Privatization Dynamics and Economic Growth*

For a large panel of 56 developed and developing countries spanning the period 1980 to 2004, we examine whether privatization had an impact on economic growth. We characterize privatization along two dimensions: The extent of privatization efforts (proceeds) that proxy for the size of the program, and the method of privatization that proxy for government commitment. In order to take into account the dynamics of privatization and tackle potential endogeneity issues, we use a dynamic panel approach and find that privatization has a robust systematic positive effect on economic growth, after controlling for classic growth determinants as well as institutional variables. We also find that the method of privatization, through share issues on the stock market, is positively related to economic growth suggesting that one potential channel of benefit is indeed to use the stock market to divest state-owned enterprises (SOEs hereafter).

Field of Research: privatization, economic growth, dynamic panel, GMM estimation

1. Introduction

Privatization is defined as "a method of reallocating assets and functions from the public sector to the private sector" (Filipovic, 2005). As such, privatization constitutes a fundamental structural change of ownership which is transferred from the public to the private sector, leading to a drastic shift in the underlying incentives of the respective owners and in the objectives of the firm (from politically oriented to profit oriented).

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Since its introduction in the United Kingdom in the early 80ies (and earlier still in Chile where the first massive privatization wave took place between 1974 and 1978), privatization has spread worldwide, first in industrialized economies and then to Asia, Latin America, Africa and Central and Eastern Europe. It has been adopted by governments from different political systems, with different political orientations and institutional backgrounds. During the last two decades, more than 100 countries privatized some or most of their SOEs (Megginson and Netter, 2001). A broad range of objectives have been put forward by governments to justify privatization, although the priority given to each has “varied both across countries and within countries over time” (Cook and Uchida, 2003). These objectives include, among others, to increase government revenues and reduce budget deficits (by reducing the subsidies and eliminating the soft budget constraint of SOEs), to promote foreign direct investment and develop domestic capital markets (by encouraging popular capitalism), to improve the efficiency of SOEs and to contribute to the economic growth of the country.

The potential effect of this ownership change on economic growth is rooted in the microeconomic theories used to justify the reform, namely the property rights theory, public choice theory and principal agent theory (Alchian, 1965; Jensen and Meckling, 1976). First, the ownership issue is important in determining the property rights and incentives of individuals to better use and preserve the resources they are allocated. Since citizens have no residual claims on public assets, and thus have no incentives to monitor the managers of SOEs, then as sustained by Alchian (1965), Megginson (2005) and Adams (2006), the likelihood that public firms will be inefficient is high.

The political view of privatization, also called public choice theory, argues that SOEs are inefficient because they are used as political tools to extract political benefits. By imposing political objectives to the firms (such as maximising employment to ensure the votes of citizens) at the expense of efficiency and profitability objectives, the politicians and bureaucrats contribute to the inefficiency of SOEs. Only a change in control, and the severance of the ties between the firm and political influence will thus lead to better performance and efficiency (Boycko, Shleifer and Vishny, 1996).

The management view of privatization is based on the agency theory argument about the incentives of managers. The switch of ownership from public to private can contribute to improve the firm performance by inducing a change in corporate governance and “the mechanisms through which different institutional arrangements affect the incentives for managing enterprises” (Cook and Uchida, 2003; Laffont and Tirole, 1991). Once government control is relinquished, both internal and external mechanisms of corporate governance will help tackle the moral hazard and adverse selection problems that plague former SOEs.

All these micro-economic perspectives of privatization suggest that we should expect the improved performance, efficiency and profitability of newly
privatized firms to be reflected in macro-economic aggregates and ultimately in sustained economic growth.

Empirical studies that focused on the micro economic impact of privatization are numerous and masterly reviewed in Megginson and Netter (2001), and overall conclude that privatization indeed leads to improvements in operating performance, productivity and efficiency (Boubakri and Cosset, 1998; Boubakri et al, 2005; Megginson, Nash and van Randenborgh, 1994; D'Souza and Megginson, 2001, D'Souza, Nash and Megginson, 2004). Several country studies, from either developed or developing countries, confirm these results (Gupta, 2001 for India; Omran, 2004 for Egypt, among others). Megginson and Netter (2001) conclude their survey on the empirical literature on privatization by writing that “in most settings, privatization “works””.

However, and despite more than two decades of privatization, the literature addressing the macroeconomic effects of privatization and particularly its implications on growth is still sparse. Most available evidence is descriptive and anecdotal. For example, according to the World Bank “countries which had firmly committed themselves to privatization, such as Chile and Mexico, had experienced higher rates of growth than countries in Sub-Saharan Africa where progress with respect to divestment was slow” (World Economic Outlook, 1994, p.50). The sparse empirical studies that address this issue lead to ambiguous results: while Plane (1997), and Barnett (2000) find a positive impact of privatization on growth, Cook and Uchida (2003), Filipovic (2005), and Adams (2006) report the opposite.

In this paper, we provide an empirical investigation of this particular issue. Precisely, we examine for a large panel of 56 developed and developing countries that implemented privatization between 1980 and 2004, whether the reform has had an impact on economic growth. Our analysis allows us to answer the following questions: (1) Did privatization promote economic growth? If so, through which channels? (2) Does the effect of privatization on economic growth depend on the method of privatization? These issues are of particular importance for developing countries that are yet to implement large-scale privatization programs over the next ten years, as reported by the World Bank, in areas as diverse as Latin America, Africa and the Middle-East, as well as in South East Asia, and the remaining Eastern Europe.

Our hypothesis that privatization is likely to affect economic growth can be articulated around two major arguments: privatization can affect growth through a direct channel of transmission on macro-economic aggregates such as government investment and FDI that are known to be inputs to growth, or indirectly through its micro economic effect on firm efficiency, productivity and corporate governance.

As discussed above, the positive effects of privatization on firm level efficiency, productivity and performance are likely to lead to an improvement in domestic productivity, and hence to a higher economic growth.
Additionally, while studying the sources of performance improvements of newly privatized firms (NPFs hereafter), Boubakri et al. (2005) establish a significant role for the post privatization corporate governance and show that improvements materialize when the government relinquishes control, and when private ownership concentration is higher. The post privatization corporate governance itself results from the method of divestiture: for instance, private sales to strategic investors yield an immediate concentrated ownership, while share issued privatizations on the stock market generally result in a more diffuse ownership, at least at the time of privatizations. The finance literature has established that concentrated ownership structures generally lead to a better monitoring of managers and hence to improved governance, as a direct result of the way privatizations are allocated among investors. This, in turn, suggests that the way the issue is allocated will play a significant role in economic growth, as more concentrated ownership structures are more likely to lead to drastic improvements in efficiency and productivity, and ultimately more likely to boost economic growth, than more diffused ownership structures. The sources of the positive effect of privatization on productivity at the level of the firm include the better definition of corporate goals by private firms and some resolution of the incentive problems associated with the softer budget constraints of SOEs.

