 3 provides the regression estimates for alternative specifications of equation (2). Two conclusions can be inferred from these regressions. First, regardless of the performance measure, the introduction of *OBCA* does not change the fundamental result that change-of-title has little effect on achieving privatization gains. Second, for most specifications, *OBCA* has a weak positive effect on

[11]An alternative is to use log of inflation as a proxy for macro stabilization (see Fischer, Sahay, and Végh, 1996).

[12]When we decompose the reform indicators into its components, we find that capital market development has the strongest positive effect on performance.

[13]Though not reported here, these results do not change when we replace contemporaneous *COT* by *COT* lagged for one or two years.

Table 2. Does Change-of-Title Alone Generate Gains from Privatization?

Regression	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*
Dependent Variable	*IGDP*	*IGDP*	*IGDP*	Log*IGDP*	*FDIpop*	*FDIpop*	*FDIrel*	*FDIrel*	*EXPrel*	*EXPrel*
COT	0.714	0.306	1.481	0.009	–0.016	–2.197	0.048	–0.227	–0.227	–0.235
	(0.443)	*(0.181)*	*(0.899)*	*(0.345)*	*(–0.003)*	*(–0.427)*	*(0.07)*	*(–0.339)*	*(–0.302)*	*(–0.303)*
REF	5.122**	4.917**	4.431**	0.082**	15.83**	10.91	2.104**	1.482	–0.426	–0.628
	(2.422)	*(2.253)*	*(2.04)*	*(2.489)*	*(2.243)*	*(1.107)*	*(2.248)*	*(1.1)*	*(–0.364)*	*(–0.502)*
INCpc89			0.001**		0.008***	0.007***				
			(2.*109)*		*(3.161)*	*(2.757)*				
Log*POP*									–3.033***	–3.084***
									(–4.331)	*(4.413)*
Cluster dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Transition year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Stabilization years dummies		yes				yes		yes		yes
Number of observations	179	179	179	179	178	178	171	171	166	166
Adjusted R^2	0.709	0.728	0.717	0.711	0.426	0.448	0.370	0.393	0.659	0.673

Notes: The numbers in parenthesis represent robust *t*-statistics after White correction. *, **, and *** represent 10, 5, and 1 percent significance, respectively.

COT: Change of title indicator. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). Exclusions: Macedonia: 1992–95.

REF: Indicator of progress in reforms, including tax, price/wage liberalization, social safety net, capital markets, banking. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a).

IGDP: Index of real GDP, 1989=100. Source: EBRD (1999).

Log*IGDP*: log transformation of IGDP.

FDIpop: FDI in 1995 U.S.$/population. Source: EBRD (1999).

FDIrel: FDI in 1995 U.S.$ x 1000 / purchasing power parity–adjusted income in 1989. Units: Percent. Source: EBRD (1999) and de Melo, Denizer, and Gelb (1995), IMF (1999). Exclusions: Azerbaijan all years.

EXPrel: Exports (from balance of payments) in 1995 U.S.$ / "ppp"-adjusted income in 1989. Source: WDI (1999) and de Melo, Denizer, and Gelb (1995). Exclusions: Bulgaria, Czech Republic, Hungary, Poland: 1990; Russia, Slovakia: 1992–3; Romania: 1991; Tajikistan, Turkmenistan, Uzbekistan: 1992.

INCpc89: National income per capita in 1989 at purchasing-power parity. Units: 1989 U.S.$. Source: de Melo, Denizer, and Gelb (1995). Log*POP*: Log of population. Source: EBRD (1999).

Cluster, Transition years and Stabilization years dummies: see explanation in text.

