Centre on Regulation and Competition

WORKING PAPER SERIES

Paper No. 7

PRIVATISATION AND ECONOMIC GROWTH IN DEVELOPING COUNTRIES

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October 2001

ISBN: **1-904056-06-7**

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Published by: Centre on Regulation and Competition,
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PRIVATISATION AND ECONOMIC GROWTH IN DEVELOPING COUNTRIES

1. INTRODUCTION

Privatisation accelerated in the 1990s. In Europe this was sparked by the liberalisation of markets at the European Union level and budgetary constraints faced by government (Parker, 1999). Privatisation particularly gained momentum in the late 1980s and spread to a wide range of developing economies. Over the last decade a significant proportion of privatisation transactions have been in developing economies and have entailed sales of public utilities. Privatisation transactions for the utilities sector have accounted for over a third of all transactions in developing economies since 1988. Between 1988-93 the value of sales for infrastructure industries amounted to US $30 billion, compared to US $78 billion for all privatisation transactions in developing economies (World Bank, 1995(a), Kikeri, 1998).

There is now a considerable time lapse since privatisation was first implemented in developing countries for the results to be evaluated at the macroeconomic level. Admittedly, privatisation as a policy proceeded in the 1980s without much knowledge of either its impact or contribution to economic growth. Instead greater attention was paid to measuring the extent of privatisation (Bennell, 1997). This situation is changing and more recent contributions assessing post-privatisation performance have been reviewed in Megginson and Netter, (2001). Among those most frequently cited are: Galal, Jones, Tandon and Vogelsang (1995); Megginson, Nash and Van Randenborgh (1994) and Boubakri and Cosset (1998). However, these studies have largely concentrated on financial measures of performance and have incorporated industrialised countries and higher income developing countries in their relatively small databases. In recent years there have also been a few attempts to measure the direct impact of privatisation on economic growth in a cross-country context (Plane 1997; Barnett, 2000). These studies have concluded that privatisation has had a sizeable positive effect on economic growth.

The purpose of this paper is to re-examine the relation between privatisation and economic growth using data for 63 developing countries over a time period of 1988-97. The next section provides a brief review of the theoretical links between a change in ownership from public to private and economic growth, and of the empirical literature that has examined this relationship. The third section discusses the methods adopted to explore the relation between

privatisation and economic growth and the data used. The fourth section discusses the results of the analysis. The final section provides a summary and draws some broad conclusions.

2. THEORY AND EMPIRICAL ANALYSIS

Policy-makers in developing economies have often set a broader agenda for privatisation than the efficiency and resource allocation objectives that were implicit in the policy conditions of structural adjustment programmes. The motives for privatisation have encompassed improved fiscal equity and distributional performance, although the importance attached to each has varied between and within countries over time (UNCTAD, 1996, Yarrow, 1999). Nevertheless, the link between privatisation and economic growth relates most directly to the microeconomic theories used to justify privatisation. At the heart of the debate are theoretical perspectives on the ownership issue drawn from property rights theory, public choice theory and principal agent analysis (Alchian, 1965; Tullock, 1965; Jensen and Meckling, 1976). By the end of the 1970s these theories were influencing attitudes towards public ownership among policy-makers in developed and developing countries (Cook and Kirkpatrick, 1988; Martin and Parker, 1997). The key theoretical elements underpinning the argument for a change in ownership from public to private related firstly to the view that public ownership led to the pursuit of objectives that detracted from economic welfare maximisation (Boycko, Shleifer and Vishny, 1996). Secondly, an ownership change could improve economic performance by changing the mechanisms through which different institutional arrangements affect the incentives for managing enterprises (Vickers and Yarrow, 1988; Laffont and Tirole, 1991; Cook and Fabella, 2001).

These arguments are linked to presumptions concerning the condition of publicly-owned enterprises before they are privatised. A typical view presented publicly-owned enterprises as overextended and poor performers (Kikeri, Nellis and Shirley, 1994). In this situation publicly-owned enterprises crowded out private enterprises in their access to credit and erected statutory barriers to preserve the monopoly status of publicly-owned enterprises. It was argued that the net effect of a change in ownership from public to private would be improved economic efficiency, and over time an increase in investment.

If privatisation was sufficiently extensive and had efficiency inducing effects then the contribution of improved performance could be detected at the macroeconomic level. Privatisation would reduce crowding out and provide more credit to the private sector. It

would increase the opportunities for investment in newly privatised enterprises by releasing them from the capital constraints previously faced under public ownership. A change in ownership would increase efficiency by introducing changes to the governance mechanisms and structure of incentives facing employees.

Attempting to measure the contribution of an ownership change on economic growth is complicated by the fact that economic performance is likely to be affected by factors that affect the wider economic environment in which privatised enterprises operate. Privatisation is often accompanied in developing countries by changes in economic policies that affect economic growth. Significant attention has focussed on the process of deregulation and the importance of competition and its relation to economic efficiency. Vickers and Yarrow (1991) have argued that competition and its regulation are crucial for the improvement of efficiency in privatised enterprises. Unravelling the separate effects of policy changes and degrees of competition is difficult, and partly explains the relative deficiency of empirical analysis in this area. The other major constraint to the development of empirical investigations has obviously related to the time period that has elapsed since privatisation. Until recently insufficient data was available to carry out studies capable of measuring the dynamic effects of privatisation.

Two recent studies have attempted to measure the impact of privatisation on economic growth in developing countries. The first by Plane in 1997. This study used data for 35 developing countries covering the period 1984-92. Plane (1997), using Probit and Tobit models, found that privatisation positively affected GDP growth and that the effect on growth was more significant for activities of a public goods type than for other sectors. The study concludes that on average institutional reform increased economic growth from 0.8 percent to 1.5 percent between the sub-periods 1984-88 and 1988-92.

The second study was published by the IMF in 2000 (Barnett, 2000). This study investigated the effect of privatisation on real GDP growth, unemployment, and investment. Only twelve developing countries were used in this 18 country study. The rest consisted of transitional economies. The empirical analysis from this study strongly supported the hypothesis that privatisation was positively correlated with real GDP growth. They found that privatisation of a 1 percent of GDP was associated with an increase in the real growth rate of 0.5 percent in period one and 0.4 percent in period two. These periods vary for each country to reflect

periods of active privatisation, but the precise span of years for the study is not specified. It has also been suggested that the privatisation variable used in Barnett's is likely to capture the positive impact of a general regime change towards better economic policies (Davis, Ossowski, Richardson and Barnett, 2000).

3. METHODOLOGY AND DATA

In most developing countries privatisation has been a new policy instrument and has typically been implemented sporadically rather than annually. As a result, this study applies a cross-country regression analysis to examine whether or not privatisation affects economic growth. Cross-country regression analysis has been widely used to scrutinise the determinants of long-run growth. These studies have identified various policy and socio-demographic factors that may contribute to long-run growth. Studies of these types and their interpretation have led to debates over the validity of these approaches.

It has become apparent that cross-country growth regressions potentially suffer a number of statistical and conceptual problems. Harberger (1987) points out that one of the most fundamental statistical problems could be caused by the inclusion of countries that have little in common into the same regression. In principle, regression analysis necessitates observations that are drawn from a distinct population. Thus, the inclusion of the countries which are intrinsically different may result in unacceptable levels of statistical bias (Levine and Zervos, 1993).

An important conceptual problem relates to the way in which cross-country growth regression analysis is conducted. A typical cross-country growth regression analysis uses data that are averaged over a significantly long period, to permit the coefficients on various variables to be interpreted as elasticities. In turn, these coefficients are used to indicate the percentage growth that results from a one percent change in a policy variable. Nonetheless, Levine and Zervos (1993) warn that this type of analysis ought to be treated cautiously since a cross-country regression itself does not provide the complete answer to any casual relationships between policy variables and growth. Accordingly, they argue that '[c]ross-country regressions should be viewed as evaluating the strength of partial correlations, and not as behavioural relationships that suggest how much growth will change when policies change' (p.426).

In practice cross-country regression analysis has been one of the most widely used methods in research on the relationship between policy changes and growth. In order to take advantage of its usefulness, it is imperative to minimise any possibility that distorts results, and to check for the robustness of results. With these reservations in mind, this paper carries out a cross-country growth regression analysis using the framework of the so-called extreme-bounds analysis (EBA). The EBA was developed by Leamer (1978, 1983, and 1985) and Leamer and Herman (1983) and has been applied practically in a number of empirical studies (Cooley and Leroy, 1981; Dervi et al, 1990; Levine and Renelt, 1992; Levine and Zervos, 1993).

The EBA can be conducted by applying the following linear ordinary least squares (OLS) regression:

$$Y = \beta_1 I + \beta_2 M + \beta_3 Z + u,$$

where Y is the GDP per capita growth rate, I is a set of variables that are commonly included in the regression, M is the policy variable of particular interest, and Z is a set of up to three variables chosen from a pool of policy variables. This method follows Levine and Renelt (1992) and is different from the original EBA developed by Leamer (1978), which includes all the Z variables in a regression. It is more practical and has been referred to as a modified version of EBA (Doppelhofer, Miller, and Sala-i-Martin, 2000).