Several recent studies also show that privatization through share issues on the stock market enhances its liquidity (Boutchkova and Megginson, 2001; Boubakri and Hamza, 2007) and helps to resolve policy risk (Perotti and van Oijen, 2001, Leaven and Perotti, 2002), which contributes to the development of local stock markets. Relatedly, another strand of literature has shown that stock market development plays a positive role in promoting economic growth (Levine, Demirguck and Maksimovic, 1998, among others); Accordingly, we expect that privatization, when conducted through share issues, will contribute to economic growth through its positive impact on stock market growth. ii

Another indirect effect of privatization stems from the improvements in NPFs post privatization capital expenditures spending, which have been proven to increase in both developing and developed countries (Boubakri and Cosset, 1998, for developing countries, and Megginson, Nash and van Randenborgh, 1994 for a multinational sample). If this increase in investment expenditures is significant, then it is likely to boost national investment spending, which becomes an additional channel through which privatization may positively affect growth.

The direct macro economic effects of privatization on economic growth can materialize through other inputs to growth, such as the additional revenues that accrue to the government from privatization proceeds (and from the reduced subsidies that used to be channeled to SOEs). The increased government revenues may induce an increase in investments on infrastructure, a reduction in budget deficits, and generally, a positive feedback on aggregate productivity as sustained by Aghion and Schankerman (1999). iii Also, by allowing foreign investors to participate in the privatization process, governments attract foreign direct investment to the country, which is
likely to lead to efficiency improvements, more competitiveness, more capital inflows and beneficial technology transfers, contributing to more economic productivity and growth.

In light of this discussion on the potential micro-economy and macro-economy channels through which privatization may affect economic growth, we characterize privatization along two specific aspects of the process: (1) the extent (size) of the program, and (2) the method of divestiture. The main difficulty we face in our analysis is to isolate the impact of privatization on economic growth from other factors and policies such as trade liberalization. Our empirical framework allows us to tackle this issue, and to also address the inevitable endogeneity issues that arise in the analysis.

Using a dynamic panel approach with GMM estimation, and controlling for the classic growth determinants, as well as the institutional environment, liberalization and foreign direct investment in the country, we find that privatization has a positive and systematically significant effect on economic growth. Our results are in conformity with the theoretical expectations derived by the public choice, agency and property rights theories of privatization, and shed light on the correlation between the reform and economic growth using a robust estimation technique that tackles the possibilities of endogeneity of privatization. The method of privatization (by share issues on the stock market) also matters for economic growth. Our results point that using domestic stock markets to divest the ownership of SOEs constitutes a growth policy channel that emphasizes the effect of stock market development on economic growth.

The remainder of the paper is structured as follows: Section one presents a brief survey of the empirical literature on the link between privatization and economic growth. Section 2 describes our sample and variables. Section 3 describes our methodology, while section 4 presents and discusses our empirical findings. We conclude in section 5.

2. Literature Review and Hypotheses

This section provides a description of the previous empirical studies that attempted to measure the impact of privatization of economic growth. As pointed out by Cook and Uchida (2003), economic performance is likely to be affected by “factors that affect the wider economic environment in which privatized firms operate”, which may lead to spurious results when assessing the impact of privatization on economic growth. Indeed, in developing countries for instance, privatization is often concomitant with liberalization in trade and financial policies to encourage foreign investment. Thus assessing the separate effect of privatization is a challenging task.

The other constraint upon earlier empirical studies was the unavailability of a sufficiently long window that allows to fully observe the dynamic of privatization which are likely to materialize in the longer run rather than contemporaneously. With two decades of privatization experience now behind
us, re-examining the role of privatization in the growth process becomes timely and called for.

There are to our knowledge only few studies that empirically assess the macro economic impacts of privatization. In the growth literature, few have attempted to incorporate the privatization reform among other policy variables that encompass monetary and fiscal discipline, performed such an analysis in a context of transition to a market economy. Havrylyshyn, Izvorski and van Rooden (1998) analyzing growth performance for 25 transition countries between 1990 and 1997, use an index of structural reforms that includes privatization, enterprise reform and financial sector reform. Bennett et al. (2004) study the role of the method of privatization in economic growth for 23 transition countries over the period 1991-2001 and find that the sale of state assets through full privatization has no significant impact on growth, whereas mass privatization does. The authors argue that their results suggest that full privatization may not prove efficient if the capital markets are underdeveloped capital markets. The authors also specify that they consider that the method of privatization is an exogenous policy, which is unlikely. In the same vein, and using a cross-country sample of 25 transition economies, Zinnes, Eilat, and Sachs (2001) find that privatization does not increase GDP growth, unless it is accompanied by "hard budget constraints and in-depth institutional reforms". However, the political, institutional and economic backgrounds of transition countries are quite different from those of developing or developed markets economies, which makes generalizations of the results inappropriate.

Recently there have been a few attempts to empirically investigate the relation between privatization and economic growth in the context of developing countries. A first study by Plane (1997) uses data for 35 developing countries over the period 1984-1992. Plane first analyzes and tests the determinants of privatization by means of cross sectional probit and tobit models. He then examines the relationship between the average GDP growth rate and a set of explanatory variables including the implementation of privatization programs. Plane finds that privatization positively affects GDP growth with a more pronounced impact for activities of a public goods type than for other sectors. He finds that on average, the reform increased economic growth from 0.8% to 1.5% between the sub periods 1984-1988 and 1988-92.

Barnett (2000) uses country-level panel data of 18 countries including only 10 developing countries, the rest being transition economies. This study explores the impact of privatization on fiscal variables, growth, unemployment and investment. The empirical evidence indicates that privatization is positively correlated with real GDP growth rates. The estimate suggests that privatization of 1% of GDP would be associated with an increase on the real GDP growth rate of 0.5% in the year of privatization and 0.4% in the following year. For the non-transition sample, the effect would be a 1.1% increase in real GDP growth rate in the year of privatization and 0.8% in the following year. However, as acknowledged by the author himself, the results of this study are based on a select sample of countries and for a limited period for which data is available. For each country, the sample corresponds to the period of active privatization for which data are available, but the author does
not specify the precise span of years for the study. Furthermore, Barnett (2000) warns that the privatization variable is likely to serve as a proxy in the regressions for one or more omitted variables measuring other policy reforms.

Cook and Uchida (2003) apply a cross-country growth regression analysis using the framework of the extreme bounds analysis. They use data for 63 developing countries between 1988 and 1997, and find that privatization has contributed negatively to economic growth. They conjecture that this result, which goes against the theoretical expected positive impact of privatization, is due to the lack of competition in the private sector that hinders economic growth, and impedes privatization from delivering its anticipated positive impact. The authors however do not control for the method of privatization, which is very likely to affect the privatization proceeds used in the study to measure privatization.