Table 3. Importance of OBCA Reforms to Economic Performance

Regression	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*
Dependent Variable	*IGDP*	*IGDP*	*IGDP*	Log*IGDP*	*FDIpop*	*FDIpop*	*FDIrel*	*FDIrel*	*EXPrel*	*EXPrel*
COT	0.314	–0.136	1.103	0.001	–1.831	–3.892	–0.206	–0.475	–0.292	–0.284
	(0.189)	*(–0.078)*	*(0.652)*	*(0.059)*	*(–0.367)*	*(–0.741)*	*(–0.297)*	*(–0.685)*	*(–0.388)*	*(–0.365)*
OBCA	1.872	1.891	1.714	0.033	7.365*	7.063*	0.982	0.94*	0.135	0.146
	(1.4)	*(1.411)*	*(1.311)*	*(1.431)*	*(1.619)*	*(1.661)*	*(1.595)*	*(1.625)*	*(0.187)*	*(0.187)*
REF	5.274**	5.361**	4.679**	0.084**	13.42	9.02	1.745*	1.235	–0.26	–0.419
	(2.399)	*(2.34)*	*(2.112)*	*(2.472)*	*(1.721)*	*(0.813)*	*(1.656)*	*(0.813)*	*(–0.187)*	*(–0.284)*
INCpc89			0.001**		0.008***	0.007**				
			(2.035)		*(3.089)*	*(2.679)*				
Log *POP*									–3.08***	–3.124***
									(–4.376)	*(–4.414)*
Cluster dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Transition year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Stabilization year dummies		yes				yes		yes		yes
Number of observations	173	173	173	173	172	172	165	165	162	162
Adjusted R^2	0.713	0.738	0.722	0.712	0.426	0.447	0.367	0.389	0.655	0.669

Notes: The numbers in parentheses represent robust *t*-statistics after White correction. *, **, and *** represent 10, 5, and 1 percent significance, respectively.

COT: Change-of-title indicator. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). Exclusions: Macedonia: 1992–95.

OBCA: Indicator for degree "agency" issues under control, including management objective function, hardness of budget constraint, ability of owners to control and monitor management. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). Exclusions. Ukraine, Armenia: 1992; Georgia, Tajikistan: 1992–93.

REF: Indicator of progress in reforms, including tax, price/wage liberalization, social safety net, capital markets, banking. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a).

IGDP: Index of real GDP, 1989=100. Source: EBRD (1999).

Log*IGDP*: log transformation of IGDP.

FDIpop: FDI in 1995 U.S.$ / population. Source: EBRD (1999).

FDIrel: FDI in 1995 U.S.$ / purchasing power parity–adjusted income in 1989. Units: Percent. Source: EBRD (1999) and de Melo, Denizer, and Gelb (1995), IMF (1999). Exclusions: Azerbaijan all years.

EXPrel: Exports (from balance of payments) in 1995 U.S.$ x 1000 / purchasing power parity–adjusted income in 1989. Source: WDI (1999) and de Melo, Denizer, and Gelb (1995). Exclusions: Bulgaria, Czech Republic, Hungary, Poland: 1990; Russia, Slovakia: 1992–93; Romania: 1991; Tajikistan, Turkmenistan; Uzbekistan: 1992.

INCpc89: National income per capita in 1989 at purchasing power parity. Units: 1989 U.S.$. Source: de Melo, Denizer, and Gelb (1995).

Log *POP*: Log of population. Source: EBRD (1999).

Cluster, transition year, and stabilization year dummies: see explanation in text.

generating performance gains from privatization. These results suggest that while the effect of *OBCA* alone on economic performance is supportive, we should look further to substantiate its theoretical importance. Though not reported here, these results do not change when we replace contemporaneous *COT* and *OBCA* by *COT* and *OBCA* lagged by one or two years.

Note that these results do not imply that privatization, "deep" or otherwise, has little impact on economic performance. Rather, they indicate that change of title or agency-related regulations *each taken on its own* has at best a limited effect on economic performance. What we want to check to test the "new paradigm" is whether economic performance gains require *simultaneous* improvements in both *COT and OBCA*. We refer to such a simultaneous improvement as the "deep privatization" effect.

We can examine what other policy reforms deepen privatization impacts on economic performance by adding an interaction term to our model as follows:

$$PERF_{i,t} = h_1\, COT_{i,t} + h_2\, OBCA_{i,t} + h_3\, REF_{i,t}$$

$$+ h_4\, COT_{i,t}{}^{*}\, OBCA_{i,t} + \ldots + \gamma_{i,t}\,, \qquad (3)$$

where, as before, *PERF* refers to each of the five performance measures and the ". . ." refers to *Z* and the dummy variables *CLUST*(*k*), *TrYear*(*j*), and *STAB*(*m*). The *h*s denote parameters to be estimated.