In accordance with the EBA procedure, the combinations of a set of the Z variables are changed to examine whether or not the coefficient on M is statistically significant and maintains the same sign throughout the process. To conduct the EBA, all possible combinations of regressions are estimated to obtain β_2 and the corresponding standard deviation, σ, for each regression. Then, the upper or maximum extreme bound is estimated as the maximum value of β_2 plus 2σ. The lower or minimum extreme bound is defined as the minimum value of β_2 minus 2σ. If these maximum and minimum extreme bounds keep the same sign, the result is interpreted as robust rather than 'fragile' (see Appendix 1 for a more detailed account of the EBA).

Several potential problems relating to EBA have been identified (Sala-i-Martin, 1994). Significant among these is the so-called reverse data mining problem where the control variables in a regression are drawn from the true population. This implies that all data contain

some element of error. By seeking different combinations of control variables, it is highly likely then that there exists a combination that results in a variable of interest being statistically insignificant or changing its coefficient sign. As a result, the EBA 'may be too strong' (Sala-i-Martin, 1994, p.743).

Accordingly, Sala-i-Martin (1997) has attempted to estimate the entire distribution of β_2. He also suggests an alternative method to conduct a sensitivity analysis, although the statistical rationale for the approach has been shown to be uncertain (Folster and Henrekson, 2001). More recently, Doppelhofer, Miller, and Sala-i-Martin (2000) have developed an alternative method based on a Bayesian approach. Our paper, however, continues to use the modified EBA developed by Levine and Renelt (1992) as these later contributions are still in their experimental stage.

Privatisation Variable

The most crucial question is how to measure the magnitude of privatisation in a given country. Plane (1997) has used the cumulative proceeds from privatisation during the period 1988-92 as a share of GDP in 1990 and a dummy variable based on the information obtained from this indicator. A similar indicator is used in this study although the average GDP during the sample period is used as a weight instead of choosing a particular year. This reduces the arbitrariness from choosing a particular year since sample countries might experience a variety of external or internal shocks in a particular year. In addition, the use of a dummy variable for privatisation is dropped since it cannot convey information on the magnitude of privatisation into the regression.

The dataset for privatisation is summarised in Table 1. The availability of privatisation data largely determines the number of sample countries and the sample period. As a result, 63 developing countries and the period 1988-1997 are selected. The dataset shows the highly concentrated pattern of privatisation, despite its adoption in a wide range of countries. Latin American countries dominate the table in terms of privatisation as a share of GDP. The dataset and full list of other variables corresponding to these countries are shown in Appendix 2.

Table 1. Cumulative Proceeds from Privatisation (CPP) and Average GDP (AGDP) during the Period 1988-1997 (in US$ millions)

	Country	CPP	AGDP	CPP/ AGDP (%)		Country	CPP	AGDP	CPP/ AGDP (%)
1	Argentina	27921.0	28267.3	9.9	33	Tanzania	140.8	15031.3	0.9
2	Peru	7477.5	87051.1	8.6	34	Uganda	151.6	16429.3	0.9
3	Malaysia	10076.3	118695.4	8.5	35	Zimbabwe	197.3	22240.3	0.9
4	Singapore	4578.0	59669.2	7.7	36	Honduras	93.5	11003.2	0.8
5	Belize	54.3	793.0	6.8	37	Kenya	235.1	28329.6	0.8
6	Jamaica	532.9	8122.0	6.6	38	Togo	38.8	5220.3	0.7
7	Panama	832.8	13363.5	6.2	39	India	7073.0	1172166.0	0.6
8	Trinidad & Tobago	448.4	7599.4	5.9	40	Korea, Republic	2546.0	442276.5	0.6
9	Zambia	417.2	7865.9	5.3	41	Guinea	45.0	9928.1	0.5
10	Mexico	33353.1	647900.5	5.1	42	Jordan	58.7	11959.8	0.5
11	Papua New Guinea	223.6	4397.3	5.1	43	Thailand	1378.4	296925.5	0.5
12	Bolivia	884.2	17720.7	5.0	44	Tunisia	171.0	37380.8	0.5
13	Brazil	34559.4	877419.5	3.9	45	Oman	60.1	13370.7	0.4
14	Ghana	872.6	23098.0	3.8	46	Ecuador	169.4	48336.9	0.4
15	Venezuela	5914.1	168554.8	3.5	47	Mali	21.9	6015.3	0.4
16	Colombia	5685.1	215739.9	2.6	48	Costa Rica	56.7	18735.7	0.3
17	Barbados	51.0	2039.5	2.5	49	Paraguay	42.0	15767.2	0.3
18	Morocco	1846.7	77307.4	2.4	50	Cameroon	41.1	23779.9	0.2
19	South Africa	6064.4	257829.9	2.4	51	Guinea-Bissau	0.5	235.2	0.2
20	Cote d'Ivoire	476.3	20874.1	2.3	52	Malawi	10.8	5549.1	0.2
21	Sri Lanka	725.9	34640.0	2.1	53	Bangladesh	60.3	98712.6	0.1
22	Nicaragua	130.2	6520.6	2.0	54	Burkina Faso	6.4	8411.6	0.1
23	Egypt	2777.7	142925.9	1.9	55	Burundi	4.2	4332.2	0.1
24	Philippines	3810.0	204678.8	1.9	56	Guatemala	43.4	33999.6	0.1
25	Senegal	191.4	12344.0	1.6	57	Nepal	15.0	18530.0	0.1
26	Turkey	3843.4	306790.8	1.3	58	Sierra Leone	1.6	2396.3	0.1
27	Mozambique	110.6	8932.9	1.2	59	Uruguay	17.0	23925.7	0.1
28	Pakistan	1951.0	161154.2	1.2	60	Iran	18.1	209417.6	0.0
29	Chile	1484.1	129306.1	1.1	61	Mauritania	1.1	3357.2	0.0
30	Benin	56.5	5692.5	1.0	62	Vietnam	2.6	72856.0	0.0
31	Indonesia	5162.8	494440.0	1.0	63	Yemen	0.8	8544.5	0.0
32	Nigeria	763.5	87263.8	0.9					

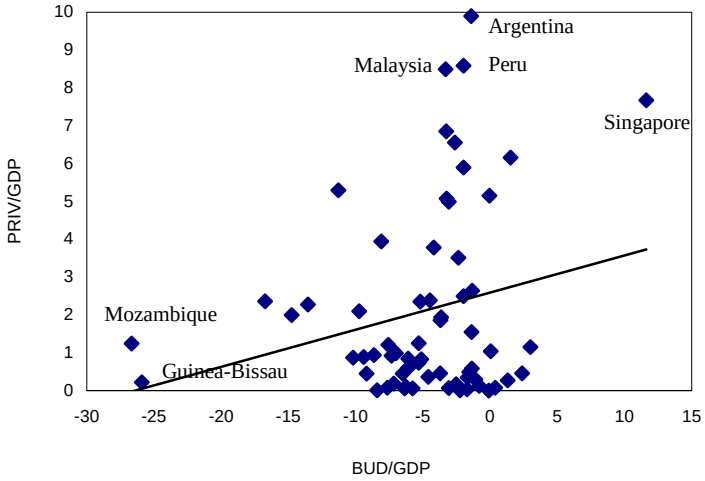
Source: Primary data from World Bank Privatization Database and Privatisation International (various issues), and World Bank Global Development Network Growth Database.

To reduce the risk that the privatisation variable reflects other policy and structural reforms at the macroeconomic or aggregate level, it is necessary to check if the effect of this variable can be isolated. This can be achieved by examining the relationship between some of the policy variables that might be captured by the privatisation variable. The effects of the privatisation variable may be linked to the size of the government budget deficit since privatisation may have been implemented as a quick solution to a budgetary problem in developing countries (Yarrow, 1999). In order to rule out this possibility, a simple correlation between the privatisation indicator and the average ratio of government budget deficit to GDP during the sample period 1988-1997 was examined.

The result, shown in Figure 1, indicates that there is no correlation between the two variables (the correlation coefficient is 0.23). Argentina, Peru, and Malaysia implemented sizeable privatisation programmes while maintaining relatively low budget deficits. Guinea-Bissau and Mozambique recorded considerably high budget deficits with relatively small

privatisation programmes. It should be emphasised that this simple correlation analysis, conducted without lags, does not eliminate the possibility that some countries might have reduced their budgetary deficits as a result of privatisation.

Figure 1: The Correlation between Privatisation and Government Budget Deficit



Note: PRIV/GDP and BUD/GDP are the average percentages during the period 1988-1997. Primary data from World Bank Privatisation Database and World Bank Global Development Network Growth Database.