Palia and Phelps (2003) include in a growth regression model a private ownership variable capturing the scope of private enterprise and control of commercial enterprises. They use a sample of 43 countries over the period 1960-1985, and find that, after controlling for education, initial per capital GDP growth and economic system, economic growth is positively related to private ownership and control. Aside from acknowledging their “data set excludes countries …such as China and the Soviet Union”, the authors provide no description of their country sample. Finally, we know of one study on the privatization experience of developed countries, performed by Katsoulakos and Likoyanni (2002) who investigate the relationship between privatization and macroeconomic variables using country-level panel data of 23 OCDE countries for the period 1990 to 2000. The authors examine the link between privatization receipts on the one hand, and budget deficit, public debt, output growth and unemployment rate, on the other hand. The estimation results indicate that there is no statistically significant relation between GDP growth rates and the privatization proceeds of the previous period. This conclusion is drawn from a model where the dependent variable is the GDP growth rate and the only explanatory variable is the privatization receipts (as a percentage of GDP of the previous period). One concern with this specification is that it suffers from omitted variables bias.

Two more recent studies by Filipovic (2005) and Adams (2006) re-examine this issue, for a set of developing countries, and Sub-Saharan African countries, respectively. Filipovic (2005) tries to consider the effects of competition, foreign direct investment, national debt, and property rights by interacting them with the privatization variable using a sample of developing countries during the 1990 to 1999 period. Following Plane (1997), and Cook and Uchida (2003), the author measures the magnitude of privatization as the total privatization proceeds during the period 1990-99 as a percentage of GDP in 2000. He finds that privatization is negatively correlated with growth although insignificantly. The inclusion of additional controls and interaction terms do not alter this main finding that privatization is uncorrelated with economic growth. Adams (2006) also establishes that in a sample of Sub-Saharan African countries over the period between 1990 and 2001,
privatization is negatively (although insignificantly) correlated with growth which contradicts the theoretical expectations with respect to this issue.

In a nutshell, all the studies anticipate a positive relation between privatization and economic growth, although the empirical evidence to date, as discussed above, establishes ambiguous results. Furthermore, most studies use dated samples, and focus primarily on either transition economies and/or developing countries. Finally, the use of cross sectional regressions, and more rarely of panel samples, does not allow to draw robust inferences. An additional concern in the above mentioned studies is with respect to the control variables: growth theory provides no guidance as to the choice of variables to include in the growth regression, and Levine and Renelt (1992) raise this issue by concluding that “over 50 variables have been found to be significantly correlated with growth in at least one regression”, including, among other determinants, initial conditions, policy variables and institutional variables. Most models include: investment, population growth, initial per capita GDP, and initial human capital.

With these caveats in mind, we propose to examine in this paper the potential impact of privatization on economic growth using a large sample of both developing and developed countries spanning two decades of privatization. Next, we describe our sample and the variables used in the analysis.

3. Sample and Variables

a) The Sample

We analyze the relationship between privatization and economic growth using a panel of 56 developed and developing countries between 1980 and 2004. Our sample includes all the countries for which we have at least three consecutive privatization observations over the study period, to ensure a time-series dimension to our data. The list of the countries in our sample appears in Table 1. We average the data over five non-overlapping 5-year periods in order to remove the business cycle effects and to focus more on the long-run impact of privatization on economic growth (Beck and Levine, 2004).
Table 1: List of Countries

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<thead>
<tr>
<th>Argentina</th>
<th>India</th>
<th>Peru</th>
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<td>Canada</td>
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<td>Chile</td>
<td>Korea, South</td>
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<td>Colombia</td>
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<td>Switzerland</td>
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<td>Hong Kong</td>
<td>Panama</td>
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b) Description of Variables

**Economic Growth**

Following the methodology used in previous studies, we measure economic growth by the difference of the log of real per capita GDP (Barro, 1991). The per capita GDP series are drawn from the World Bank’s World Development Indicators (2005). The figures are measured in 2000 constant prices and converted into US dollars using the exchange rates prevailing on the international currency markets.

**Privatization**

To conduct our empirical analysis, we rely on the following measures of privatization: (1) The total proceeds from privatization as a percentage of GDP (PRIV) serves as a proxy for the volume of privatization sales. Cook and Uchida (2003) and Barnett (2000) argue that this variable is a good measure of the magnitude of privatization and provides an adequate measure of the change from public to private ownership. Besides, it captures the level of political commitment towards better economic policies (Barnett, 2000; Davis et al., 2000). (2) The ratio of proceeds from share issue privatizations to total proceeds from privatization (SIP) captures the method of privatization and the political commitment to use the stock market as a source of financing. Bortolotti et al. (2004) note that measuring privatization by the ratio of total proceeds over GDP only may overestimate the extent of privatization in countries where the sale of few large public firms to strategic investors generated huge revenues. Therefore, it is crucial to complete the privatization proceeds with another measure capturing the method of divestiture.
Initial Level of Development

We examine the link between privatization and economic growth while controlling for the initial level of development using the log of initial real per capita GDP (LGDPC). The inclusion of LGDPC is based on the idea that poor countries tend to grow more rapidly than rich industrialized countries (Barro, 1991). A negative and significant coefficient of this variable provides evidence of conditional growth convergence (Barro and Sala-i-Martin, 1995).

Government Consumption

The economic growth literature suggests that a measure of government spending serves as a proxy for the level of political corruption in the country and for the negative effects of non-productive government expenditure and taxation (Cook and Uchida, 2003; Filipovic, 2005). We control for the level of government consumption with the ratio of government consumption to GDP (GOVC). We expect a negative relationship between GOVC and economic growth.

Population Growth

Bornschier et al. (1978) argue that a higher growth rate of a country's population may dilute the positive effects of economic policies implemented to promote economic growth. Moreover, the findings of Savvides (1995) and Adams (2006) indicate that a country's high population growth rate slows down economic growth. To control for this effect, we include in our growth model the growth rate of the population (POP). We expect a negative relation between POP and economic growth.

Savings Ratio

It is well accepted in the economic growth literature that the saving ratio is a major determinant of economic growth (Solow, 1956; Koopmans, 1965; Ramsey, 1928; Frankel, 1962; Romer, 1986; etc.). Higher savings rates imply higher capital accumulation, which is a major source of economic growth. We measure the savings ratio with the gross domestic savings to GDP (SAVE). The coefficient of SAVE is expected to be positive.

It is worth noting that we choose not to include in our growth models a measure of investment in order to mitigate the reverse causality problem. Indeed, many studies have shown that the direction of causality goes from growth to investment and not vice versa (Barro and Sala-i-Martin, 1995; Temple, 1999).

Investment in human capital

The theory and evidence suggest an important relation between investment in human capital and economic growth (Solow, 1956; Lucas, 1988; Barro and Sala-i-Martin, 1995). To measure the investment in human capital, we use the literacy rate (LITERACY). Human capital theories argue that higher literacy rate of a country is a major determinant of economic growth (Fuller, Edwards
and Gorman, 1986). In addition, many studies claim that literacy rate is a useful proxy of investment in human capital (Romer, 1989; Barro, 1991; Tallman and Wang, 1992; Bashir and Darrat, 1994). Indeed, is it argued that literate persons could be trained less expensively than illiterate people, typically possess a higher socio-economic status, and enjoy a better quality of life in terms of health and employment opportunities. We expect a positive relation between this variable and economic growth.

