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## **The Political Economy of Public Investment and Public Finance: Structural and Institutional Regulators**

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## **Abstract**

From the spurring of productivity and the incubation of new technologies to its role in the maintenance of the safety and security of citizens, public investment is widely recognized to play a central role in the long-term economic and social development of society. This article will discuss the structural and institutional determinants of the financing of public investment, its evolution during the post-World War II period and its challenges faced in the current economic crisis. The discussion will revolve around the empirical fact, observed for a number of countries over fairly wide time periods, of a long-run co-trended relationship between public savings and public investment.

**JEL Classification Numbers:** O23, P16, C32

**Keywords:** Public saving and public investment, financing of public investment, crowding in effects, vector error correction mechanism (VECM).

## 1. INTRODUCTION

From the spurring of productivity and long-run growth to lowering poverty and improving the prospects for economic development, public investment has widely been recognized to play a central role in the long-term economic and social development of society. Public investment spending involves “an outlay of expenditure on assets that provide longer run benefits going beyond the current period” (Mintz and Smart, 2006, p. 9. Cited from Roy, Heuty, and Letouzé, 2006, p. 21). In contrast to public consumption, investment expenditures by the state involve a flow variable that adds to an economy’s capital stock so that the cumulative effects of these flows are felt only over a longer time period and therefore by future generations (Roy, Heuty, and Letouzé, 2006; Perée and Väililä, 2005).

*Contra* the Austrian perspective, direct investments by the State either in infrastructure or in certain types of production activities becomes a structural necessity in capitalism when the capitalists in a country are unwilling or unable to undertake such investments (de la Haye 1979). The need for such state activities arises *endogenously* as it were with the development of capitalism itself and the state under such circumstances is often the only institution capable of financing such operations.<sup>1</sup> Most types of public investment, such as infrastructure, involve huge sunk costs with uncertain future private rates of return. It is therefore no surprise that capitalist states have typically carried out such types of

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<sup>1</sup> Writing of Marx’s treatment of such State activities (de la Haye, 1979, pp. 43-44, emphasis added) observes: “The material conditions of transportation (roads, canals, ports, tunnels, bridges), and the means of communication (railroads, steamships, telegraphs, mail) thus become the State’s special object of interest and not just that of the class which the State represents. *The State provides security and the necessary conditions for obtaining supplies and for the free circulation of commodities when the capitalist class cannot do so at a given moment in the development of its mode of production...*In other words, in the genesis of industrial production, the State is all the more interested in the communication question in that it is not only vital for the capitalists, but because it is equally essential for its army, police, intelligence, etc... It is thus easier to understand why the state acts as a centre of convergence for scientific treatises and patents, and as the arbitrator between the technical interests which embellish the turbulent history of telegraph and railroad, as well as the discoveries in the areas of road construction, tunnel drilling and port digging. *The State, in these cases, is the only social instance capable of assuming the financing of this theoretical and technological research, and the financing of the large-scale operations destined to overturn the modes of exchange, methods of warfare, and forms of territorial administration.*”

investment.<sup>2</sup> One can see examples of such arenas of State investment from the earliest history of capitalist development to the modern period in both currently developed and developing countries. For example, given the paucity of private capital, the exigencies of nation-building in early American history required the public construction of canals, turnpikes, and railroads. These were initiatives that were advocated by political leaders such as George Washington, Alexander Hamilton, and John Quincy Adams. Rapid urbanization, which generated increased pressures for efficient sanitation, clean water, public health facilities, transportation, and fire protection generated pressures on state and local agencies to provide the necessary infrastructure (Leighninger 2007). These public sector initiatives accelerated after the Great Depression and many of the New Deal investment projects (Leighninger 2007), as well as other significant post-New Deal initiatives such as the interstate highway system and the Internet, created the basis for longer-term socio-economic development.

It is therefore no surprise that in the classic development policy literature that rose to prominence in the postwar period, many authors such as Nurkse as well as other such as Harrod and Kaldor emphasized the central role of public investment for the purpose of long-range development. These authors followed Keynes whose proposal regarding public investment “constitutes the only explicit long-term policy proposal to be found in the *General Theory*” (Seccareccia 1995, p. 47). A number of Post Keynesian authors (Smithin 1989; Kregel 1993; Brown-Collier and Collier 1995; Seccareccia 1995) have argued that Keynes’s fiscal policy was based not on rising and growing budget deficits but one in which the public sector’s budget would be split up between a current and a capital budget where a surplus on the former, maintained via high taxes, would be used to finance long-term capital expenditures.

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<sup>2</sup> The reader can also consult Adam Smith’s commentaries on public investment in *The Wealth of Nations* (Smith 2003).