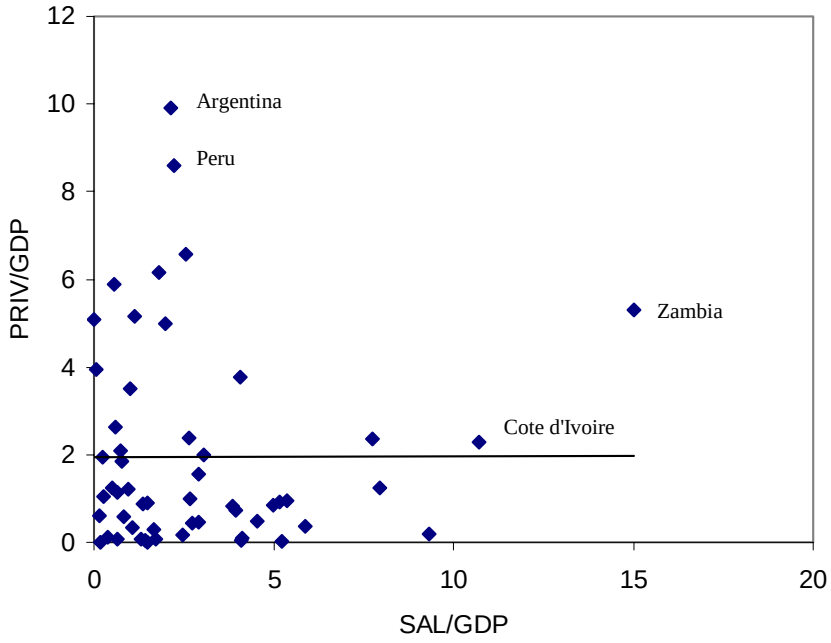
Similarly, the privatisation variable may capture the effects of policy reforms pursued through World Bank adjustment programmes. In our sample, 56 of the 63 countries received various adjustment loans with policy reform conditions during the period 1985-1997. In particular, Argentina, Bangladesh, Bolivia, Ghana, Jamaica, Mauritania, and Zambia received adjustment loans with explicit conditions to implement privatisation programmes.

The World Bank states that "[p]rivatisation became an important feature in the Bank's adjustment lending from the mid-1980's. This reflected both the concurrent ideological shift in favour of private ownership as well as the Bank's long, and painful, experience with failed attempts at reforming public enterprises" (World Bank, 1995(b), p.56). Before 1985, 8 percent of all public enterprise reform-related adjustment loans attached conditions regarding the implementation of privatisation. Between 1985-1989, the proportion increased to 14 percent and to 32 percent in the period between 1990-1994 (World Bank, 1994).

A simple correlation was conducted between privatisation and World Bank adjustment loans in order to eliminate the possibility that the privatisation variable captures the macroeconomic effects of adjustment programmes. The magnitude of World Bank

adjustment loans is calculated in the same manner as the privatisation indicator (i.e. the cumulative amount of World Bank adjustment loans during the period 1985-1997 divided by the average GDP during the same period). The result reported in Figure 2 clearly indicates that there is no apparent relationship between privatisation and adjustment loans (the correlation coefficient is 0.03).

Figure 2: The Correlation between Privatisation and World Bank Adjustment Loans



Note: PRIV/GDP and SAL/GDP are the average percentage during the period 1988-1997. Primary data from World Bank Privatisation Database, World Bank Global Development Network Growth Database, and World Bank SAL Database.

Of course, these results do not automatically confirm that the privatisation indicator is able to capture the effects of privatisation at the macroeconomic level. It only assures us that the privatisation indicator is not picking up the effects of other policy reforms. In addition, since our study has significantly increased the number of sample countries compared with the previous studies, then the possibility that the privatisation indicator captures the effects of other macroeconomic reforms is considerably reduced.

4. EXTREME BOUNDS ANALYSIS (EBA)

The analysis is conducted in two parts. In the first, the control variables are examined to find appropriate specifications for the I variables. In the second part, the results of introducing privatisation are reported.

The Basic Test for the Control Variables (the I variables)

In principle, the I variables are always included in an EBA. These variables have to be selected with great care. In the context of a cross-country growth regression, the control variables ought to control for initial economic, political, and social conditions of countries. There are several variables that are routinely included in these types of regressions. They are: (1) log of initial GDP per capita; (2) initial life expectancy at birth; (3) average population growth rate; (4) the ratio of government consumption to GDP; (5) the ratio of gross domestic investment to GDP; and (6) the rate of secondary school enrolment or attainment. These variables, with the exception of (2), are sometimes called 'Barro-regressors' and are used widely in cross-country growth regressions (Barro, 1991).

Earlier, Levine and Zervos (1993) have argued that the inclusion of a fiscal variable (4) does not necessarily control for initial conditions or political stability but is a contemporaneous economic policy indicator. However, Barro and Sala-i-Martin (1995) have argued that a fiscal variable can be used as a proxy 'for political corruption or other aspects of bad government, as well as for the direct effects of non-productive public expenditures and taxation' (p.434).

The inclusion of investment as a control variable also remains controversial. Levine and Renelt (1992) have included the ratio of investment to GDP in their I variables, although a number of studies have shown that causality runs from growth to investment and not vice versa (Blomstrom, Lipsey, and Zejan, 1993 and Barro and Sala-i-Martin, 1995). More recently, Temple (1999) argues that the correlation is reverse and robust. Besides the concern over the direction of causality, there is also a question over what measure of investment to use. In general, gross domestic investment is often used as a proxy for investment. However, Barro and Sala-i-Martin (1995) argue that since gross domestic investment includes both private and public spending, it may be an inappropriate measure of investment. DeLong and Summers (1991) also argue that the use of gross domestic investment can be ruled out since producer durables are the significant component of investment. Since we are unable to

resolve the causality problem, we test for different combinations of the I variables using both gross domestic investment and government consumption.

Another specification problem we have encountered relates to the inclusion of the secondary school enrolment ratio. This was not included in our study since it does not capture the quality of education. Barro and Sala-i-Martin (1995) have argued that it is more appropriate to use the secondary school attainment ratio, although if we use this variable, the number of countries will have to be severely reduced owing to a lack of data. Instead, the initial life expectancy at birth is used. This variable captures various aspects of human capital development, such as investment in education and increases in schooling, thereby reflecting the quality of education in general (Ram and Schulz, 1979, Sala-i-Martin, 1997, and Kalemili-Ozcan, Ryder, and Weil, 2000).

Combinations of variables were used to find the I variables relevant for this study. This was achieved by examining three different combinations of selected I variables. The first specification included the log of initial GDP per capita for 1988 (hereafter LGYP), the initial life expectancy at birth for 1987 (LIFE), the average population growth during the sample period 1988-1997 (POP), and the average ratio of GDI to GDP during the sample period (GDI). The second specification included LGYP, LIFE, POP, GDI, and the average ratio of government consumption to GDP during the sample period (GOVC). The third specification included LGYP, POP, LIFE, and GOVC. In all cases the dependent variable is the average growth rate of GDP per capita during the sample period (GYP).

In order to check the robustness of the basic results, a series of the EBAs was conducted by including the Z variables. The following Z variables were selected: (1) openness, which is calculated as (export + import)/GDP (hereafter OPEN); (2) informal market premium (IMP); (3) the standard deviation of IMP (SDIMP); (4) the average ratio of FDI to GDP (FDI); (5) the average inflation rate (INFL); (6) the standard deviation of average inflation rates (SDINF); (7) GDI (only for the third specification); (8) the average ratio of liquid liabilities (M3) to GDP used as a proxy for the level of financial sector development (M3); (9) the standard deviation of M3 (SDM3); (10) the average ratio of total external debt to GDP (DEBT); (11) the average ratio of government budget surplus/deficit to GDP (BUD); and (12) three regional dummies for East Asia, Latin America and Sub-Saharan Africa (EA, LA, AF, respectively).

These variables, with the exception of (4), are frequently used in the cross-country growth regressions. The ratio of FDI to GDP is included on the basis of the assumption that FDI may play a significant role in generating positive spillover effects, bringing new technologies and management and marketing skills that contribute to economic growth in developing countries. In addition, the variable that we have used for political stability could have been used as one of the I variables, but there may exist a reverse causality that runs from political instability to economic growth. In this respect, Londregan and Poole (1990) argue that higher political instability is likely to be caused by lower economic growth, and Barro (1991) and Alesina and Petrotii (1993) have found evidence supporting this reverse causality. Accordingly, this variable is included as a Z variable.

The EBA for the control variables in the three specifications were conducted by computing a total of 5460 regressions, and the results are shown in Table 2. Note that any result obtained from a regression that exhibits a significant level of multicollinearity (i.e. a regression showing that a variance inflation factor (VIF) is greater than 10) was discarded from these results.