**Inflation**

Economic theory suggests that inflation serves as proxy for the macroeconomic stability, the investment climate, and the condition of the credit market (Fischer, 1993; Bruno and Easterly, 1998). We control for inflation using the annual inflation rate (INF). The coefficient of INF is expected to be negative.

**Trade Openness**

In the economic growth literature, openness to international trade has been identified as an important determinant of economic growth (Grossman and Helpman, 1992; Harrison, 1996; Sachs and Warner, 1997). Indeed, it is argued that openness to international trade stimulates the growth of exports, and increases the availability of imports of inputs and machinery, thereby accelerating the economy's technological development and hence fosters economic growth (Dollar, 1992). Our proxy for trade openness is the ratio of the sum of exports and imports over GDP (OPEN). We expect a positive relationship between OPEN and economic growth.

**Stock Market Development and Bank Development**

The empirical growth literature has shown that markets and banks are important determinants of economic growth (Demirguc-Kunt and Maksimovic, 1998; King and Levine, 1993; Bencivenga and Smith, 1991; Beck et al., 2000). Indeed, well-functioning stock markets and financial intermediaries ameliorate information and transaction costs, thereby contributing to better resource allocation and economic growth (Beck and Levine, 2004). We measure stock market development with market capitalization, which equals the total value of the country's listed stocks divided by GDP (MCAP) (Levine and Zervos, 1998; Bennett et al., 2004). Following Beck and Levine (2004), we measure bank development with the ratio of the domestic credit provided by the banking sector divided by GDP (BCREDIT). The coefficients of MCAP and BCREDIT in the growth regressions are expected to be positive.

**Foreign Direct Investment**

We control for the level of Foreign Direct Investment using the ratio of foreign direct investment to GDP (FDI). This variable is included on the grounds that higher foreign direct investment may play an important role in bringing new advanced technologies as well as marketing and management skills, hence
contributing to the economic growth of the host country (Cook and Uchida, 2003). We expect a positive relationship between FDI and economic growth.

**Quality of Institutions**

The recent empirical evidence has now reached a consensus that developed institutions of governance cause economic growth (Knack and Keefer, 1995; Mauro, 1995; Hall and Jones, 1999; Easterly and Levine, 2003; Dollar and Kraay, 2003; Acemoglu et al., 2001). Theses studies argue that institutions matter for economic growth because they shape the structure of economic incentives in society, facilitate investment in human and physical capital, and contribute to the efficient allocation of resources in the economy. Following Knack and Keefer (1995), we measure the quality of a country’s institutions with an equally weighted index of the following governance indicators: Government Stability, Corruption, Law and Order, Bureaucratic Quality, and Democratic Accountability.

The privatization data is derived from SDC Platinum (Thomson Financial). The governance indicators come from the International Country Risk Guide (ICRG). All remaining data are drawn from the World Bank’s World Development Indicators (WDI) 2005. Table 2 shows the variables used in our study and the data sources.

**4. Model and Methodology**

The purpose of this paper is to empirically investigate the impact of privatization on economic growth using a dynamic panel setting. The majority of previous studies employed cross-country growth regressions to examine the relationship between privatization and economic growth (Plane, 1997; Cook and Uchida, 2003; Barnett, 2000; Filipovic, 2005; and Adams, 2006). However, it has become apparent that Ordinary Least Squares (OLS) estimation of cross-country growth regressions potentially suffers from a number of statistical problems. First, this methodology does not control for the unobserved country-specific effects, hence does not account for the possible heterogeneity in the relationship between privatization and growth. Second, cross-country growth regressions suffer from the omitted variable bias since the empirical growth literature have identified over fifty variables that are significantly correlated with growth (Levine and Renelt, 1992) and it is impossible to include them all in one regression.

Third, there may be a simultaneity bias arising from possible reverse causality running from economic growth to privatization. It is likely that governments can time privatization sales during periods of high economic growth in order to benefit from the favourable business climate, and hence maximize the proceeds form privatization sales.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Proxy</th>
<th>Label</th>
<th>Expected sign</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>Economic Growth</td>
<td>Difference of the log of real per capita GDP</td>
<td>GROWTH</td>
<td>na</td>
<td>WDI 2005</td>
</tr>
<tr>
<td>Privatization Method of Privatization</td>
<td>Annual privatization proceeds to GDP.</td>
<td>PRIV +</td>
<td>SDC Platinium, Thomson Financial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual SIP proceeds to Total Proceeds</td>
<td>SIP +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Income Level</td>
<td>Log of initial real per capita GDP</td>
<td>LGDPC -</td>
<td>WDI 2005</td>
<td></td>
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<tr>
<td>Government Consumption</td>
<td>Ratio of government consumption to GDP</td>
<td>GOVC -</td>
<td>WDI 2005</td>
<td></td>
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<tr>
<td>Population</td>
<td>Growth rate of the population</td>
<td>POP -</td>
<td>WDI 2005</td>
<td></td>
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<tr>
<td>Saving Ratio</td>
<td>Gross domestic saving to GDP</td>
<td>SAVE +</td>
<td>WDI 2005</td>
<td></td>
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<tr>
<td>Human Capital</td>
<td>Literacy Rate</td>
<td>LITERACY +</td>
<td>WDI 2005</td>
<td></td>
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<tr>
<td>Inflation</td>
<td>Annual Inflation Rate</td>
<td>INF -</td>
<td>WDI 2005</td>
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<tr>
<td>Trade Openness</td>
<td>Sum of exports and imports to GDP</td>
<td>OPEN +</td>
<td>WDI 2005</td>
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<tr>
<td>Stock Market Development</td>
<td>Market capitalization over GDP</td>
<td>MCAP +</td>
<td>WDI 2005</td>
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<td>Foreign Direct Investment</td>
<td>Ratio of Foreign Direct Investment to GDP</td>
<td>FDI +</td>
<td>WDI 2005</td>
<td></td>
</tr>
<tr>
<td>Bank Development</td>
<td>Domestic credit provided by the banking sector divided by GDP</td>
<td>BCRREDIT +</td>
<td>WDI 2005</td>
<td></td>
</tr>
<tr>
<td>Quality of Institutions</td>
<td>Equally weighted index of the following indicators: Government Stability, Corruption, Law and Order, Bureaucratic Quality, and Democratic Accountability</td>
<td>INST +</td>
<td>International Country Risk Guide</td>
<td></td>
</tr>
</tbody>
</table>

Further, some determinants of economic growth that are routinely included in cross-country regressions should not be treated as exogenous, particularly when unobserved country-specific effects are not controlled for. Specifically, stock market development, bank development and FDI are endogenous to...
economic growth: higher economic growth stimulates the development of stock markets and financial intermediaries and boosts the flow of foreign direct investment. Based on the above, it is obvious that OLS estimators of cross-country growth regressions are biased and inconsistent, and thus cast doubt on the results of previous literature on the link between privatization and economic growth that are based on this estimation procedure.