Table 4 presents the estimation results of alternative specifications of equation (3). The strongest conclusion of these regressions is the powerful role of *OBCA* in support of *COT* economic performance improvements. This synergistic effect is captured in the *COT*OBCA* interaction term, which is significantly positive across all regression specifications. To check the robustness of this result we repeated the regressions for various specifications and methods. These include using random effects and OLS models, inclusion of other quadratic terms (i.e., *COT* squared, *OBCA* squared, and *COT* multiplied by *REF*), dividing the sample into subsamples by period and by geography, and replacing the cluster dummies by country dummies and the transition year dummies by calendar year dummies. The results of these exercises for the case where *IGDP* is used as the performance measure are shown in Table 5. A similar exercise was done using our other performance measures and did not yield significantly different results. We also verify that these results do not change when we replace contemporaneous *COT*, *OBCA*, and *COT*OBCA* by one- or two-year-lagged *COT*, *OBCA,* and *COT*OBCA*. In all these cases the coefficient on *COT*OBCA* remains very significantly positive.[14]

The interpretation of this strong result is that the higher the OBCA level a country has, the more positive is the impact of an increase in change-of-title on economic performance. That is, if the change-of-title impact is positive, it will be even stronger when OBCA is higher, and if the change-of-title impact is negative,

[14] It is especially interesting to see that in the regressions where more than one quadratic term is included, not only does *COT*OBCA* maintain its significance, but the other quadratic terms do not prove to be significant.

Table 4. Synergistic Effect of the Interaction Between *COT* and *OBCA* on Economic Performance

Regression	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*I*	*j*
Dependent Variable	*IGDP*	*IGDP*	*IGDP*	*LogIGDP*	*FDIpop*	*FDIpop*	*FDIrel*	*FDIrel*	*EXPrel*	*EXPrel*
COT	0.77	0.175	1.525	0.007	–0.385	–2.348	0.010	–0.261	–0.057	–0.129
	(0.492)	*(0.106)*	*(0.955)*	*(0.291)*	*(–0.076)*	*(–0.431)*	*(0.015)*	*(–0.372)*	*(–0.074)*	*(–0.164)*
OBCA	3.377**	2.855**	3.201**	0.541**	12.52***	11.74***	1.631**	1.489**	0.72	0.543
	(2.494)	*(2.162)*	*(2.484)*	*(2.373)*	*(2.65)*	*(2.672)*	*(2.326)*	*(2.270)*	*(0.926)*	*(0.659)*
REF	4.597**	4.729**	4.032*	0.075**	11.223	5.808	1.449	0.821	–0.757	–0.834
	(2.192)	*(2.11)*	*(1.910)*	*(2.269)*	*(1.522)*	*(0.561)*	*(1.457)*	*(0.573)*	*(–0.543)*	*(–0.567)*
*COT*OBCA*	3.343***	2.147**	3.293***	0.045***	11.45***	10.308***	1.49***	1.251**	1.325***	0.956*
	(4.09)	*(2.043)*	*(4.112)*	*(3.378)*	*(3.012)*	*(2.892)*	*(2.749)*	*(2.465)*	*(3.145)*	*(1.8)*
INCpc89			0.001**		0.008***	0.007***				
			(2.033)		*(3.029)*	*(2.687)*				
Log *POP*									–3.001***	–3.051***
									(–4.207)	*(–4.274)*
Cluster dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Transition year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Stabilization year dummies		yes				yes		yes		yes
Number of observations	173	173	173	173	172	172	165	165	162	162
Adjusted R^2	0.733	0.744	0.741	0.725	0.452	0.463	0.391	0.402	0.669	0.674

Notes: The numbers in parenthesis represent robust *t*-statistics after White correction. *, **, and *** represent 10, 5, and 1 percent significance, respectively.

COT: Change-of-title indicator. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). Exclusions: Macedonia: 1992–95.

OBCA: Indicator for degree "agency" issues under control, including management objective function, hardness of budget constraint, ability of owners to control and monitor management. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). Exclusions: Ukraine, Armenia: 1992; Georgia, Tajikistan: 1992–93.

*COT*OBCA*: *COT* multiplied by *OBCA*.

REF: Indicator of progress in reforms, including tax, price/wage liberalization, social safety net, capital markets, banking. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a).

IGDP: Index of real GDP, 1989=100. Source: EBRD (1999).

LogIGDP: log transformation of IGDP.

FDIpop: FDI in 1995 U.S.$ / population. Source: EBRD (1999).

FDIrel: FDI in 1995 U.S.$ / purchasing power parity–adjusted adjusted income in 1989. Units: Percent. Source: EBRD (1999) and de Melo, Denizer, and Gelb (1995), IMF (1999). Exclusions: Azerbaijan all years.

EXPrel: Exports (from balance of payments) in 1995 U.S.$ x 1000 / purchasing power parity–adjusted income in 1989. Source: WDI (1999) and de Melo, Denizer, and Gelb (1995). Exclusions: Bulgaria, Czech Republic, Hungary, Poland: 1990; Russia, Slovakia: 1992–93; Romania: 1991; Tajikistan, Turkmenistan, Uzbekistan: 1992.