In general there is not inconsiderable evidence regarding the crowding-in effect of public investment on private investment, costs, profitability, growth, and productivity although there is also evidence of negative impacts. According to the UNCTAD's *Trade and Development Report* (UNCTAD 2003) roughly half the empirical studies show public investment crowding in private investment. On the other hand, on the basis of Everhart and Sumlinski (2001, tables 2.2 and 2.3) and World Bank (2003), the TDR 2003 report states that public investment in communications and transport consistently crowds in private investment. Drawing on the UNDP's *Asia-Pacific Regional Programme in Macroeconomics of Poverty Reduction* Roy and Weeks (2004) argue that there is significant evidence of the crowding-in effect.

Despite being the focus of considerable criticism by those economists who support *laissez faire*, the record of state-owned enterprises (SOEs), while mixed in many ways, shows interesting examples of remarkable success stories. This is an important component of Ha-Joon Chang's work who argues that while the conventional view is that SOEs have generally been failures, the success and strategic importance of many SOEs merits a closer examination. As Chang (2004) points out highly successful industrializing countries in the post-war period such as Austria, France, Taiwan, and South Korea made significant use of SOEs to leap-frog ahead technologically. Similarly, SOEs played a crucial role in the rapid industrialization of Finland, a primarily agrarian economy when it became independent of the USSR in 1918 (Jäntti and Vartiainen 2009). In a similar vein SOEs have played an equally positive role in some of the more successful developing countries such as China, India, Pakistan, and Brazil (Kohli 2004; Lazonick 2004; Nagaraj 2006). Chang (2004, chapter 6) points out that certain SOEs in some of the poorest countries such as the Kenyan Tea Development Authority, the Ethiopian Telecommunications Authority, the Tanzanian Electricity Supply Company Limited, and the Guma Valley Water Company of Sierra Leone have been highly successful.

It is of significance to note that the general stylized fact about most countries is that, despite its economic importance, the share of public investment in national output has fallen quite dramatically in the last several decades. The consequences are fairly serious. For example in the United States the cutbacks in public investment has led to major problems such as the collapse of the Interstate W35 bridge in Minneapolis in 2007 and the breaching of the levees in the wake of Hurricane Katrina in 2005, or the crisis of the nation's water and sewer pipelines which decades of neglect have left susceptible to dangerous ruptures, thereby making potable water easily contaminated by dangerous pollutants (Duhigg 2010). The American Society of Civil Engineers (ASCE), which provides a very detailed analysis of the state of the nation's physical infrastructure every year, gives the latter a "D" in its 2009 Report Card.<sup>3</sup> According to the Congressional Research Service 26 percent of bridges in the country are either "structurally deficient" or "functionally obsolete" (Ghilarducci, et al. 2008). One may of course add to these problems by taking into account clogged and congested roadways, which add to road maintenance costs, and inefficient airports that lack far behind those of other OECD countries.

Needless to say, the implications of cutbacks in public investment for developing countries are even worse and may compromise their ability to attain the Millennium Development Goals (MDGs) or a sufficiently high long-run growth rate (Roy, Heuty and Letouzé 2006). One can clearly see the tragic impacts of the recent earthquakes in Chile and Haiti with the effects being much more devastating in the latter country because, in part, of its much poorer infrastructure.

Given that many countries have cut public investment expenditures when budget deficits have risen in crises (Roy, Heuty, and Letouzé 2006), the current paper investigates the empirical nature of the relationship between the two components of the State's budget (the current and capital budgets) for a number of OECD countries. Theoretically, we would in general not expect the relationship between the

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<sup>3</sup> For further information about this point the reader can consult <http://www.infrastructurereportcard.org/>

two variables to be a rigid one, as the link between the public savings rate (determined by the current budget) and the public investment rate (the capital budget) is mediated by the debt/GDP ratio, i.e. by the desire and *ability* of the State to finance public investment via bond sales. For example, a fall in the public savings rate could be accompanied by stable, rising, or falling public investment rates. The first two situations will involve growing bond sales and will necessarily depend on the willingness of bond purchasers, including the central bank, to buy growing amounts of government debt. The question is, how far can the State “get away” by debt financing public investment expenditures and what policy options do such limits suggest? This is a particularly important question, in particular for relatively smaller open economies, in an economic crisis when there is a fall in the public savings rate.<sup>4</sup>

Section 2 shows the long-run trend relationship between the public investment and savings shares and discusses the nature of this relationship for the United States and a number of OECD countries. Section 3 shows why fiscal constraints exist, in particular in the context of an open economy. Finally, section 4 discusses some of the current literature regarding the financing of public expenditures. An important question discussed in section 4 deals with alternative policies to raise the public investment share.

## **2. THE EMPIRICAL RELATIONSHIP BETWEEN GOVERNMENT SAVING RATES AND GROSS GOVERNMENT INVESTMENT RATES.**

We plot below the public investment share (IGRATEUSA) and public savings share (SAVGRATEUSA) for the United States. The data for the US is available from US Department of Commerce (BEA) for the period 1929-2009 and we have split it up into the pre- and post-1951 periods:

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<sup>4</sup> An economic crisis brings about a decline in the public savings rate because revenues fall and unemployment expenditures rise. State current expenditures may also increase because of higher interest payments on its debt (caused by rising budget deficits), the maintenance of law and order because of growing social instability (Held 1989) etc.