Unlike previous studies, Bennett et al. (2004) use a dynamic panel model and Generalized Method of Moments (GMM, henceforth) estimation to test the growth consequences of different methods of privatization for a sample of 23 transition countries over the period 1991-2001. Their results show that the method of privatization fosters economic growth. However, the political and economic backgrounds of transition countries are quite different from those of developed and developing markets economies. Indeed, privatization was implemented in the absence of established stock markets or adequate institutions of legal governance (Boubakri, Cosset and Smaoui, 2009) which are key determinants of growth. Consequently, the results of Bennett et al. (2004) cannot be generalized to developing and developed countries.

This study uses new econometric techniques that reduce the statistical problems of cross-sectional growth regressions to investigate the relationship between economic growth and privatization. More specifically, we use a dynamic panel model that allows us to control for: (i) the unobserved country-specific effects that are theoretically important but too difficult to measure; (ii) the omitted variable bias; (iii) the inclusion of the lagged dependent variable as a regressor; (iv) and the endogeneity and simultaneity problems of explanatory variables. Further, the use of a dynamic panel will allow us to incorporate both the time-series dimension and the cross-sectional information in the data, thus gaining a higher degree of freedom and more precise estimates (Baltagi, 2001). In addition, we use low frequency data to abstract from crises and business cycle phenomena and focus on longer-run economic growth.

To analyze the impact of privatization on economic growth, we use the System GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The dynamic panel growth model can be written as follows:

\[ y_{i,t} - y_{i,t-1} = \alpha y_{i,t-1} + \beta' x_{i,t} + \mu_i + \epsilon_{i,t} \]  

Where \( y_{i,t} \) is the log of real per capita GDP, \( y_{i,t-1} \) represents the log of the level of real per capita GDP at the beginning of each period, \( x_{i,t} \) is the vector of the explanatory variables described above; \( \mu_i \) is an unobserved country-specific effect; \( \epsilon_{i,t} \) is the error term; \( i \) holds for the country \((i=1,\ldots,N)\); and \( t \) stands for the 5-year period \((t=1, 2, 3, 4, 5)\).

We can rewrite model (1) in dynamic form:

\[ y_{i,t} = \alpha^* y_{i,t-1} + \beta' x_{i,t} + \mu_i + \epsilon_{i,t} \]  

Where \( \alpha^* = (1 + \alpha) \)
Most of previous empirical growth studies ignored the country-specific effect, \( \mu_i \), relegating it to the error term, \( \varepsilon_{i,t} \). Hence, they estimated the following model:

\[
y_{i,t} = \alpha^* y_{i,t-1} + \beta^* x_{i,t} + \varepsilon_{i,t}^*
\]

Where \( \varepsilon_{i,t}^* = \mu_i + \varepsilon_{i,t} \)

Since \( y_{i,t-1} \) is, by construction, correlated with \( \mu_i \), \( y_{i,t-1} \) will also be correlated with the new error term, \( \varepsilon_{i,t}^* \). This makes the OLS parameter estimates biased and inconsistent. Therefore, we should be extremely cautious before drawing inferences based on OLS parameter estimates of cross-country growth regressions.

Anderson and Hsiao (1982) were the first to first-difference equation (2) in order to eliminate the unobserved country-specific factor, \( \mu_i \):

\[
y_{i,t} - y_{i,t-1} = \alpha^*(y_{i,t-1} - y_{i,t-2}) + \beta^*(x_{i,t} - x_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1})
\]

or

\[
\Delta y_{i,t} = \alpha^* \Delta y_{i,t-1} + \beta^* \Delta x_{i,t} + \Delta \varepsilon_{i,t}
\]

where \( \Delta \) denotes the difference operator.

However, first-differencing equation (2) introduces a new bias since, by construction, \( y_{i,t-1} \) in \( \Delta y_{i,t-1} \) is correlated with \( \varepsilon_{i,t-1} \) in \( \Delta \varepsilon_{i,t} \). The use of instrumental variables is required to purge this correlation. The Generalized Method of Moments (GMM) estimation technique employs orthogonality conditions to derive valid instruments. The key intuition behind GMM is to establish the population moment conditions and then to use their sample analogs to compute parameter estimates.

By setting the two following conditions: (a) the error term, \( \varepsilon_{i,t} \) is not serially correlated; and (b) the independent variables, \( x_{i,t} \) are weakly exogenous (i.e. they can be correlated with past and current realizations of the dependant variable but not with its future realizations, thus allowing for the possibility of simultaneity and reverse causality), Arellano and Bond (1991) propose the following moment conditions:

\[
E[y_{i,t-s}(\Delta \varepsilon_{i,t})] = 0 \quad \text{for } s \geq 2; \quad t = 3, \ldots, T.
\]

(6)

\[
E[x_{i,t-s}(\Delta \varepsilon_{i,t})] = 0 \quad \text{for } s \geq 2; \quad t = 3, \ldots, T.
\]

(7)

The moment conditions (6) and (7) imply that \( \Delta \varepsilon_{i,t} \) have a null covariance with all \( y_{i,t} \) and \( x_{i,t} \) dated t-2 and earlier. Consequently, it is possible, starting from t-2, to go back through the panel to obtain appropriate instruments in order to eliminate the correlation between \( \Delta y_{i,t-1} \) and \( \Delta \varepsilon_{i,t} \).

Using conditions (6) and (7), Arellano and Bond (1991) propose a two-step GMM estimator, commonly called difference GMM. Although asymptotically
consistent, Monte Carlo simulations suggest that the difference GMM estimator displays large finite sample biases and very low precision in the estimation of the autoregressive parameter, especially when it is close to unity (Blundell and Bond, 1998; Alonso-Borrego and Arellano, 1999).

Blundell and Bond (1998) address these shortcomings of the difference GMM estimator by introducing a new estimator called System GMM, which we shall use in our analysis. This estimator combines, within a system, the regression in differences (4) and the regression in levels (2), each with its specific set of instruments. For the equation in levels, the country-specific effect is not eliminated but must be controlled for with the use of instrumental variables. The instruments for the regression in differences remain as described above (i.e. lagged endogenous and exogenous variables previous or equal to t-2). For the regression in levels, the instruments are the lagged differences of the endogenous and exogenous variables. For these exogenous variables to be considered as appropriate instruments, Blundell and Bond (1998) and Arellano and Bover (1995) set the following additional moment conditions:

\[ E[(y_{i,t-s} - y_{i,t-s-1}) \ast (\mu_i + \epsilon_{i,t})] = 0 \quad \text{for } s = 1 \]  

\[ E[(x_{i,t-s} - x_{i,t-s-1}) \ast (\mu_i + \epsilon_{i,t})] = 0 \quad \text{for } s = 1 \]

The levels of the independent variables \(x_{i,t}\) may be correlated with the country-specific effect, \(\mu_i\), but there should be no correlation between the differences of the independent variables \(\Delta x_{i,t}\) and the country-specific effect \(\mu_i\).