Table 2: The EBA Results of the I Variables (at 0.05 level)

Specification I

Variable		Coefficient	t-statistic	Z-variables included	EBA result
LGYP	Min	-	-	-	Insignificant
	Max	-	-	-	
	Base	-0.005	-0.84	-	
LIFE	Min	0.0010	2.05	GOVC, FDI, LA	Fragile
	Max	0.0011	2.14	GOVC, BUD, LA	
	Base	0.0004	0.84	-	
POP	Min	-1.043	-3.17	IMP, FDI, LA	Robust
	Max	-0.662	-2.07	SDINF, LA, AF	
	Base	-0.775**	-2.30	-	
GDI	Min	0.104	2.11	EA, LA, AF	Robust
	Max	0.220	5.22	IMF, SDM3, DEBT	
	Base	0.204***	5.04	-	

Specification II

Variable		Coefficient	t-statistic	Z-variables included	EBA result
LGYP	Min	-	-	-	Insignificant
	Max	-	-	-	
	Base	-0.003	-0.48	-	
LIFE	Min	0.0010	2.02	FDI, SDM3, LA	Fragile
	Max	0.0012	2.37	BUD, EA, LA	
	Base	0.0004	0.97	-	
POP	Min	-	-	-	Insignificant
	Max	-	-	-	
	Base	-0.382	-1.04	-	
GDI	Min	0.108	2.23	STAB, EA, LA	Robust
	Max	0.211	5.04	BUD, SDM3, DEBT	
	Base	0.198***	5.04	-	
GOVC	Min	-0.160	-2.98	BUD, SDIMP, LA	Robust
	Max	-0.107	-2.01	OPEN, FDI, SDIMF	
	Base	-0.119**	-2.27	-	

Specification III

Variable		Coefficient	t-statistic	Z-variables included	EBA result
LGYP	Min	-0.014	-2.33	STAB, EA, AF	Fragile
	Max	-0.011	-2.00	STAB, SDIMP, EA	
	Base	-0.005	-0.83	-	
LIFE	Min	0.0010	2.05	GDI, FDI, LA	Robust
	Max	0.0020	3.91	STAB, BUD, LA	
	Base	0.0012**	2.33	-	
POP	Min	-	-	-	Insignificant
	Max	-	-	-	
	Base	-0.320	-0.73	-	
GOVC	Min	-0.203	-3.17	STAB, BUD, M3	Robust
	Max	-0.109	-2.04	GDI, SDINF, SDM3	
	Base	-0.139**	-2.22	-	

Notes: Dependent variable: GYP. The base results are calculated excluding the M and Z variables. Note that following Levine and Renelt (1992) (see Table 1, notes (a), p.947), where an EBA indicates a robust result, but the base result is statistically insignificant, the overall result is interpreted as fragile. ** = statistically significant at 0.05 level, and *** = statistically significant at 0.01 level.

In general, the inclusion of LGYP, the log of initial GDP per capita for 1988, is expected to represent the rate of convergence across the sample countries. Other studies that have included developed countries have found evidence of conditional convergence (e.g. Mankiw, Romer, and Weil, 1992 and Barro and Sala-i-Martin, 1995). A negative and statistically significant coefficient for this variable signifies evidence of conditional convergence. In our study, the result for LGYP obtained from the third specification appears to be fragile (see the notes in Table 2 for the criterion used to interpret EBA results). Since all the base results for LGYP, which are calculated without the Z variables, are statistically insignificant, it can be concluded that there is no robust partial correlation between GYP and LGYP. Accordingly, our study has found no evidence to support the existence of conditional convergence, although this may not be unanticipated, as the sample period is relatively short.

In the results for the first and second specifications, LIFE, the initial life expectancy at birth, appears to be fragile although a robust result was obtained in the third specification. Throughout, the sign of the coefficient is positive, and the third specification implies that this variable captures aspects of human capital development reasonably well.

A robust result was obtained for POP, population growth, from the first specification. In contrast, the results obtained from the other specifications were completely insignificant. These contrasting results may suggest that this variable is extremely sensitive to the inclusion or exclusion of other variables, as indicated by Levine and Renelt (1992).

Robust results were obtained in relation to GDI, the average ratio of GDI to GDP, and GOVC, the average ratio of government consumption to GDP. The signs of the coefficient for GDI are positive, whereas they are negative for GOVC, confirming previous studies (e.g. Barro 1991).

In summary, LGYP is statistically insignificant, and LIFE and POP appear to be sensitive to different combinations of other variables, resulting in ambiguous results. On the other hand, the results for GDI and GOVC are always robust. Nevertheless, it is difficult to choose a particular specification for the control variables from these results. Since a continued search for the most suitable combination of the control variables is beyond the scope of this study and may prove impossible, as some past studies have demonstrated, then all three specifications are used to conduct an EBA for the privatisation variable.

The EBA for Privatisation

The EBA proceeded in two steps. First, basic tests were carried out to estimate baselines before a formal EBA was conducted for privatisation. These regressions included the control variables in the three specifications examined previously and the privatisation variable. The Z variables were excluded. The tests showed that the base results for privatisation were statistically insignificant. Second, the EBA for the privatisation variable was conducted this time by including three regressors from a pool of the fifteen Z variables. The results are shown in Table 3. Although the EBA indicates that the results are robust, they still have to be interpreted as fragile since the earlier basic tests indicated that they were statistically insignificant. Accordingly, we have concluded that only a weak or fragile negative partial correlation between privatisation and economic growth exists.

Table 3: The EBA Results for the Privatisation Variable (at 0.05 level)

The I variables based on Specification I (LGYP + LIFE + POP + GDI)

Variable		Coefficient	t-statistic	Z-variables included	EBA result
PRIV	Min	-0.242	-2.28	OPEN, FDI, DEBT	Fragile
	Max	-0.220	-2.08	FDI, DEBT, EA	
	Base	-0.056	-0.55	-	-

The I variables based on Specification II (LGYP + LIFE + POP + GDI + GOVC)

Variable		Coefficient	t-statistic	Z-variables included	EBA result
PRIV	Min	-0.245	-2.30	BUD, FDI, DEBT	Fragile
	Max	-0.217	-2.01	OPEN, FDI, SDIMP	
	Base	-0.077	-0.77	-	-

The I variables based on Specification III (LGYP + LIFE + POP + GOVC)

Variable		Coefficient	t-statistic	Z-variables included	EBA result
PRIV	Min	-0.345	-2.79	FDI, SDM3, DEBT	Fragile
	Max	-0.226	-2.02	FDI, DEBT, LA	
	Base	-0.090	-0.76	-	-

Notes: Dependent variable: GYP. Note that following Levine and Renelt (1992) (see Table 1, notes (a), p.947), in the case that the EBA indicates a robust result, but the base result is statistically insignificant, the overall result is interpreted as fragile.

Two cautionary notes are required at this stage. First, it is known that the inclusion or exclusion of certain control variables sometimes eliminates a bivariate relationship (Easterly and Rebelo, 1993). It is thus plausible to argue that our inconclusive results are due to an inadequate choice or combinations of the control variables. In order to examine this possibility, all possible combination of the control variables and the privatisation variable were applied to the EBA technique. This exercise reconfirmed our conclusion by showing that no combination of the control variables existed that would establish a robust partial correlation between privatisation and economic growth.

Second, it is known that cross-country regression analysis is sensitive to the inclusion or exclusion of a particular country. This is often due to the existence of an 'outlier' in the observations. This possibility is also examined by checking whether or not there is any outlier in our sample of observations. We define outliers as the countries that recorded values for GYP and PRIV that are less than the mean minus 2σ (standard deviation) or are more than the mean plus 2σ (i.e. the countries that recorded values, GYP $\leq$ -0.02 and PRIV $\leq$ -0.04 or GYP $\geq$ 0.06 and PRIV $\geq$ 0.08). In accordance with this criterion, two East Asian economies, Malaysia and Singapore, are identified as outliers. Both of these economies have achieved higher rates of economic growth while implementing substantial privatisation programmes. We then eliminated these countries from our basic tests for privatisation and applied the EBA technique. This time, a statistically significant result was obtained from the third specification for the control variables. The EBA permitted us to check whether or not there are other combinations of the control variables that can establish a partial correlation between privatisation and economic growth. Using this technique, two additional combinations of the control variables were identified, LGYP + LIFE + POP and LIFE + POP + GOVC. The base results for privatisation and the EBA results for the control variables and privatisation are shown in Table 4.