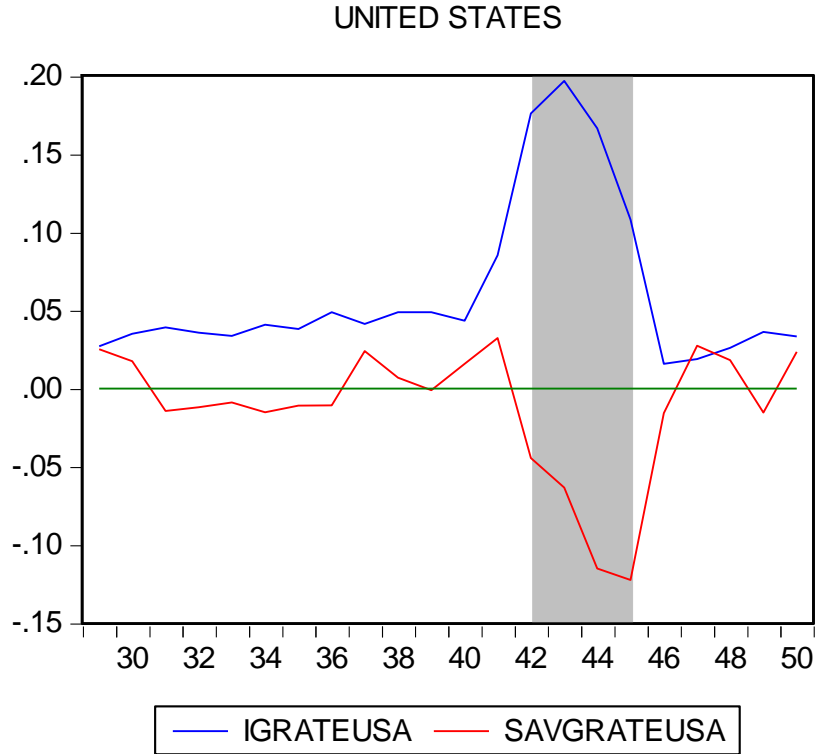


Figure 1a: US Public Investment and Savings Shares, 1929-1951  
 Source: BEA, US Department of Commerce