It is worth noting that the consistency of the system GMM estimator depends on the assumption that the instruments are valid and that the error terms are not serially correlated. To test both hypotheses, we run two specification tests proposed by Arellano and Bond (1991) and Arellano and Bover (1995). The first is a Hansen test of over-identifying restrictions, which tests the overall validity of the instruments. Our model specification is adequate if we cannot reject the null hypothesis of over-identifying restrictions. The second tests the null hypothesis that the difference error term, \(\Delta \epsilon_{i,t}\) has no second order serial autocorrelation. The non-rejection of the null hypothesis gives support to our model.

Although it is superior to the difference GMM estimator, Blundell and Bond (1998) show that the standard errors of the two-step system GMM estimator are severely downwardly biased in finite samples. We address this problem as follows. First, as a minimally rule of thumb, we consider a lesser number of instruments than the number of cross-sectional units to reduce the over-fitting problem of the endogenous variables and improve the efficiency of the two-step estimator (Roodman, 2009; Beck and Levine, 2004). Second, we use the Windmeijer (2005) correction of the estimated variance. In a Monte-Carlo study, Windmeijer (2005) shows that the corrected variance closely approximates the finite sample variance of the two-step system GMM estimator.
In order to tackle the endogeneity problem of the privatization variables, we use two external instruments that have been identified in the literature: (1) A dummy variable for the legal environment since common law countries, as opposed to civil law counties, where investor protection is strong are more likely to privatize (Bortolotti, Fantini and Siniscalco, 2004) (2) A dummy variable for the political orientation of the government since a right-wing government is more likely to privatize than a left-wing government (Biais and Perotti., 2002)

5. Empirical Results

1. Descriptive Analysis

Table 3 presents descriptive statistics for our main variables. We note that the average growth rate for all our sample countries over the study period is 0.94%, ranging from a minimum of (-3.2%) to a maximum of 5.77%. We also note that, on average, the total proceeds from privatization sales amount to 0.623% of GDP over the study period. Moreover, 29% of the total privatization proceeds are raised through public offers on the stock market. Further, there is a wide variation in the literacy rate, inflation, trade openness, and market capitalization. While Italy has a literacy rate of 98.48% over the period 2000-2004, Pakistan has a literacy rate of only 29.26% over the period 1980-1984. While Hong Kong has a ratio of market capitalization to GDP equal to 366.89% during the period 2000-2004, Uganda has a ratio of market capitalization to GDP of only 0.93% during the same period.

2. Regression Analysis

a. Volume of Privatization

Table 4 shows the empirical results of the regressions on the link between economic growth and volume of privatization (PRIV) for our sample of 56 developed and developing countries between 1980 and 2004. In all our model specifications, the Hansen test cannot reject, at the 1% level, the null hypothesis that our instruments are valid. Moreover, the AR2 test fails to reject, at the 1% level, the null hypothesis that there is no second order autocorrelation in the differentiated residuals. These results provide support for our use of dynamic panel models to assess the impact of privatization on growth.

The results in Table 4 indicate that the coefficient of PRIV is positively and significantly correlated with economic growth at the 5% level in all the specifications, except in models (5) and (7) where it is significant at the 10% level. This finding is consistent with Plane (1997), Barnett (2000), and Palia and Phelps (2003) and suggests that the volume of privatization, measured by annual proceeds over GDP, has had a positive impact on long-term sustainable economic growth.
Table 3: Descriptive Statistics

This table reports the descriptive statistics of our main variables for the sample of 56 countries between 1980 and 2004.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROWTH</td>
<td>222</td>
<td>0.946</td>
<td>0.959</td>
<td>1.397</td>
<td>-3.262</td>
<td>5.778</td>
</tr>
<tr>
<td>PRIV</td>
<td>180</td>
<td>0.623</td>
<td>0.347</td>
<td>0.764</td>
<td>0.003</td>
<td>4.211</td>
</tr>
<tr>
<td>SIP</td>
<td>280</td>
<td>0.290</td>
<td>0</td>
<td>0.388</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>LGDPC</td>
<td>223</td>
<td>8.321</td>
<td>8.545</td>
<td>1.508</td>
<td>5.111</td>
<td>10.507</td>
</tr>
<tr>
<td>GOVC</td>
<td>279</td>
<td>16.029</td>
<td>15.769</td>
<td>5.949</td>
<td>4.510</td>
<td>48.062</td>
</tr>
<tr>
<td>POP</td>
<td>280</td>
<td>1.477</td>
<td>1.457</td>
<td>1.690</td>
<td>-20.359</td>
<td>5.686</td>
</tr>
<tr>
<td>LITERACY</td>
<td>182</td>
<td>76.777</td>
<td>83.171</td>
<td>17.942</td>
<td>29.257</td>
<td>98.484</td>
</tr>
<tr>
<td>INF</td>
<td>277</td>
<td>54.640</td>
<td>6.359</td>
<td>285.404</td>
<td>-2.744</td>
<td>3357.607</td>
</tr>
<tr>
<td>OPEN</td>
<td>276</td>
<td>70.883</td>
<td>59.061</td>
<td>48.969</td>
<td>12.876</td>
<td>390.063</td>
</tr>
<tr>
<td>MCAP</td>
<td>207</td>
<td>52.635</td>
<td>33.771</td>
<td>53.749</td>
<td>0.907</td>
<td>366.896</td>
</tr>
<tr>
<td>FDI</td>
<td>272</td>
<td>2.266</td>
<td>1.253</td>
<td>3.583</td>
<td>-3.883</td>
<td>38.704</td>
</tr>
<tr>
<td>BCREDIT</td>
<td>278</td>
<td>79.451</td>
<td>73.364</td>
<td>48.180</td>
<td>5.553</td>
<td>298.335</td>
</tr>
<tr>
<td>INST</td>
<td>280</td>
<td>4.352</td>
<td>4.250</td>
<td>1.282</td>
<td>0.000</td>
<td>6.600</td>
</tr>
</tbody>
</table>

In all our models, the initial level of development (LGDPC) is negatively and significantly correlated with growth. This result supports Barro's (1991) prediction that poor countries tend to grow more rapidly than rich countries. In addition, this finding provides evidence supporting the existence of conditional convergence across developed and developing countries (Mankiw et al., 1992; Barro and Sala-i-Martin, 1995).

The majority of the coefficients of government consumption (GOVC) are unexpectedly positive, but never significant in any of the model specifications. As expected, the coefficients of population growth (POP) are all negative. These results are reliable at the 1% level, only in models (2) and (3). This result is consistent with the findings of Savvides (1995), Adams (2006), and Cook and Uchida (2003) and indicates that a high population growth rate slows down economic growth and dilutes the benefits of economic policies.