INCpc89: National income per capita in 1989 at purchasing power parity. Units: 1989 U.S.$. Source: de Melo, Denizer, and Gelb (1995).

LogPOP: Log of population. Source: EBRD (1999).

Cluster, transition year, and stabilization year dummies: see explanation in text.

Table 5. Additional Regressions for Estimating the Effect of the Interaction Between COT and OBCA on Economic Performance

Regression	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*I*	*j*	*k*
Dependent Variable	*IGDP*	*IGDP*	*IGDP*	*IGDP*	*IGDP*	*IGDP*	*IGDP*	*IGDP*	*IGDP*	*IGDP*	*IGDP*
COT	–0.961	1.149	1.138	0.534	0.874	–1.151	0.82	0.395	2.448	–1.516	1.102
	(–0.602)	*(0.729)*	*(0.7)*	*(0.357)*	*(0.486)*	*(–0.594)*	*(0.357)*	*(0.274)*	*(1.467)*	*(–0.64)*	*(0.716)*
OBCA	6.146***	3.357***	2.908*	3.254**	–1.693	4.368***	–5.422	5.492***	3.671***	10.03***	4.851***
	(4.475)	*(2.655)*	*(1.941)*	*(2.449)*	*(–0.656)*	*(2.656)*	*(–1.531)*	*(3.565)*	*(3.71)*	*(5.331)*	*(3.677)*
REF	–0.37**	3.606	4.577**	4.692**	2.904	9.286***	8.131**	3.587	0.371	–3.78	2.469
	(–2.05)	*(1.605)*	*(2.169)*	*(2.255)*	*(1.067)*	*(2.66)*	*(2.105)*	*(1.576)*	*(0.195)*	*(–1.464)*	*(1.212)*
*COT*OBCA*	3.638***	2.26**	4.353***	2.876**	3.507***	4.264***	4.324**	3.179***	3.367***	4.565***	4.107***
	(3.757)	*(2.185)*	*(3.01)*	*(2.105)*	*(2.939)*	*(4.306)*	*(2.081)*	*(2.927)*	*(5.039)*	*(3.192)*	*(4.495)*
COT^2		2.278*									
		(1.776)									
OBCA^2			–0.765								
			(–0.836)								
*COT*REF*				0.764							
				(0.512)							
Cluster dummies	yes (RE)	yes	yes	yes	yes	yes	yes	yes	yes		yes
Transition year dummies	yes	yes	yes	yes	yes	yes	yes	yes			
Calendar year dummies											yes
Country dummies								yes			
Notes	Random Effects Model				only FSU countries	only CEE countries	years 1995–98 only	years 1990–95 only			
Number of observations	173	173	173	173	74	99	96	101	173	173	173
R^2		0.737	0.734	0.733	0.44	0.599	0.763	0.78	0.93	0.184	0.713

Table 5. *(concluded)*

Notes: The numbers in parentheses represent robust *t*-statistics for regressions *b–k* and *z* statistics for regression *a*, after White correction. * = 10 percent significant, ** = 5 percent significant; *** = 1 percent significant.

COT: Change of title indicator. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). Exclusions: Macedonia: 1992–95.

OBCA: Indicator for degree "agency" issues under control, including management objective function, hardness of budget constraint, ability of owners to control and monitor management. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). Exclusions: Ukraine, Armenia: 1992; Georgia, Tajikistan: 1992–93.

REF: Indicator of progress in reforms, including tax, price and wage liberalization, social safety net, capital markets, banking. Units: mean 0, variance 1. Source: Sachs, Zinnes, and Eilat (2000a). IGDP: Index of real GDP, 1989=100. Source: EBRD (1999).

*COT*OBCA: COT* multiplied by OBCA.

COT^2: *COT* squared.

OBCA^2: *OBCA* squared.

*COT*REF: COT* multiplied by *REF*.

Cluster, transition years, calendar year, and country dummies: see explanation in text.

Abbreviations: RE: Random Effects. FSU: Russia, the Baltics, and other countries of the former Soviet Union. CEE: Central and Eastern Europe.

it will be less negative. This latter case, where the effect of a change-of-title increase is negative, can be explained by the fact that transfer of ownership without the institutional structures in place for owners to exercise their authority simply replaces poor government control of management with weak or no private sector control.