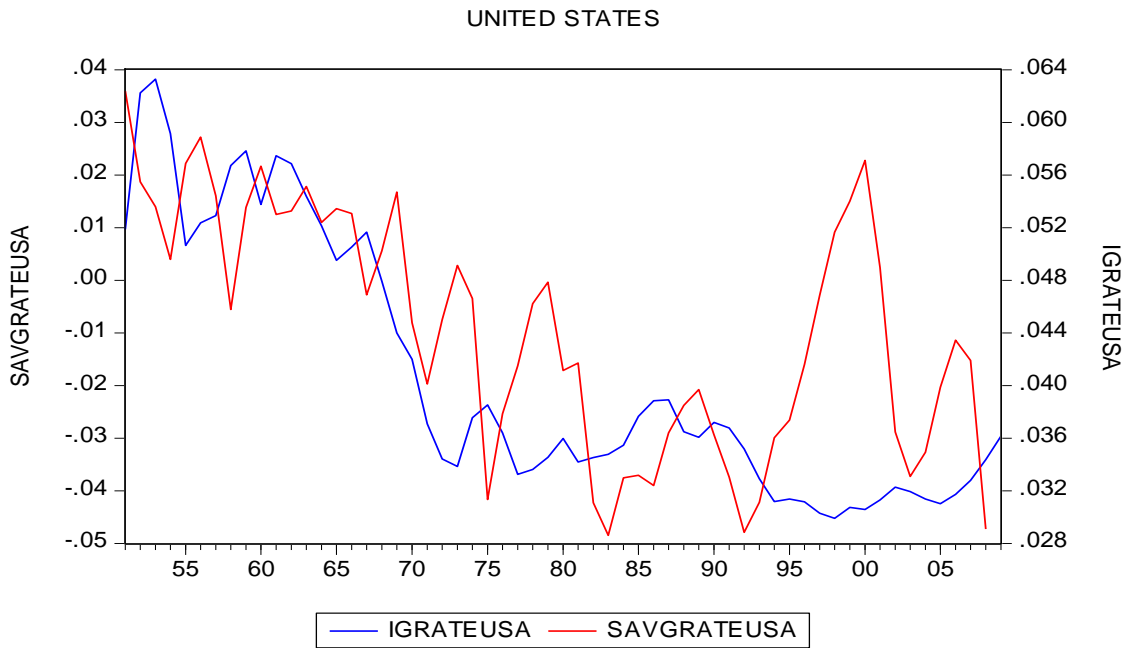
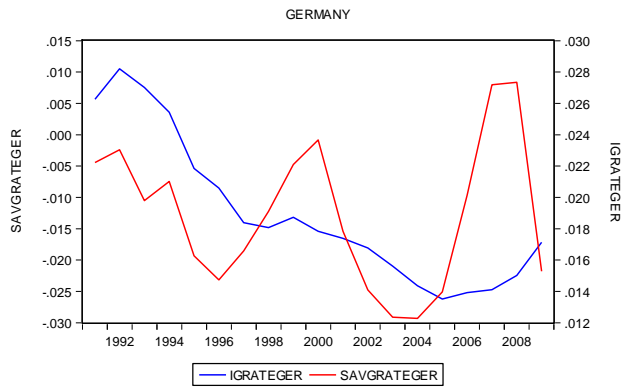
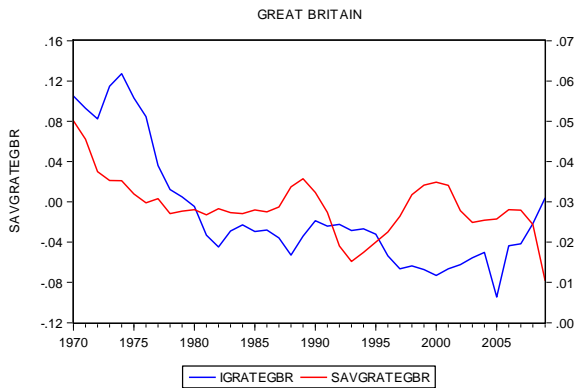
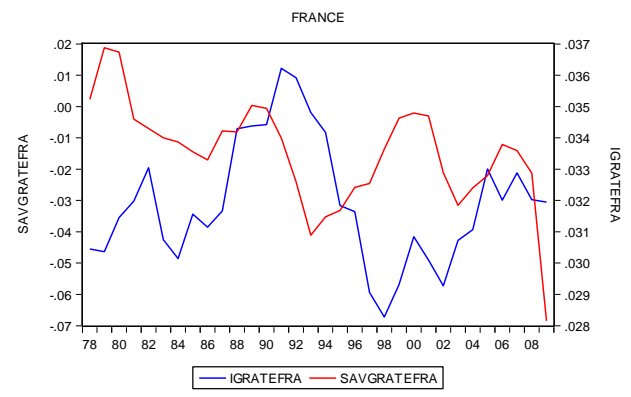
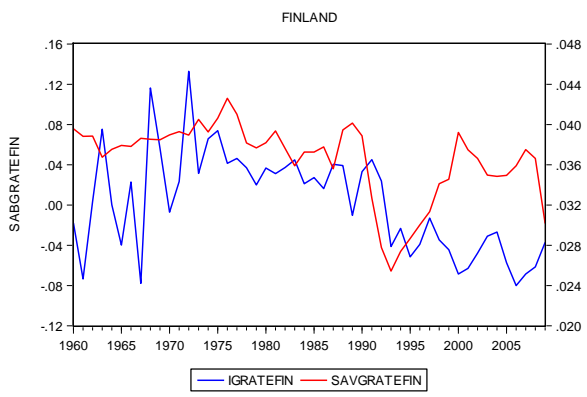