With respect to the saving ratio (SAVE), the coefficients are positive and significantly correlated with economic growth at the 5% level in all our models, indicating that higher saving rates lead to higher capital accumulation and
hence fosters economics growth (Solow, 1956; Koopmans, 1965; Ramsey, 1928; Frankel, 1962; Romer, 1986; etc.).

The results also suggest that the literacy rate (LITERACY) measuring the investment in human is not a key determinant of economic growth, since the regression coefficients of this variable are insignificant, at the 5% significance level, whatever the specification.

In model specification (2), we control for inflation using the annual inflation rate (INF). The evidence shows that inflation is negatively and significantly related to economic growth at the 1% level. This finding is consistent with earlier studies (Romer and Romer, 1998) that sustain that inflation slows down economic growth. Indeed, an increase by 1% in the annual inflation rate will lead to a decrease in the growth rate by 0.1%, everything else being constant. One possible explanation for this result is that inflation is a good indicator of macroeconomic instability and serves as proxy for the condition of the credit market and investment climate. Therefore, it should influence negatively economic growth (Fisher, 1993).

In model specifications (3) to (6), we control in turn for: Trade Openness (OPEN), Stock Market Development (MCAP), Foreign Direct Investment (FDI), and Bank Development (BCREDIT). The results show that none of these variables is significantly related to economic growth at conventional levels.

A striking result obtained in Table 4 is the positive and significant coefficient (0.091) of the Quality of Institutions variable (INST) at the 5% level. This finding provides support to the various studies that argue that developed institutions of governance are important for economic growth, since they shape the structure of incentives and contribute to the efficient allocation of resources in the economy (Knack and Keefer, 1995; Mauro, 1995; Hall and Jones, 1999; Easterly and Levine, 2003; Dollar and Kraay, 2003; Acemoglu et al., 2001).
Table 4: Impact of the Volume of Privatization on Economic Growth

This table shows the results of the regressions estimated with the GMM in system procedure of Blundell and Bond (1998) for our sample of 56 countries for the period 1980-2004. The dependent variable is economic growth measured by the first difference of the log of real per capita GDP. The measure of privatization is privatization proceeds to GDP. The definitions of our variables appear in Table 2. The p-values appear in parentheses below the estimated coefficients. The Hansen (1982) test tests the validity of our instruments, while AR2 is the Arellano and Bond (1991) test of the absence of second order autocorrelation in the differentiated residuals. ***, **, * refer to the 1, 5 and 10% levels of significance respectively. Two-step system GMM estimator is used. Windmeijer (2005) finite-sample correction to the two-step covariance matrix is employed. Robust standard errors consistent in the presence of heteroskedasticity and autocorrelation within the panel are reported.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Expected Sign</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSTANT</td>
<td>+</td>
<td>0.399</td>
<td>0.755*</td>
<td>0.579**</td>
<td>0.505</td>
<td>0.197</td>
<td>0.464</td>
<td>0.100</td>
</tr>
<tr>
<td>LGDPC</td>
<td>-</td>
<td>-0.126**</td>
<td>-0.115**</td>
<td>-0.082**</td>
<td>-0.125***</td>
<td>-0.071</td>
<td>-0.122***</td>
<td>-0.085**</td>
</tr>
<tr>
<td>GOVC</td>
<td>-</td>
<td>0.005</td>
<td>0.003</td>
<td>0.005</td>
<td>0.003</td>
<td>0.007</td>
<td>0.002</td>
<td>-0.003</td>
</tr>
<tr>
<td>POP</td>
<td>-</td>
<td>-0.043</td>
<td>-0.125***</td>
<td>-0.100***</td>
<td>-0.061</td>
<td>-0.060</td>
<td>-0.057</td>
<td>-0.029</td>
</tr>
<tr>
<td>SAVE</td>
<td>+</td>
<td>0.010***</td>
<td>0.009***</td>
<td>0.007**</td>
<td>0.010***</td>
<td>0.010**</td>
<td>0.008***</td>
<td>0.006***</td>
</tr>
<tr>
<td>LITERACY</td>
<td>+</td>
<td>0.004</td>
<td>0.001</td>
<td>0.001</td>
<td>0.003*</td>
<td>0.001</td>
<td>0.004</td>
<td>0.002*</td>
</tr>
<tr>
<td>PRIV</td>
<td>+</td>
<td>0.039***</td>
<td>0.023***</td>
<td>0.031**</td>
<td>0.035**</td>
<td>0.029*</td>
<td>0.032**</td>
<td>0.022*</td>
</tr>
<tr>
<td>INF</td>
<td>-</td>
<td>-0.001**</td>
<td>(0.021)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPEN</td>
<td>+</td>
<td></td>
<td>-0.000</td>
<td>(0.975)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCAP</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCREDIT</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>INST</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.091**</td>
</tr>
</tbody>
</table>

Hansen Test  
AR2 Test  
N  
Nbr of instruments  

35
b. Method of Privatization

We control for the method of privatization using the ratio of the proceeds from Share Issue Privatizations to total privatization proceeds (SIP). The results appear in Table 5. All our specifications satisfy the diagnostic tests that our instruments are appropriate, and that there is no second order autocorrelation in the differenced residuals.

We note from Table 5 that the coefficients of LGDPC have the expected negative sign, but are no longer statistically different from zero, except in model (7) where LGDPC is negatively and significantly related to growth.

As expected, the coefficients of GOVC, across specifications, are negative and significant at the 5% level in models (2) and (6), and at the 10% level in models (1) and (7). This finding is consistent with Cook and Uchida's (2003) argument that government consumption is a proxy for the level of government corruption and therefore should have a negative impact on economic growth.

The results also suggest that the coefficients of Population Growth (POP) are consistently negative and significant at the 5% level, except for model (8) where POP is not statistically different from zero at 5%. These results confirm the findings of Adams (2006) and Cook and Uchida (2003) that high population growth rates slow down economic growth.

Consistent with the results reported in Table 4, the saving ratio (SAVE) is consistently positively and significantly correlated with economic growth across all specifications (except in model (2)), while LITERACY have no significant impact on economic growth. The results of Model (2) yield a negative coefficient of INF, but it is no longer statistically different from zero at conventional levels. Once again, the coefficients of TRADE and BCREDIT are not statistically significant at the 5% level.

We also note from Table 5 that the coefficients of SIP have the expected positive sign and are significant at the 5% level in models (1), (2) and (6) and at the 10% level in models (3) and (5). This evidence suggests that privatization through public offer on the stock market stimulates economic growth.

In model (4), we control for the level of stock market development using the ratio of market capitalization to GDP (MCAP). Interestingly, the coefficient of this variable is, as expected, positive and significant at the 5% level. Moreover, the coefficient of SIP turns negative, but not significant at conventional levels. Hence, privatization through public offers is no longer a significant determinant of growth when the level of stock market development is controlled for. One possible explanation for this result is that privatization through public offers contributes to stock market development (Bouchikova and Megginson, 2001; Boubakri and Hamza, 2007). Since stock market development has been shown in the literature to have a positive effect of economic growth (Demirguc-Kunt and Maksimovic, 1998, among others), it is
possible that the method of privatization contributes to economic growth through its positive impact on stock market growth.