Table 4: The EBA results for the Control Variables and the Privatisation Variable (at 0.05 level)

Specification III

Variable		Coefficient	t-statistic	Z-variables included	EBA result
LGYP	Min	-0.015	-2.33	STUB, INFL, AF	Fragile
	Max	-0.012	-2.05	BUD, SDIMF, EA	
	Base	-0.106	-1.65	-	
LIFE	Min	0.0010	2.03	FDI, DEBUT, EA	Robust
	Max	0.0020	3.96	STAB, BUD, LA	
	Base	0.0013**	2.60	-	
				-	
POP	Min	-	-	-	Insignificant
	Max	-	-	-	
	Base	-0.594	-1.40	-	
GOVC	Min	-0.167	-2.30	STAB, BUD, M3	Robust
	Max	-0.109	-2.02	GDI, FDI, IMP	
	Base	-0.101*	-1.68	-	
PRIV	Min	-0.354	-2.89	BUD, FDI, DEBT	Robust
	Max	-0.242	-2.02	OPEN, IMP, DEBT	
	Base	-0.249**	-2.12	-	

Specification IV

Variable		Coefficient	t-statistic	Z-variables included	EBA result
LGYP	Min	-0.018	-2.76	STAB, SDIMP, AF	Robust
	Max	-0.012	-2.05	FDI, DEBT, LA	
	Base	-0.013**	-2.04	-	
LIFE	Min	0.0010	2.03	SDIMP, EA, AF	Robust
	Max	0.0020	3.63	OPEN, BUD, LA	
	Base	0.0013**	2.55	-	
POP	Min	-1.186	-3.35	FDI, SDIMP, LA	Robust
	Max	-0.664	-2.03	GDI, SDM3, EA	
	Base	-0.943**	-2.51		
PRIV	Min	-0.359	-2.89	OPEN, FDI, DEBT	Robust
	Max	-0.239	-2.09	GDI, GOVC, FDI	
	Base	-0.246**	-2.05	-	

Specification V

Variable		Coefficient	t-statistic	Z-variables included	EBA result
LIFE	Min	0.0001	2.01	GOVC, STAB, EA	Robust
	Max	0.0019	3.85	LGYP, BUD, LA	
	Base	0.0006**	2.09	-	
POP	Min	-	-	-	Insignificant
	Max	-	-	-	
	Base	-0.446	-1.06	-	
GOVC	Min	-0.187	-2.75	STAB, BUD, M3	Robust
	Max	-0.104	-2.01	GOVC, GDI, EA	
	Base	-0.124**	-2.07	-	
PRIV	Min	-0.373	-3.07	BUD, FDI, DEBT	Robust
	Max	-0.229	-2.02	GDI, FDI, EA	
	Base	-0.268**	-2.27	-	

Notes: Dependent variable: GYP, the base results for the control variables are obtained without PRIV and the Z variables, the EBA results for the control variables are obtained without PRIV, and the base and EBA results for PRIV are obtained by including the control variables and the Z variables. * = statistically significant at 0.10 level and ** = statistically significant at 0.05 level.

Table 4 shows that the base results for the privatisation variable are statistically significant at 0.05 level, and the corresponding EBA results are robust. As for the control variables, the overall results indicated by the signs of the coefficient are the same as our previous results. We conclude, therefore, that a robust negative partial correlation between privatisation and economic growth has been found[1].

Consequently, a negative but fragile partial correlation between privatisation and economic growth has been found using the 63 country sample, and a robust negative partial correlation has been found using the 61 country sample (which excluded Singapore and Malaysia). These results suggest that the privatisation variable is sensitive to combinations of control variables and the inclusion of certain countries. In other words, in order to detect a significant result for the privatisation variable, great care is required in the selection of a specific conditioning information set and countries.

5. CONCLUSION

The analysis has shown that there is a robust partial correlation between privatisation and economic growth, suggesting that privatisation has contributed negatively to economic growth. This conclusion is contrary to the results obtained by Plane (1997) and Barnett (2000). Given the usual problems associated with regression analysis and the difficulties surrounding the determination of the direction of causality, and despite the attempt to be methodologically rigorous, the results must be treated with a fair degree of caution.

Are there policy implementations arising from this analysis? Clearly, the findings do not refute the notion that the wider economic and socio-political environment may have important effects on economic growth, and on the success of privatisation. The IMF study, using a limited number of countries, has suggested that the positive relationship between privatisation and economic growth could be explained by privatisation acting as a proxy in their analysis for a range of structural measures signifying changes in the economic environment. We have attempted, with our measure of privatisation, to rule out the possibility that this variable captures the effects of wider policy reforms.

If, as is argued in the theoretical literature, the change in ownership alone at the microeconomic level is not sufficient to guarantee greater enterprise efficiency, then other reforms, more directly related to enterprise development, may indeed play a crucial role. If

the success of privatisation is linked to competition and the regulation of competition, then weaknesses in these fields may explain why privatisation is negatively related to economic growth in developing countries. Recent reviews of competition policy in developing countries indicate fundamental weaknesses in implementation (Gray, 1991; Cook, 2001). Similarly, regimes for regulating competition in developing countries have not developed uniformly and with the same degree of effectiveness across developing countries. The share of utilities in privatisation has increased significantly in the 1990s in developing countries resulting in the creation of numerous private sector monopolies, and the need for better regulation. Even in countries in Latin America where, regulatory systems have developed, they may not be working effectively (Cook, 1999). In addition, the IMF report evidence of weak regulatory systems in the telecommunications sector in some developing countries, which may have contributed to enhancing the proceeds from privatisation (Davis, Ossowski, Richardson and Barnett, 2000). The combination of weak regulation and high proceeds from privatisation, if accompanied by low gains in economic efficiency, may also provide an explanation for the disappointing results as far as economic growth is concerned.

The policy implications arising from this analysis squarely point to the need for further research into the policy environment, in particular the roles played by competition and its regulation if the relation between privatisation and economic growth is to be understood.

Endnote:

[1] Since the privatisation indicator does not have a value that is less than unity, the minimum value for privatisation, -0.04, might be unreasonable. Thus, the minimum value of 0.00 was set. When this was applied, an additional five countries, Thailand (high economic growth and low privatisation), Burundi, Cameroon, Jordan, and Sierra Leone (low economic growth and low privatisation), were identified as outliers. These countries were eliminated one by one, and the overall results remained the same.

References

Alchian, A. (1965), 'Some Economics of Property Rights,' *II Politico*, Vol.30, 816-829

Alesina, A. and Petrotii, R. (1993) 'Income Distribution, Political Instability and Investment,' *NBER Working Paper*, No.4486

Barnett, S. (2000), 'Evidence on the Fiscal and Macroeconomic Impact of Privatisation,' *IMF Working Paper*, July, Washington D.C.: IMF.

Barro, R. (1991), 'Economic Growth in a Cross-Section of Countries,' *Quarterly Journal of Economics*, Vol.106, No.2, 407-43

Barro, R. and Sala-i-Martin, X. (1995), *Economic Growth*, N.Y.: McGraw-Hill.

Blomstrom, M., Lipsey, R. and Zejan, M. (1993), 'Is Fixed Investment the Key to Economic Growth?' *NBER Working Paper*, No.4436

Boubakri, N. and Cosset, J. (1998), 'The Financial and Operating Performance of Newly Privatised Firms: Evidence from Developing Countries,' unpublished draft, Universite Laval.

Boycko, M., Shleifer, A., and Vichny, R. (1996), 'A Theory of Privatisation,' *Economic Journal*, Vol.106, 309-319

Cook, P., and Kirkpatrick, C. (1988), *Privatisation in Less Developed Countries*, Brighton: Weatsheaf.

Cook, P. (2001), 'Competition and its Regulation: Key Issues,' Paper presented at an international workshop on Competition and Regulation, University of Manchester, 9 February 2001

Cook, P. (1999), 'Privatisation and Utility Regulation in Developing Countries: The Lessons So Far,' Annals of Public and Cooperative Economics, Vol.70, No.4, 549-587

Cook, P., and Fabella, R. (2001), 'The Welfare and Political Economy Dimensions of Private vs. State Enterprise,' forthcoming *Manchester School*.

Cooley, T. and LeRoy, S. (1981), 'Identification and Estimation of Money Demand,' *American Economic Review*, Vol.71. 825-44

Davis, J., Ossowski, R., Richardson, T., and Barnett, S. (2000), 'Fiscal and Macroeconomic Impact of Privatisation,' *Occasional Paper*, No.194, Washington D.C.: IMF.

DeLong, J. and Summers, L. (1991), 'Equipment Investment and Economic Growth,' *Quarterly Journal of Economics*, Vol.106, No.2, 445-502

Deravi, K., Hegji, C., and Moberly, D. (1990), 'Government Debt and the Demand for Money: An Extreme Bound Analysis,' *Economic Inquiry*, Vol.28, 390-401

Doppelhofer, G, Miller, R, and Sala-i-Martin, X. (2000), "Determinants of long-term growth: a Bayesian Averaging of Classical Estimates (BACE) approach," *OECD Working Paper*, No.266.

Easterly, W and Rebelo, S. (1993), 'Fiscal policy and economic growth: An empirical investigation,' *Journal of Monetary Economics*, Vol.32, 417-458.

Folster, S and Henrekson, M. (2001), 'Growth Effects of Government Expenditure and Taxation in Rich Countries,' *European Economic Review*, forthcoming.

Galal, A., Jones, L., Tandon, P., and Vogelsang, I. (1994*), Welfare Consequences of Selling Public Enterprises: an Empirical Analysis*, New York: Oxford University Press.

Harberger, A. (1987), 'Comment,' *NBER Macroeconomics Annual*, 255-258

Jensen, M. and Meckling, W. (1976), 'Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure,' *Journal of Financial Economics*, Vol.3, No.4, 305-360

Kalemili-Ozcan, S, Ryder, H.E, and Weil, D.N. (2000), 'Mortality Decline, Human Capital Investment, and Economic Growth,' *Journal of Development Economics*, Vol.62, 1-23

Kikeri, S., Nellis, J., and Shirley, M. (1994), *Privatisation: The Lessons of Experience*, Washington D.C.: World Bank.