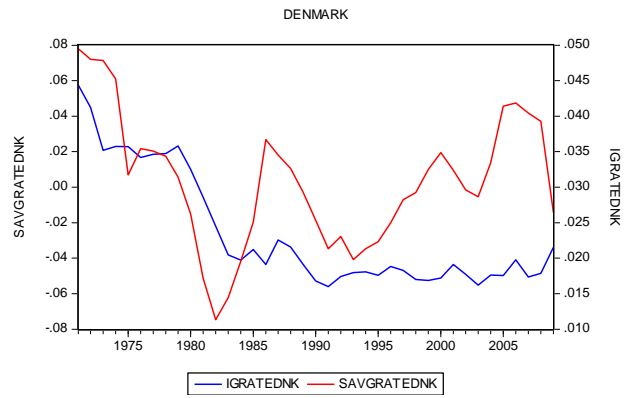
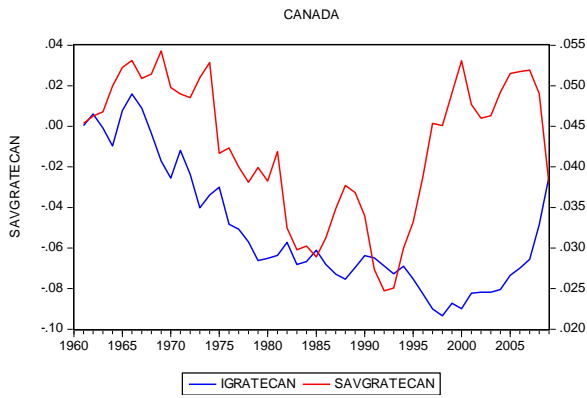
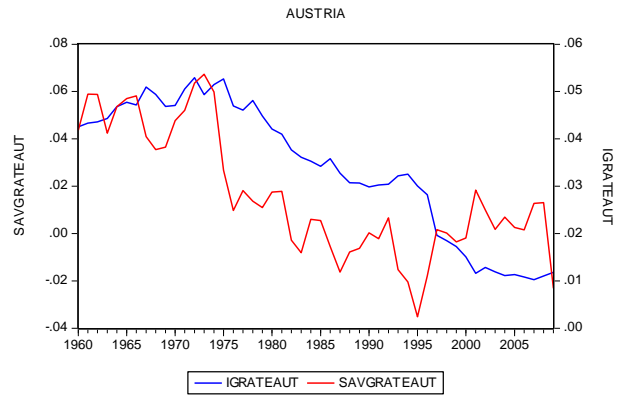
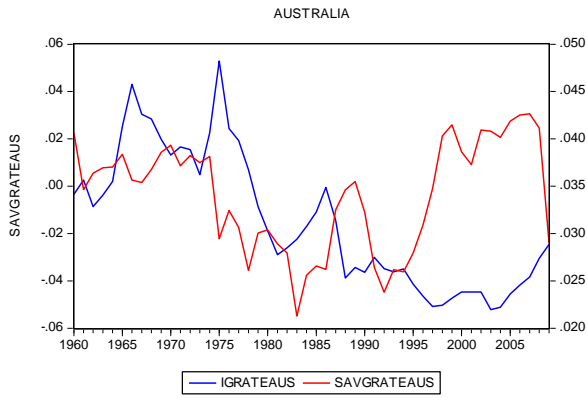