To understand these effects, we differentiate equation (3) with respect to *COT*:

$$\mathrm{d}PERF_{i,t} / \mathrm{d}COT_{i,t} = h_1 + h_4\, OBCA_{i,t}\,. \tag{4}$$

The above equation shows that if h_4 is positive, the higher is *OBCA*, and the larger is the effect of a change in *COT* on performance. This equation also allows us to determine the level of OBCA needed to generate a positive performance effect of an increase in change-of-title.

Similarly, to determine the level of change-of-title needed to generate a positive performance effect of an increase in OBCA, we differentiate equation (3) with respect to *OBCA*:

$$\mathrm{d}PERF_{i,t} / \mathrm{d}OBCA_{i,t} = h_2 + h_4\, COT_{i,t}. \tag{5}$$

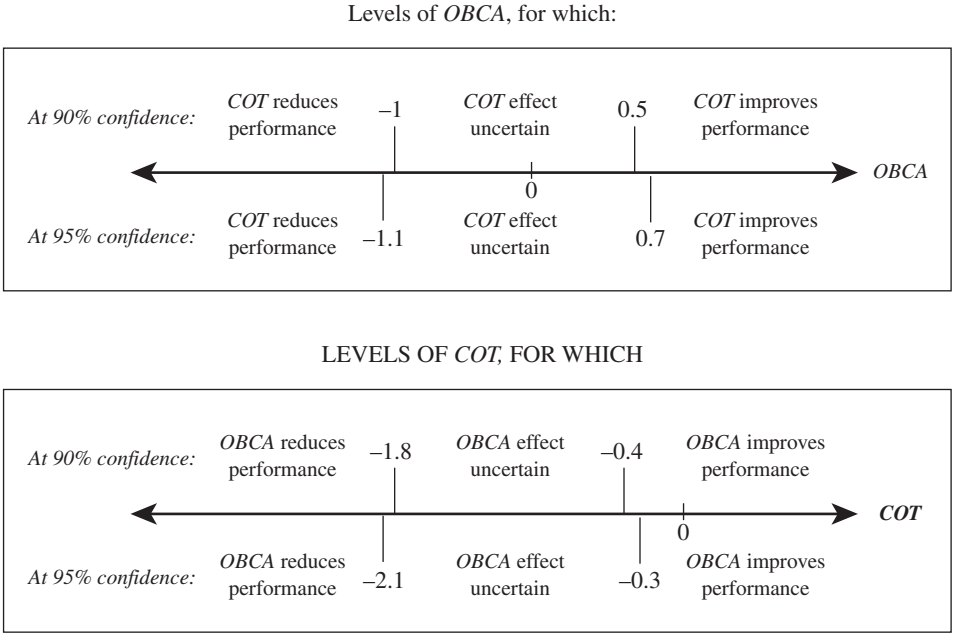
Note that by construction the sample mean (across all countries and years) of *OBCA* and *COT* is zero. Consequently, in equation (4), since the coefficient on *COT* (h_1) is not significantly different from zero, an average level of *OBCA* is not enough to ensure *COT* has a positive economic performance gain. In equation (5) for the case of *OBCA*, however, since the coefficient of *OBCA* (h_2) is statistically significant and positive, an average level of *COT* is enough to ensure *OBCA* has a positive economic performance gain.

To be more precise about the effect of change-of-title on performance, we can use direct statistical tests to determine the critical levels of *OBCA* above (below) which an increase in *COT* guarantees a positive (negative) effect on performance. We do this by performing one-sided *F*-tests using the coefficients estimated in regression *a* of Table 4. To find the upper (lower) critical value, we search for the minimum (maximum) value of OBCA for which the null hypothesis that d*PERF*/d*COT* in equation (4) is smaller (greater) than zero can be rejected for a chosen confidence level. We then repeat this exercise using d*PERF*/d*OBCA* in equation (5) to determine the critical levels of *COT* for which *OBCA* has a significant impact on performance.

The results of these tests for confidence levels of 90 and 95 percent in the case when the dependent variable is *IGDP* are shown in Figure 3. As an example, at the 10-percent significance level, for any country with a level of OBCA below –1.0 (i.e., one standard deviation below the sample mean across all countries and years), *any* change-of-title increase will cause a loss in economic performance. Similarly, at the 5-percent significance level, for any country with a level of OBCA above 0.5, *any* change-of-title increase will cause a gain in economic performance.