In model (6), we control for the level of foreign direct investment (FDI). The results in Table 5 show that the coefficient of FDI is consistently positive (0.015) and significant at the 1% level. This finding is consistent with Cook and Uchida’s (2003) argument that higher FDI contributes to economic growth by bringing new advanced technologies and management and marketing skills to the host country. It is worth noting that the positive and significant impact of FDI on growth is obtained only when the method of privatization is controlled for. In addition, the coefficient of SIP is only marginally significant at the 10% level. This evidence suggests that privatization through public sales of SOEs on the stock market may boost the flow of FDI by attracting foreign investors. Since economic theory provides evidence that the level of FDI positively influences economic growth (Borensztein et al., 1998; De Mello, 1999), the method of privatization may contribute to economic growth through its positive effect on FDI.

Finally, the coefficient of the Quality of Institutions variable (INST) in model (7) is positive and significant at the 1% level, while the coefficient of SIP is no longer statistically significant at conventional levels. We can explain this result by the fact that several studies sustain that privatization creates a demand for better institutions of governance, such as increased investor protection, better respect for property rights, lower policy risk and better transparency (Coffee, 1999; Megginson and Netter, 2001; Perotti and van Oijen, 2001). Moreover, Boubakri et al. (2009), using a sample of 20 developed and 34 developing countries, provide empirical evidence that privatization through public share issues helps to reduce the risk of corruption and to improve the quality of law enforcement, and of overall investor protection. Since more developed institutions of governance constitute a precondition for economic growth (Knack and Keefer 1995; Beck, Demirgüç-Kunt, and Levine 2000), privatization through share issues on the stock market, may help to stimulate economic growth, by enhancing the development of institutions of legal governance.

To assess the possibility that well developed institutions of governance may facilitate the effectiveness of privatization as a policy for economic growth, we include in model (8) an interaction term between our privatization variable SIP and INST (SIP*INST). The results, displayed in Table 5, indicate that the coefficient of SIP is positive but no longer significant at 5%. On the other hand, the coefficient of SIP*INST is positive and significant at the 5% level (0.006). This result suggests that high levels of development of institutions of governance positively influence the effect of privatization on economic growth.
Table 5: Impact of the Method of Privatization on Economic Growth

This table shows the results of the regressions estimated with the GMM in system procedure of Blundell and Bond (1998) for our sample of 56 countries for the period 1980-2004. The dependent variable is economic growth measured by the first difference of the log of real per capita GDP. The measure of privatization is the ratio of proceeds SIP to total privatization proceeds. The definitions of our variables appear in Table 2. The p-values appear in parentheses below the estimated coefficients. The Hansen (1982) test tests the validity of our instruments, while AR2 is the Arellano and Bond (1991) test of the absence of second order autocorrelation in the differentiated residuals. ***, **, * refer to the 1, 5 and 10% levels of significance respectively. Two-step system GMM estimator is used. Windmeijer (2005) finite-sample correction to the two-step covariance matrix is employed. Robust standard errors consistent in the presence of heteroskedasticity and autocorrelation within the panel are reported.

<table>
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<th>Explanatory Variables</th>
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<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
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<td>0.247*</td>
<td>0.295**</td>
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<td>0.307**</td>
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<td>-0.030</td>
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<td>-0.008</td>
<td>-0.027</td>
<td>-0.043**</td>
<td>-0.005</td>
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<td>-0.010**</td>
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<td>-0.008*</td>
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<tr>
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<td>-0.035**</td>
<td>-0.034**</td>
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<td>0.007*</td>
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<td>0.008***</td>
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<tr>
<td>SIP</td>
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<td>0.109**</td>
<td>0.111*</td>
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<td>0.043*</td>
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<td>(0.635)</td>
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<td>(0.005)</td>
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<td>(0.995)</td>
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<td>INST</td>
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<td>(0.002)</td>
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<td>(0.004)</td>
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<td>0.111</td>
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6. Conclusion

The objective of this study is to investigate the impact of privatization on economic growth for a sample of 56 developed and developing countries over the period 1980-2004. We use a dynamic panel model in order to reduce the statistical problems of cross-sectional growth regressions estimated by OLS. Further, a dynamic panel setting allows us to control for the country-specific effects, the omitted variable bias and the endogeneity of explanatory variables.

Our results show that privatization measured by privatisation proceeds over GDP plays an important role in stimulating economic growth, confirming results in Plane (1997) and Barnett (2000) but go against evidence in Filipovic (2005) and Cook and Uchida (2003). Moreover, privatization through public offerings on the stock market contribute to economic growth. These findings are consistent with the expected theoretical impact of privatization, either through the micro or the macro channel of transmision from the reform to growth.

Further, our findings indicate that population growth, government consumption and inflation are negatively correlated with economic growth, whereas the savings ratio, stock market development, and foreign direct investment are positively related to growth, confirming earlier results on the determinants of economic growth.

An interesting result is that the development of institutions of governance is also a key determinant of economic growth. Moreover, high levels of development of institutions of governance positively influence the effect of privatization through share issues on economic growth, confirming the particular importance of investor protection in the success of the reform. Indeed, the development of institutions of governance imply more respect for property rights, better regulation, less policy risk and more transparency, thereby encouraging investment and creating incentives which are crucial to encourage the participation of investors, thus creating a positive spillover effect on growth.

One main policy implication of this study is that the implementation of privatization through share issues on the stock market accompanied with a good institutional environment that protects property rights may play an important role in the quest for economic growth.
Endnotes

i Contrary to previous studies that focused on transition economies and/or developing countries, we consider a large sample of both developed and developing countries, which allows for a large time period of privatization experience.

ii More mature capital market structures can also be an important element in improved corporate governance (Megginson and Netter, 2002). Privatization itself may contribute to domestic capital market, and “the larger the proportion of output that comes from the private sector, the greater is the scope for benefiting from capital markets” Bennett et al. (2004).

iii Filipovic (2005) cites the examples of Latin American economies, including Argentina, Mexico and Peru, who used their substantial privatization proceeds to pay off their outstanding debt.

iv Hence, the first period covers the years 1980-1984; the second period covers the years 1985-1989; the third period covers the years 1990-1991 and so on.

v To see this, simply lag equation (2) by one period.

vi Furthermore, even standard panel data estimators with fixed or random effects are not appropriate for estimating models like equation (3). For example, fixed effects panel data regressions yield biased estimates since correlation between the transformed lagged dependent variable and the transformed error term is still there (Baltagi, 2001).

vii Only the most recent difference is used as an instrument in the regression in levels since the lags in levels are already used as instruments in the regression in differences.

viii Arellano and Bond (1991) note that when the error term, \( \varepsilon_{i,t} \), is not serially correlated, then the differenced error term, \( \Delta \varepsilon_{i,t} \), should display first order autocorrelation but no second order autocorrelation.

References