Figure 1b: US Public Investment and Savings Shares, 1951-2009  
 Source: BEA, US Department of Commerce

How does one explain the very close relationship between the two variables in Figure 1b? Part of it can be explained by the fact that a significant component of US public investment takes place at the State and local levels in which government agencies cannot print money and thus are subject to very tight budget constraints. But another reason is that, for better or worse, the Fed has become more independent of the Treasury's budgetary policies since the Treasury-Fed Accord of 1951. Thus public investment is subjected to the budget constraint of the aggregate public sector. On the other hand the Fed was much more accommodationist before 1951, in particular during WWII. This can be seen from Figure 1a which shows the two variables moving in dramatically opposite directions during the war years when the Fed was obligated to monetize the budget deficit at a fixed interest rate.

In short there is no necessary internal financial constraint faced by the State in its investment policies. The constraints arise via some combination of institutional and external factors, as discussed in the next section.

We plot next the two variables for a number of other OECD countries.



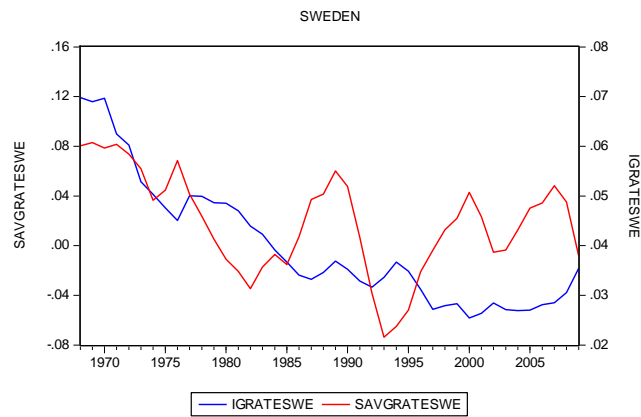
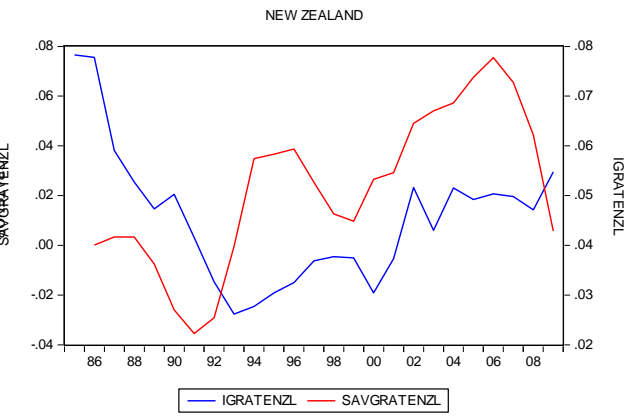
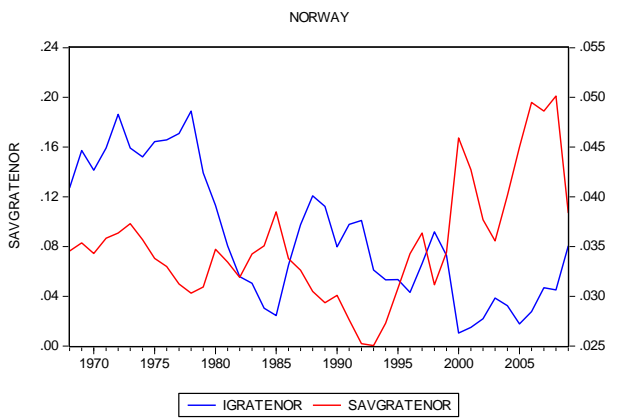
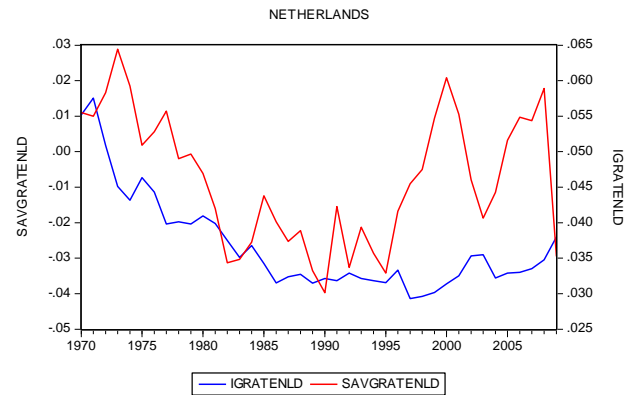
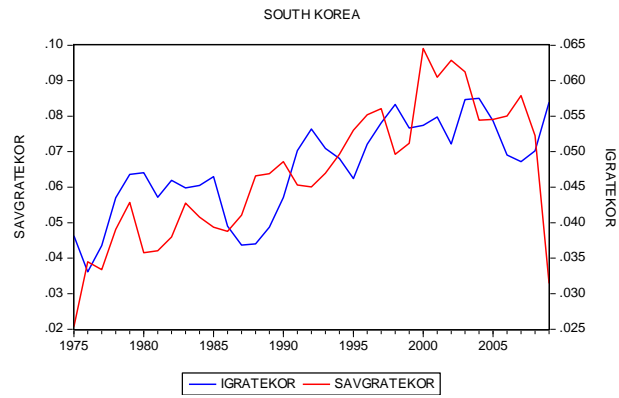
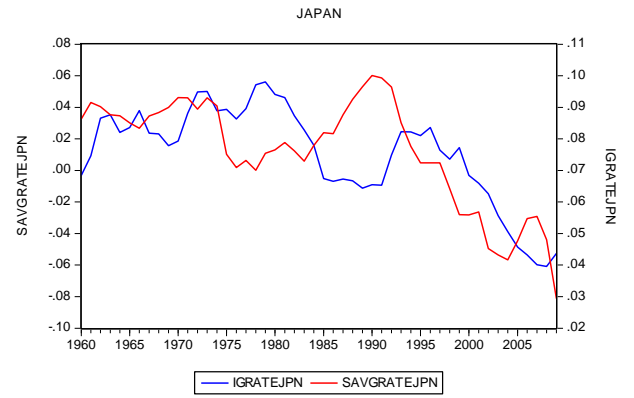
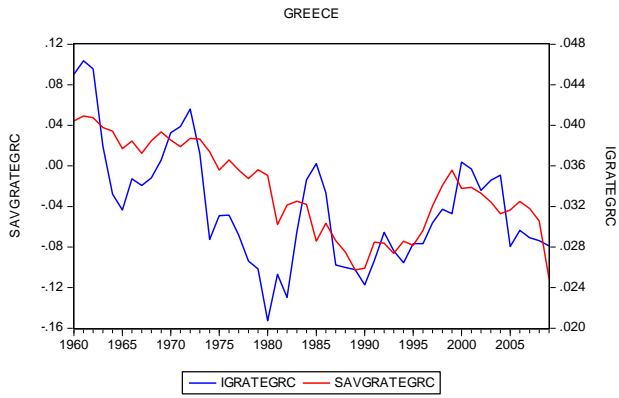


Figure 3: OECD Public Investment and Savings Shares, 1960-2009  
Source: OECD Economic Outlook online database

The next question we investigate is to find whether there is any long-run causal relationship between the two variables either for the entire time periods under consideration (1951-2009 for the US or 1960-2009 for the rest of the OECD) or some sub-periods. This requires us to investigate the possible links between the two variables in a vector error correction mechanism (VECM) framework. Appendix 1 shows that almost all the variables are  $I(1)$  on the basis of the Augmented-Dickey Fuller (ADF), Phillips-Perron (PP), and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests. Appendix 2 shows the VECM results (with the lag specification specified) when the first difference of each variable is the dependent variable. The error correction mechanism (ECM) coefficient for each country is found to be negative and statistically significant when the first difference of investment is the dependent variable, suggesting that the public savings rate Granger causes the public investment rate.