Kikeri, S. (1998), 'Privatisation and Labor: What Happens to Countries When Governments Divest,' *World Bank Technical Paper*, No.396, Washington D.C.: World Bank.

Laffont, J., and Tirole, J. (1991), 'Privatisation and Incentives,' *Journal of Law, Economics and Organisation*, Vol.7, 84-105

Leamer, E. (1978), *Specification Searches: Ad Hoc Inference from Non-Experimental Data*, New York: Wiley.

Leamer, E. (1983), 'Let's Take the Con Out of Econometrics,' *American Economic Review*, Vol.73, 31-43

Leamer, E. (1985), 'Sensitivity Analysis Would Help,' *American Economic Review*, Vol.75, 308-13

Leamer, E. and Herman, L. (1983), 'Reporting the Fragility of Regression Estimates,' *Review of Economics and Statistics*, Vol.65, 306-17

Levine, R. and Renelt, D. (1992), 'A Sensitivity Analysis of Cross-Country Growth Regressions,' *American Economic Review*, Vol.82, 942-63

Levine, R. and Zervos, S. (1993), 'What We Have Learned About Policy and Growth from Cross-Country Regressions?' *American Economic Review*, Vol.83, No.2, 427-430

Londregan, J. and Poole, K. (1990), 'Poverty, the Coup Trap, and the Seizure of Executive Power,' *World Politics*, Vol.423, No.2, 151-183

Mankiw, N., Romer, D., and Weil, D. (1992), 'A Contribution to the Empirics of Economic Growth,' *Quarterly Journal of Economics,* Vol.107, No.2, 407-37

Martin, S. and Parker, D. (1997), *The Impact of Privatisation: Ownership and Corporate Performance in the UK*, London: Routledge.

Megginson, W., Nash, R., and Van Randenborgh, M. (1994), 'The Financial and Operating Performance of Newly Privatised Firms: An International Empirical Analysis,' *Journal of Finance*, Vol.49, 403-452

Megginson, W and Netter, J. (2001), 'From State to Market: A Survey of Empirical Studies on Privatisation, ' *Journal of Economic Literature*, Vol.39, 321-389

Parker, D. (1999), 'Privatisation in the European Union: A Critical Assessment of its Development, Rationale and Consequences,' *Economic and Industrial Democracy*, Vol.20, 9-38

Plane, P. (1997), 'Privatisation and economic growth: an empirical investigation from a sample of developing market economies,' *Applied Economics*, Vol.29, 161-178

Ram, R and Schulz, T.W (1979), 'Life Span, Health, Savings, and Productivity,' *Economics Development and Cultural Change*, Vol.27, 399-421

Sala-i-Martin, X (1994), 'Cross-Sectional Regressions and the Empirics of Economic Growth, ' *European Economic Review*, Vol.38, 739-47.

Sala-i-Martin, X. (1997), 'I Just Run Two Million Regressions,' *American Economic Review*, Vol.87, No.2, 176-183

Temple, J. (1999), 'The New Growth Evidence,' *Journal of Economic Literature*, XXXVII, 112-156.

Tullock, G. (1965), *The Politics of Bureaucracy*, Washington D.C.: Public Affairs Press.

UNCTAD (1996), *Comparative Experiences with Privatisation: Policy Insights and Lessons Learned*, New York: United Nations.

Vickers, J., and Yarrow, G. (1988), *Privatisation: An Economic Analysis*, London: MIT Press

Yarrow, G. (1999), 'Theory of Privatisation, or Why Bureaucrats are still in Business,' *World Development*, Vol.27, No.1, 157-168

World Bank (1994), *World Bank Assistance to Privatization in Developing Countries*, OED Report, No.3273, August.

World Bank (1995[a]), *Bureaucrats in Business: the Economics and Politics of Reform*, World Bank, Oxford University Press.

World Bank (1995[b]), *Structural and Sectoral Adjustment Lending: World Bank Experience (1980-1992)*, Operations Evaluation Department, Washington D.C.: World Bank.

Appendix 1

Consider the following three variable linear regression:

$$y_t = x_t\beta + z_{1t}\gamma_1 + z_{2t}\gamma_2 + u_t \qquad (1)$$

where β is the coefficient of particular interest to be estimated, x is the variable of particular interest or the variable that is always included in a regression, z denotes the 'doubtful' variables, and γ is the corresponding coefficient to be estimated. Here, the z variables represent specification uncertainty, and cannot be excluded a priori.

A Bayesian approach assumes that it is possible to define a prior distribution with the prior location of such doubtful variables and to specify their covariance matrix, thereby obtaining a posterior distribution for β. In practice, however, it is difficult to specify such a matrix. Leamer (1978) has developed a theorem in which specification of the prior covariance matrix is not required, assuming that specification of the prior location and the sample covariance matrix is only necessary to constrain the posterior means to lie within a certain ellipsoid or the locus of constrained estimates.

Suppose that the object is to show that β is large or that the estimation of γ_1 and γ_2 is difficult. In a conventional approach, four different regressions would be computed using different combinations of the control variables, z_1 and z_2. Then, among the four different results obtained, the most favourable result would be reported. What Leamer has developed is an alternative procedure in which the specification search is enlarged and reports consist of the most favourable and least favourable results.

To enlarge the search for more specifications, a composite variable is defined as follows:

$$w_t(\theta) = z_{1t} + \theta z_{2t}, \qquad (2)$$

where θ is a number to be selected and is allowed to take any value.

Then, equation (1) can be rewritten as:

$$y_t = x_t\beta + w_t(\theta)\gamma + u_t. \qquad (3)$$

The search can be enlarged by including all values of θ. For each value of θ, a different constraint of the form, $\gamma_2 = \theta\gamma_1$ is imposed, and there exits a least squares estimate of β, $\beta(\theta)$. By maximising $\beta(\theta)$ with respect to θ, the most favourable value of θ can be obtained, and the least favourable value can be obtained by minimising the value.

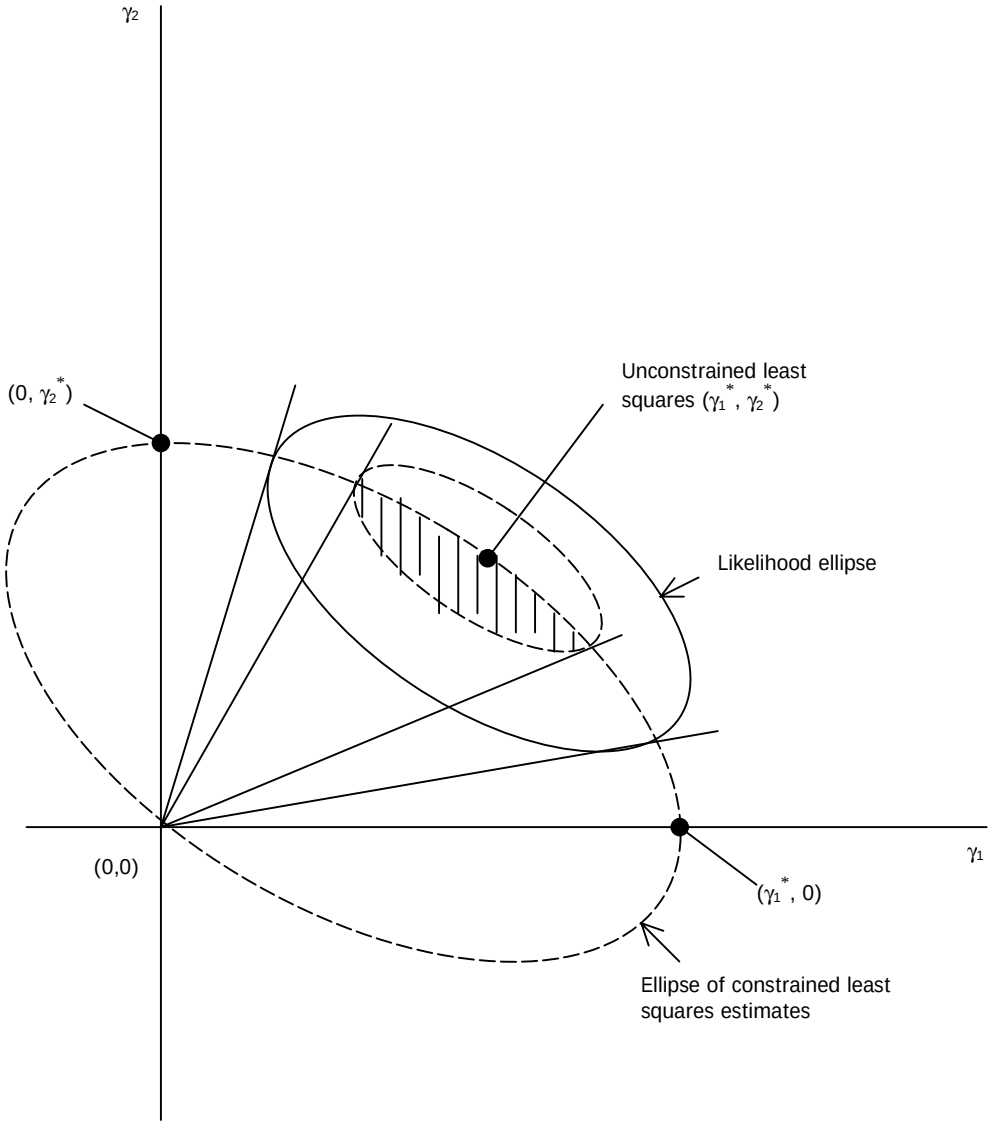
Figure A.1 shows the theorem graphically. In a conventional approach, four different regressions are estimated. These are indicated by the four points, (γ_1^*,γ_2^*), $(\gamma_1^*,0)$, $(0,\gamma_2^*)$, (0,0) in the figure. However, there is no reason why the search should be restricted by only estimating these four regressions. To enlarge the search, any values for θ can be used and a different regression is estimated and the corresponding focus coefficient $\beta^*(\theta)$ for each value of θ. The dished line in the figure depicts the ellipse of constrained estimates defined by the set of all possible values of (γ_1,γ_2) that are obtained by changing the value of θ over the real line. Thus, the ellipse contains all posterior means for the distribution of (γ_1,γ_2).