While only indicative, it is interesting to inquire what countries fall into these ranges. Table 6 shows what countries fall into the 95-percent confidence level for

Figure 3. Values of *OBCA* (*COT*) Required for an Increase in *COT* (*OBCA*) to Generate Economic Performance Gains or Losses in GDP



Source: Author's estimates, using one-sided *F*-test for coefficients estimated in regression *a* on Table 1.

a definitive response to a change in change-of-title. The table suggests that, with the exception of Bulgaria since 1997 (and Armenia for just 1997), only the EU border states and the Baltics have high enough levels of OBCA so that increases in change-of-title are likely to generate economic performance improvements.

On the other hand, with the notable exception of the Czech Republic in 1990, no countries in the EU border states or the Baltics appear to have had OBCA levels so low such that there would be a likely loss in their economic performance from a change-of-title increase.

While we do not present here an analogous table for changes in OBCA, one should nonetheless note that no country in our sample had a change-of-title level low enough to generate negative performance impacts from an increase in OBCA, even at the 90-percent confidence level. That is, OBCA may not always generate improved performance in the short run, but it has not proven to do any harm.

VI. Policy Implications

The analysis in this paper supports some recommendations for policymakers. First and foremost, they should consider carefully when recommending quick privatization if the requisite OBCA-related, legal, and regulatory institutions are

Table 6. Years in which OBCA Levels Would Have Caused a COT Increase to Lead to a Gain (Loss) in IGDP, at 95 Percent Confidence Level

Country	*Years of IGDP gain*	*Years of IGDP loss*	*Country*	*Years of IGDP gain*	*Years of IGDP loss*
Armenia	1997	Through 1994	Lithuania	Through 1993, Since 1996	Never
Azerbaijan	Never	1992	Macedonia	Never	Never
Belarus	Never	Since 1997	Moldova	Never	Never
Bulgaria	Since 1997	Never	Poland	Since 1994	Never
Croatia	Since 1996	Never	Romania	1998	Through 1991
Czech Rep.	Since 1994	1990	Russia	Never	1996–97
Estonia	All years	Never	Slovakia	Since 1994	Never
Georgia	Never	Through 1994	Slovenia	Since 1994	Never
Hungary	Since 1994	Never	Tajikistan	Never	Through 1995
Kazakhstan	Never	1994	Turkmenistan	Never	Never
Kyrgyz Rep.	Never	Never	Ukraine	Never	Through 1994
Latvia	1993, since 1996	Never	Uzbekistan	Never	Never

Source: Authors' calculations.

not sufficiently developed and functioning. Our analysis suggests that countries in the western FSU do not meet these conditions (with the Caucasus and Central Asia borderline). Economic performance gains come only from "deep" privatization, that is, where change-of-title reforms occur in the presence of high enough levels of OBCA. Moreover, as a result of their different initial conditions, the economic performance responses of countries to the same policies are different. In the area of privatization, these responses depend on the level of complementary reforms and on OBCA-related reforms in particular. Thus, a corollary of our analysis is that, in the case of transition countries, one size (policy) does not fit all. Policy prescriptions, therefore, should be less ideological and more tailored to the country's institutional conditions and stage of transition. While ownership matters, institutions matter just as much.

Appendix I. "Recipe" for Constructing the COT and OBCA Indicators

Category	Definition	Effect	Weight	Scoring	Availability*	Source
Enterprise privatization	Indicator	Pos		M0V1	0–8	Computed
(COT: Change of Title)	Large-scale privatization index	Pos	0.2	1 to 4.33 (1 worst)	4–8	EBRD (1994–99)
	Small-scale privatization index	Pos	0.2	1 to 4.33 (1 worst)	4–8	EBRD (1994–99)
	Percentage of small firms privatized	Pos	0.2	Percent	0–8	Survey, WB
	Private sector employment share	Pos	0.2	Percent	0–7	EBRD, WB
	Private sector GDP share	Pos	0.2	Percent	0–8	EBRD (1994–99)
OBCA (Privatization performance incentives)	Indicator	Pos		M0V1	0–8	Computed
Budget constraint	Indicator	Pos	0.4	M0V1	0–7	Computed
	Tax arrears/average GDP	Neg	0.2	Percent	0–6	WB, EBRD
	Budget subsidies/average GDP	Neg	0.3	Percent	1–7	EBRD
	Bad loans/total loans	Neg	0.2	Percent	0–8	EBRD (1994–99)
	Electricity tariff collection ratio	Pos	0.1	Percent	4–7	EBRD (1994–99)
	Likelihood of mid-sized private firm being bailed out	Neg	0.2	0 = very unlikely to 4 = very likely	0–8	Survey
Agency problems/ management objectives	Indicator	Pos	0.6	M0V1	4–8	Computed
	Existence of bankruptcy courts	Pos	0.1	1 = Yes, 0 = No	0–8	Survey
	Governance/restructuring index	Pos	0.6	1 to 4.33 (1 worst)	4–8	EBRD (1994–99)
	Legal system for investment index	Pos	0.3	1 to 4.33 (1 worst)	5–8	EBRD (1994–99)