How does one explain this pattern? In the roughly quarter-century boom following the end of the Second World War, government savings rates were generally much higher because of higher tax rates, lower unemployment benefits, and lower interest rates on government debt. The boom in turn created the need for growing public investment outlays. This was particularly the case for small and upcoming capitalist countries with strong developmental states such as Austria, Finland, Japan, and South Korea.

The global economic crisis that started in the early 1970's sharply lowered public savings rates. The response of policymakers in the face of growing budget deficits and government debt was to cut back on public investment expenditures (although in countries like the US and the UK the welfare state also came under attack in this crisis). Roy et al. (2006) argue that this policy response arose from a focus on the aggregate budget deficit that "puts both current and investment spending on an equal footing in

the measurement of the deficit” (Perée and Vällilä 2005, p. 6). With such a fiscal policy rule governments in crisis periods find it politically more convenient to delay construction of long-term infrastructural projects as opposed to raising taxes or cutting expenditures (although the latter does happen too). As the International Monetary Fund (2004, p. 9) states there is “however, evidence that public investment has fallen because of fiscal adjustment, and on this account there is reason to be concerned”. Citing the World Bank (1988) the IMF reports that in the fiscal crisis of the 1980s, cuts in public investment were more than three times greater than those on current expenditures.

Of course one cannot discount the political climate of the post-1980 period when neoliberalism became the dominant policy paradigm. The economic and fiscal crisis of the State brought about a dramatic swing away from the statist paradigm of the previous period. The shift towards privatization and tax cuts in the era of globalization further reduced the fiscal capacity of the State and contributed to the pursuit of balanced budgets and/or budget surpluses as goals in themselves. Thus in the mid-1990s-2000 when several countries achieved improvements in the public savings rate the public investment rate remained relatively flat (Australia, Canada, Denmark, Finland, Great Britain, Netherlands, Norway, Sweden, and the United States).

### **3. HOW DO GOVERNMENT BUDGET RESTRAINTS ARISE?**

The nexus that links public expenditures to public revenues (from tax and bond finance) has been challenged by contemporary authors such as Wray (1998) and Bell (2000). In this neo-Chartalist perspective the existence of a government budget constraint is denied. For these authors the State faces no financial constraints in its expenditure policies since the central bank and the Treasury’s balance sheets can be combined and the central bank is always ready and willing to purchase Treasury bonds, i.e. to “print” money. The purpose of taxes is to give “value” to the currency while both government bonds and tax payments drain liquidity from the system and thereby stabilize overnight

interest rates (in the US the Fed Funds rate). Funds from taxes or bonds do not constitute a restraint to public expenditures. As one Chartalist author puts it:

“If the Fed purchases newly issued bonds directly from the Treasury, it will not cause a change in member bank reserves... Furthermore, since the government’s balance sheet can be considered on a *consolidated* basis, given by the sum of the Treasury’s and Federal Reserve’s balance sheets with offsetting assets and liabilities simply canceling one another out [Tobin 1998], the sale of bonds by the Treasury to the Fed is simply an internal accounting operation, which provides the government with a self-constructed spendable balance. Although self-imposed institutional constraints may prevent the Treasury from creating all of its deposits in this way, there is no financial constraint to prevent it from doing so”. (Bell 2000, p. 612)

In short there is no internal budget constraint faced by the State if the Fed buys up all the bonds sold by the Treasury and “tops up” the Treasury’s account, i.e. the Fed monetizes the debt (Bell, 2000). Chartalist authors argue that this is an internal automatic balance sheet transfer. The Chartalist literature is correct to argue that there is no fundamental *internal constraint* on the ability of the central bank to essentially print the money necessary to pay for the government’s expenditure needs. However, as a number of authors (Mishkin 1995; Rochon and Gnos 2002; Maxfield 1997) have pointed out, under modern banking systems in both developed and developing worlds the central bank is not allowed to directly purchase government debt to finance budget deficits.

Nonetheless, even if such an institutional constraint were removed, would it be correct to say that the central bank faces no *external constraint* in printing money?

It is clear that during the Bretton Woods period when exchange rates were fixed central banks did not have much autonomy to also pursue open market operations to satisfy the Treasury’s fiscal needs. Thus, Treasuries would have less freedom to make central banks purchase their debt under fixed exchange rates. Not surprisingly, Chartalist authors are careful to emphasize the importance of exchange rate flexibility in their analysis of fiscal and monetary policies.

However is there potential for central banks to become less independent under flexible exchange rates? This depends on the theory of foreign trade with the conventional view being that flexible exchange rates simultaneously restore monetary independence and bring about balanced trade. However this theory of foreign trade assumes the validity of perfect competition and the Heckscher-Ohlin theorem. If on the other hand international competition is regulated by cost differentials (themselves a function of labor costs and technology) then trade balances will be persistently unbalanced (Shaikh 2007). Trade surplus countries will experience an inflow of international hard currency (say US dollars) and the higher levels of bank liquidity will lower domestic interest rates. The nominal exchange rate will appreciate making imports cheaper. This will tend to lower cost of imported inputs and, other things equal, lower domestic prices. The opposite will happen in deficit countries which will experience increasing domestic interest rates and foreign debt, currency depreciation, and rising costs of imported inputs that will tend to raise domestic prices in particular if intermediate inputs constitute an important proportion of business prime costs (Taylor 1988).