However, the extreme values, max $\beta^*(\theta)$ and min $\beta^*(\theta)$, may be located in an unlikely parameter space on the locus of constrained estimates in relation to the data. To resolve this problem, define a statistically feasible likelihood ellipse, say at 0.05 level or 95 percent, which is depicted in the dashed lines in the figure, within the likelihood ellipse. This is defined by the assumption that all doubtful variables are included in the regression. The intersection of the points in the interior of the ellipse of constrained estimates and this likelihood ellipse is the set of points (γ_1^*,γ_2^*). The area defined by the set is shown by the shaded area in the figure.

Thus, the set of all posterior means for the distribution of (γ_1^*,γ_2^*) is here subject to further constraint in this area, eliminating the unlikely parameter space. The parameter pairs in the area can be obtained by posterior estimates

from prior distribution centred at the origin, and the measure of specification uncertainty is the difference between the extreme values of $\beta^*(\theta)$ over the area.

Figure A.1: Ellipsoids of constrained least squares points



Appendix 2

	PRIV	GYP	LGYP	LIFE	POP	CON	STAB	OPEN	GDI	BUD	FDI	IMP	SDIMP	INFL	SDINF	M3	SDM3	DEBT
Argentina	0.10	0.02	8.58	71.01	0.01	0.04	6.00	0.16	0.17	-0.01	0.01	0.22	0.24	5.65	10.78	0.18	0.05	0.04
Bangladesh	0.00	0.03	7.17	53.30	0.02	0.04	1.00	0.23	0.19	-0.06	0.00	0.80	0.46	0.05	0.03	0.26	0.03	0.02
Barbados	0.03	0.00	8.91	74.34	0.00	0.20	0.00	0.98	0.15	-0.02	0.01	0.08	0.07	0.02	0.02	0.62	0.06	0.07
Belize	0.07	0.03	8.09	72.57	0.03	0.15	0.00	1.16	0.26	-0.03	0.03	0.15	0.10	0.03	0.02	0.43	0.03	0.05
Benin	0.01	0.01	6.90	50.85	0.03	0.11	1.00	0.58	0.16	-0.07	0.00	0.03	0.01	0.07	0.11	0.26	0.03	0.02
Bolivia	0.05	0.02	7.42	56.81	0.02	0.13	3.00	0.48	0.15	-0.03	0.03	0.02	0.02	0.12	0.04	0.35	0.11	0.06
Brazil	0.04	0.01	8.34	64.76	0.02	0.17	4.00	0.17	0.21	-0.08	0.01	0.29	0.32	10.21	9.53	0.44	0.18	0.03
Burkina Faso	0.00	0.01	6.26	45.87	0.02	0.14	6.00	0.38	0.22	0.00	0.00	0.03	0.01	0.05	0.09	0.23	0.01	0.02
Burundi	0.00	-0.03	6.33	46.71	0.02	0.12	6.00	0.35	0.13	-0.06	0.00	0.27	0.13	0.10	0.07	0.19	0.02	0.04
Cameroon	0.00	-0.04	7.19	53.31	0.03	0.11	2.00	0.40	0.16	-0.03	0.00	0.03	0.01	0.04	0.06	0.19	0.04	0.05
Chile	0.01	0.06	8.29	72.67	0.02	0.10	0.00	0.61	0.25	0.03	0.04	0.13	0.06	0.13	0.07	0.41	0.02	0.08
Colombia	0.03	0.02	8.08	68.23	0.02	0.13	3.00	0.34	0.20	-0.01	0.02	0.09	0.05	0.24	0.03	0.32	0.07	0.08
Costa Rica	0.00	0.02	8.12	74.84	0.02	0.16	0.00	0.82	0.26	-0.01	0.03	0.02	0.07	0.18	0.05	0.41	0.03	0.08
Cote d'Ivoire	0.02	-0.01	7.26	50.96	0.03	0.15	1.00	0.68	0.11	-0.14	0.01	0.03	0.01	0.05	0.13	0.28	0.01	0.13
Ecuador	0.00	0.01	7.95	67.04	0.02	0.10	2.00	0.57	0.20	-0.02	0.02	0.13	0.10	0.42	0.16	0.27	0.06	0.09
Egypt, Arab Rep.	0.02	0.02	7.55	61.07	0.02	0.11	2.00	0.53	0.22	-0.04	0.02	0.07	0.19	0.13	0.05	0.87	0.03	0.06
Ghana	0.04	0.02	6.70	55.96	0.03	0.11	0.00	0.50	0.18	-0.04	0.01	0.09	0.10	0.29	0.10	0.17	0.02	0.07
Guatemala	0.00	0.01	7.66	59.69	0.03	0.06	12.00	0.42	0.15	-0.01	0.01	0.10	0.09	0.16	0.11	0.25	0.02	0.03
Guinea	0.00	0.02	6.65	42.55	0.03	0.10	0.00	0.49	0.19	-0.07	0.00	0.07	0.05	0.12	0.11	0.07	0.04	0.04
Guinea-Bissau	0.00	0.02	6.48	41.56	0.02	0.08	1.00	0.51	0.31	-0.26	0.00	0.45	0.20	0.54	0.24	0.16	0.02	0.05
Honduras	0.01	0.01	7.26	65.40	0.03	0.13	3.00	0.75	0.28	-0.06	0.02	0.26	0.30	0.18	0.08	0.33	0.03	0.11
India	0.01	0.04	7.09	57.85	0.02	0.11	11.00	0.21	0.23	-0.06	0.00	0.10	0.04	0.09	0.03	0.48	0.02	0.03
Indonesia	0.01	0.06	7.46	60.21	0.02	0.08	1.00	0.51	0.30	0.00	0.01	0.07	0.08	0.09	0.02	0.43	0.08	0.09
Iran, Islamic Rep.	0.00	0.02	8.08	64.73	0.02	0.12	0.00	0.39	0.28	-0.02	0.00	2.29	1.19	0.27	0.09	0.53	0.09	0.04
Jamaica	0.07	0.01	7.80	72.41	0.01	0.14	2.00	1.19	0.31	-0.03	0.03	0.18	0.09	0.28	0.16	0.53	0.03	0.18
Jordan	0.00	-0.02	8.16	66.71	0.04	0.25	0.00	1.32	0.31	-0.02	0.00	0.05	0.03	0.06	0.06	1.18	0.15	0.13
Kenya	0.01	0.00	6.80	57.55	0.03	0.16	3.00	0.62	0.21	-0.05	0.00	0.14	0.16	0.13	0.07	0.47	0.05	0.10
Korea, South	0.01	0.07	8.63	69.27	0.01	0.10	0.00	0.64	0.36	-0.01	0.00	0.01	0.05	0.06	0.02	0.67	0.14	0.03
Malawi	0.00	0.01	6.20	44.88	0.03	0.16	0.00	0.60	0.19	-0.07	0.00	0.29	0.16	0.29	0.24	0.23	0.04	0.06
Malaysia	0.08	0.06	8.36	69.50	0.03	0.13	1.00	1.65	0.36	-0.03	0.06	0.01	0.01	0.04	0.01	1.05	0.27	0.10
Mali	0.00	0.01	6.25	46.51	0.03	0.13	2.00	0.54	0.20	-0.05	0.00	0.03	0.01	0.06	0.10	0.22	0.01	0.03
Mauritania	0.00	0.01	6.67	49.46	0.03	0.13	0.00	1.02	0.20	-0.02	0.01	0.70	0.57	0.06	0.03	0.23	0.05	0.12
Mexico	0.05	0.01	8.58	69.82	0.02	0.10	0.00	0.44	0.23	0.00	0.02	0.05	0.05	0.31	0.29	0.25	0.07	0.08