Notes: The OBCA indicator comprises the sub-indicators, "budget" and "agency/objectives." In order to interpret the subindicator tables, first note that all the categories and sub-categories of the table have weights listed in the column "Weight" and the direction of the impact of the variable on reform progress listed in the column "Effect." These comprise hierarchical levels. For a given level the weights add up to unity 1. For example, in the OBCA indicator, the weights for hardness of "Budget constraint" 0.4 and "Agency problems/management objectives" 0.6 add to 1, as do the weights of the five and three variables used within each of these two subcategories. "Availability" summarizes years for which data is available. For example, "2" is 1992. Abbreviations: EBRD: European Bank for Reconstruction and Development. M0V1: Mean zero, variance 1. Survey: Harvard Institute of International Development Transition Survey of Foreign Institutes see Sachs, Zinnes, and Eilat (2000a). WB: World Bank Enterprise Reform and Privatization Database.

REFERENCES

Aziz, Jahanger, and Robert Wescott, 1997, "Policy Complementarities and the Washington Consensus," IMF Working Paper 97/118 (Washington: International Monetary Fund).

Aghion, Philippe, and Olivier Blanchard, 1993, "On the Speed of Transition in Central Europe," Working Paper 6 (London: European Bank for Reconstruction and Development).

Åslund, Anders, 1994, "Lessons of the First Four Years of Systemic Change in Eastern Europe," *Journal of Comparative Economics*, Vol. 19, No. 1, pp. 22–38.

Balcerowicz, L., 1993, "Common Fallacies in the Debate on the Economic Transition in Central and Eastern Europe," Working Paper 11 (London: European Bank for Reconstruction and Development).

Barberis, Nicholas, Maxim Boycko, Andrei Shleifer, and Natalia Tsukanova, 1996, "How Does Privatization Work? Evidence from the Russian Shops," *Journal of Political Economy*, Vol. 104, pp. 764–790.

Blanchard, Olivier, 1997, *The Economics of Transition in Eastern Europe* (Oxford: Clarendon Press).

Boardman, Anthony, and Aiden Vining, 1989, "Ownership and Performance in Competitive Environments," *Journal of Law and Economics*, Vol. 32, No. 1, pp. 1–33.

Claessens, Stijn, and Simeon Djankov, 1998, "Politicians and Firms in Seven Central and Eastern European Countries," Working Paper 1954 (Washington: World Bank).

Dabrowski, Marek, 1996, "Different Strategies of Transition to a Market Economy: How Do They Work in Practice?" Working Paper 1579 (Washington: World Bank).

de Melo, Martha, Cevdet Denizer, and Alan Gelb, 1995, "From Plan to Market: The Patterns of Transition" (unpublished; Washington: Transition Economics Division; Policy Research Department, World Bank).

European Bank for Reconstruction and Development, 1999, *Transition Report* (London: European Bank for Reconstruction and Development).

Earle, John, Roman Frydman, and Andrzey Rapaczynski, 1993, *Privatization in the Transition to a Market Economy* (Budapest: Central European University Press).

Fischer, Stanley, Ratna Sahay, and Carlos A. Végh, 1996, "Stabilization and Growth in Transition Economies: The Early Experience," *Journal of Economic Perspectives*, Vol. 10, No. 2, pp. 45–66.

Frydman, Roman, Cheryl Gray, Marek Hessel, Andrzey Rapaczynski, 1997, "Private Ownership and Corporate Performance: Evidence from Transition Economies," Research Report 97–128 (New York: C.V. Starr Center for Applied Economics, New York University).

———, 1998, "When Does Privatization Work?" (unpublished; Privatization Project).

Havrylyshyn, Oleh, Igor Izvorski, and Ron van Rooden, 1998, "Recovery and Growth in Transition Economies 1990–97: A Stylized Regression Analysis," IMF Working Paper (Washington: International Monetary Fund).