	PRIV	GYP	LGYP	LIFE	POP	CON	STAB	OPEN	GDI	BUD	FDI	IMP	SDIMP	INFL	SDINF	M3	SDM3	DEBT
Morocco	0.02	0.01	7.66	62.01	0.02	0.17	2.00	0.57	0.22	-0.04	0.01	0.05	0.04	0.04	0.02	0.66	0.08	0.10
Mozambique	0.01	0.03	6.63	43.47	0.02	0.13	6.00	0.52	0.17	-0.27	0.01	0.25	0.20	0.43	0.14	0.33	0.05	0.06
Nepal	0.00	0.03	6.91	52.02	0.03	0.09	1.00	0.46	0.22	-0.08	0.00	0.30	0.11	0.10	0.04	0.35	0.03	0.02
Nicaragua	0.02	-0.01	7.27	62.17	0.03	0.22	7.00	0.80	0.23	-0.15	0.02	0.41	0.63	31.11	45.44	0.36	0.16	0.13
Nigeria	0.01	0.02	6.85	48.31	0.03	0.13	3.00	0.74	0.18	-0.10	0.04	0.64	0.50	0.36	0.24	0.20	0.05	0.09
Oman	0.00	0.01	8.89	67.96	0.04	0.33	0.00	0.86	0.16	-0.09	0.01	0.02	0.01	0.00	0.09	0.31	0.02	0.07
Pakistan	0.01	0.02	7.22	58.24	0.03	0.14	6.00	0.36	0.16	-0.08	0.01	0.06	0.03	0.10	0.02	0.44	0.03	0.05
Panama	0.06	0.01	7.94	71.74	0.02	0.17	11.00	0.73	0.19	0.02	0.02	0.00	0.00	0.02	0.02	0.52	0.13	0.07
Papua New Guinea	0.05	0.01	7.39	53.93	0.02	0.20	9.00	0.97	0.25	-0.03	0.04	0.10	0.06	0.05	0.06	0.34	0.03	0.14
Paraguay	0.00	0.01	7.61	67.60	0.03	0.08	0.00	0.82	0.23	0.01	0.02	0.23	0.25	0.20	0.09	0.26	0.05	0.05
Peru	0.09	0.00	7.91	64.39	0.02	0.08	12.00	0.26	0.21	-0.02	0.02	0.36	0.49	10.13	20.11	0.19	0.04	0.03
Philippines	0.02	0.01	7.42	64.00	0.02	0.11	16.00	0.72	0.23	-0.04	0.02	0.05	0.02	0.09	0.03	0.46	0.12	0.07
Senegal	0.02	0.00	7.07	48.25	0.03	0.14	0.00	0.62	0.15	-0.01	0.01	0.03	0.01	0.04	0.24	0.23	0.01	0.06
Sierra Leone	0.00	-0.05	6.79	36.81	0.02	0.10	1.00	0.41	0.07	-0.06	0.00	0.88	0.93	0.48	0.27	0.13	0.03	0.06
Singapore	0.08	0.07	9.24	73.59	0.02	0.09	0.00	3.68	0.35	0.12	0.10	0.02	0.01	0.04	0.02	1.18	0.04	0.11
South Africa	0.02	-0.01	8.12	60.43	0.02	0.20	1.00	0.48	0.17	-0.05	0.01	0.04	0.02	0.12	0.03	0.46	0.02	0.03
Sri Lanka	0.02	0.04	7.61	70.70	0.01	0.10	12.00	0.73	0.24	-0.10	0.01	0.13	0.10	0.11	0.03	0.40	0.02	0.04
Tanzania	0.01	0.00	6.28	51.01	0.03	0.17	0.00	0.51	0.22	-0.09	0.01	0.30	0.23	0.26	0.08	0.24	0.03	0.04
Thailand	0.00	0.07	8.00	67.49	0.01	0.10	5.00	0.80	0.39	0.02	0.02	0.03	0.01	0.05	0.01	0.79	0.07	0.06
Togo	0.01	0.00	6.46	51.41	0.03	0.13	8.00	0.75	0.16	-0.05	0.00	0.03	0.01	0.07	0.11	0.32	0.05	0.04
Trinidad and Tobago	0.06	0.00	9.00	70.39	0.01	0.13	2.00	0.83	0.16	-0.02	0.05	0.23	0.18	0.07	0.07	0.53	0.05	0.10
Tunisia	0.00	0.02	7.90	65.63	0.02	0.16	0.00	0.89	0.26	-0.04	0.02	0.05	0.05	0.06	0.02	0.50	0.02	0.10
Turkey	0.01	0.02	8.14	64.25	0.02	0.11	5.00	0.39	0.24	-0.05	0.00	0.03	0.04	0.75	0.15	0.29	0.04	0.06
Uganda	0.01	0.04	6.27	48.34	0.03	0.09	2.00	0.30	0.14	-0.07	0.01	0.38	0.40	0.48	0.60	0.10	0.01	0.04
Uruguay	0.00	0.02	8.45	72.11	0.01	0.13	2.00	0.43	0.13	-0.03	0.00	0.12	0.08	0.58	0.28	0.49	0.09	0.06
Venezuela	0.04	0.00	8.82	70.53	0.02	0.08	8.00	0.54	0.18	-0.02	0.02	0.19	0.36	0.50	0.31	0.35	0.08	0.08
Vietnam	0.00	0.05	6.79	65.80	0.02	0.08	0.00	0.69	0.21	0.00	0.04	0.46	0.73	0.70	1.23	0.22	0.01	0.03
Yemen	0.00	0.00	7.54	51.49	0.04	0.19	0.00	0.61	0.20	-0.08	0.04	0.17	0.07	0.25	0.16	0.51	0.07	0.51
Zambia	0.05	-0.01	6.63	49.63	0.03	0.17	1.00	0.72	0.13	-0.11	0.02	0.69	0.68	0.77	0.50	0.22	0.07	0.17
Zimbabwe	0.01	0.01	6.99	56.91	0.03	0.19	0.00	0.62	0.21	-0.09	0.00	0.29	0.16	0.21	0.06	0.40	0.05	0.08
Mean	0.02	0.02	7.51	59.83	0.02	0.13	3.06	0.67	0.21	-0.05	0.02	0.22	0.18	1.09	1.48	0.39	0.06	0.08
Standard Deviation	0.03	0.02	0.80	9.95	0.01	0.05	3.88	0.47	0.06	0.06	0.02	0.33	0.24	4.28	6.40	0.23	0.05	0.07

Notes:

PRIV = the magnitude of privatisation as the ratio of cumulative proceeds from privatisation during the sample period 1988-97 to average GDP during the same period; primary data for the proceeds are taken from World Bank Privatization Database and Privatisation International (various issues); and the data for GDP are taken from World Bank Global Development Network Growth Database.

GYP = the average real GDP per capita (in constant US dollars, base year 1985) growth rate during the sample period; and the data are taken from World Bank Global Development Network Growth Database (see www.worldbank.org/research/growth/GDNdata.htm for the detailed definitions of these variables)

LGYP = the log of initial real GDP per capita in 1988; and primary data are taken from World Bank Global Development Network Growth Database

POP = the average population growth rate during the sample period; and the data are taken from World Bank Global Development Network Growth Database

LIFE = the initial life expectancy at birth in 1987 (the data in 1988 are not available); and the primary data are taken from World Bank Global Development Network Growth Database

STAB = political stability calculated as the average number of major political crises, revolutions, and coups during the sample period; and the primary data are taken from World Bank Global Development Network Growth Database

BUD = the average ratio of government budget surplus/deficit to GDP during the sample period; and the primary data are taken from World Bank Global Development Network Growth Database

OPEN = openness of a country calculated as (export-import)/GDP; and the primary data are taken from World Bank Global Development Network Growth Database

CON = the average ratio of government consumption to GDP during the sample period; and the primary data are taken from World Bank World Development Database

GDI = the average ratio of gross domestic investment to GDP during the sample period; and the primary data are taken from World Bank World Global Development Network Growth Database

FDI = the average ratio of foreign direct investment (net inflows) to GDP during the sample period; and the primary data are taken from World Bank World Development Database

INFL = the average inflation rates (GDP deflator) during the sample period; and the primary data are taken from World Bank World Development Database

SDINF = the standard deviation of INFL

IMP = log(1+ informal market premium); informal market premium is calculated using the following formula: (Parallel Exchange Rate/Official Exchange Rate -1)*100; the primary data are taken from World Bank Global Development Network Growth Database

SDIMP = the standard deviation of IMP

M3 = the ratio of liquid liabilities (M3) to GDP, the primary data are taken from World Bank Global Development Network Growth Database

SDM3 = the standard deviation of M3

DEBT = the ratio of total external debt to GDP, the primary data are taken from World Bank Global Development Network Growth Database.