Havrylyshyn, Oleh, and Donald McGettigan, 1998, "Privatization in Transition Countries: A Sampling of the Literature," IMF Working Paper 99/6 (Washington: International Monetary Fund).

International Monetary Fund, 1999, *International Financial Statistics Yearbook* (Washington: International Monetary Fund).

Kolodko, Grzegorz, 1999, "Ten Years of Post-Socialist Transition: The Lessons for Policy Reforms," World Bank Development Economics Research Group Working Paper 2095 (Washington: World Bank).

Kornai, Janos, 1986, "The Soft Budget Constraint," *Kyklos*, Vol. 39, No. 1, pp. 3–30.

———, 1994, "Transformational Recession: The Main Causes," *Journal of Comparative Economics*, Vol. 19, pp. 39–63.

Megginson, William, Robert Nash, and Matthias van Randenborgh, 1994, "The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis," *Journal of Finance*, Vol. 49, pp. 403–52.

Nellis, J., 1999, "Time to Rethink Privatization?" (unpublished; Washington: World Bank).

Pistor, Katharina, 1999, "Corporate Governance Issues: A Preliminary Response," private communication.

———, 2001, "Law as a Determinant for Equity Market Development," in *Assessing the Value of Law in Transition Economies*, ed. by Peter Murrell (Ann Arbor, Michigan: University of Michigan Press).

Pohl, Gerhardt, Robert Anderson, Stijn Claessons, and Simeon Djankov, 1997, "Privatization and Restructuring in Central and Eastern Europe," World Bank Technical Paper 368 (Washington: World Bank).

Roland, Gerhardt, 1994, "On the Speed and Sequencing of Privatization and Restructuring," *Economic Journal*, Vol. 104 (September), pp. 1158–68.

Sachs, Jeffrey, 1996, "The Transition at Mid Decade," *American Economic Review, Papers and Proceedings*, Vol. 86 (May), pp. 128–33.

———, 1997, "An Overview of Stabilization Issues Facing the Economies in Transition," in *Economies in Transition: Comparing Asia and Europe*, ed. by T.W. Woo, S. Parker, and J. Sachs (Cambridge, Massachusetts: MIT Press).

Sachs, Jeffrey, Clifford Zinnes, and Yair Eilat, 2000a, "Patterns of Economic Reform and its Determinants in Transition Economies: 1990–1998," CAER II Discussion Paper 61 (Cambridge, Massachusetts: Harvard Institute for International Development).

———, 2000b, "The Gains from Privatization in Transition Economies: Is 'Change of Ownership' Enough?" CAER II Discussion Paper 63 (Cambridge: Massachusetts: Harvard Institute for International Development).

Shapiro, Carl, and Robert Willig, 1990, "Economic Rationales for the Scope of Privatization," in *The Political Economy of Public Sector Reform and Privatization*, ed. by Ezra Suleiman and John Waterbury (Boulder, Colorado: Westview Press).

Sheshinski, E, and L. López-Calva, 1999, "Privatization and Its Benefits: Theory and Evidence," CAER II Discussion Paper 35 (Cambridge: Massachusetts: Harvard Institute for International Development).

Shleifer, Andrei, and Robert Vishny, 1994, "Politicians and Firms," *Quarterly Journal of Economics*, Vol. 109, pp. 995–1025.

———, 1996, "A Theory of Privatization," *Economic Journal*, Vol. 106, pp. 309–19.

Stiglitz, Joseph, 1998, "More Instruments and Broader Goals: Moving Toward the Post-Washington Consensus," WIDER Annual Lectures 2 (Helsinki: United Nations University World Institute for Development Economics Research).

Vickers, John, and George Yarrow, 1990, *Privatization: An Economic Analysis* (Cambridge, Massachusetts: MIT Press).

Williamson, John, 1990, "What Washington Means by Policy Reform," in *Latin American Adjustment: How Much has Happened?* ed. by John Williamson (Washington: Institute for International Economics).

———, 1993, "Democracy and the 'Washington Consensus'," *World Development*, Vol. 21, pp. 178–83.

———, 1997, "The Washington Consensus Revisited," in *Economic and Social Development into the XXI Century*, ed. by L. Emmerij (Washington: Inter-American Development Bank).

World Bank, 1999, *The World Development Indicators* (Washington: World Bank).

Zinnes, Clifford, Yair Eilat, and Jeffrey Sachs, 2001, "Benchmarking Competitiveness in Transition Economies," *Economics of Transition*, Vol. 9, No. 2, pp. 315–53.