Weak currencies are vulnerable to attack by foreign exchange speculators, leading to their collapse, as happened to both developed and developing country currencies. Global financial deregulation has perhaps exacerbated currency crises (Eatwell and Taylor 2000; 2002). The point is that central banks in deficit countries will *attempt* to defend their currencies from large depreciation for fear of being attacked. This in turn implies that even under (quasi) flexible exchange rates central banks will not have complete freedom to passively accept the fiscal demands of the Treasury as long as the country is running persistent trade deficits that need to be financed via foreign capital inflows.

In an economy with capital controls a government has more leeway to sell its debt to residents at relatively low bond rates of interest. Matters become quite different with relatively free international capital mobility when the State has to compete with foreign suppliers of bonds. In this situation the

constraints faced by the State to finance expenditures via bond sales are higher. Further one could argue that more is at stake for a country that does not have an independent central bank when it desperately needs to attract foreign finance precisely because foreign creditors' aims are unlikely to be consistent with the policy objectives of the State. For example, if the State has free access to the central bank and can easily "print" money to finance arbitrarily large budget deficits then this might make foreign creditors fear *future* inflation even if there are no current inflationary pressures. Thus the central bank is likely to become more independent in such a situation and therefore less willing to absorb government debt so as to make the country more creditworthy (Maxfield 1997).<sup>5</sup>

Put simply, in the event a country is running persistent trade deficits, the State is in a much weaker position to delink its public savings rate from its public investment rate. Its budgetary constraint becomes more binding.

Can the US dollar, the dominant international currency, be subjected to attack thereby necessitating the need for the Fed to defend the dollar? On the surface of it, the answer appears to be in the negative. Put simply, the US Fed has more leeway than other central banks because of the greater tolerance that foreign central banks will have to absorb it. However it must be remembered that Bretton Woods collapsed because foreign central banks felt that they had overaccumulated dollar reserves.

Further, despite flexible exchange rates, Blecker (2002) is not particularly sanguine about the sustainability of the US foreign debt. His argument is that this debt could become unsustainable if a financial crisis triggers and outflow of the foreign capital that has thus far been financing the deficit, thereby forcing domestic interest rates up and forcing a domestic contraction. One can extend Blecker's

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<sup>5</sup> One does not have to be a monetarist to make this connection between central bank independence and inflation. See John Kenneth Galbraith's excellent analysis of the links between the printing of money by the State and inflation in the American colonies, France immediately after its revolution (Galbraith 1975).

argument by considering the feedback effect of such an outcome on the US public savings rate which will be squeezed even more because of the higher debt service payments of the State.

The point of this discussion is to emphasize that under flexible exchange rates in certain conditions central banks of even wealthy countries may find that they do not have the full freedom to accommodate their State's fiscal needs.

Those limits are of course much narrower for developing countries. Referring to the fact that the South African Reserve Bank (SARB) was subservient to the Ministry of Finance during the apartheid years, Padayachee (2000) points out that the SARB actually became independent after apartheid although there was a clear realization on the part of the ANC that an accommodationist SARB was necessary for socio-economic development. As Padayachee asks rhetorically, was the SARB given full constitutional independence after the fall of apartheid to placate international investors? Did "...the ANC, a left-of-centre nationalist movement with radical trade union and communist party allies, (grant) the SARB independence in order to assure international capital markets of its willingness to play by the rules of the international game, and so secure the foreign capital needed to bolster its low domestic savings ratio?" (Padayachee 2000, p. 500).

#### **4. POLICY ISSUES AND CHALLENGES**

In the current economic crisis the IMF appears to have done an about face with regard to two core aspects of the policies that it supports, contractionary fiscal policy and free capital mobility.<sup>6</sup> The IMF's current policy is that capital controls are useful and justifiable. Rejecting austerity, it supports expansionary fiscal policy so as to stimulate aggregate demand although it cautions against "excessive"

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<sup>6</sup> With regard to this matter the reader can consult the following references "Crisis-Hit Countries See Sharp Rise in Government Debt" (<http://www.imf.org/external/pubs/ft/survey/so/2009/RES030609A.htm>) and Gallagher (2010).

increases in budget deficits and government debt because of the fear of insolvency. Commenting on bond-holders' reaction to the "excessive" pile up of debt the IMF cautions that "market reactions are often delayed and abrupt. If investors lose confidence in governments' creditworthiness, interest rates would start rising, the financial sector would be further destabilized, and the demand impact of the fiscal stimulus would be negated" (Cottarelli 2009). The IMF recommends (Freedman, et al. 2009) over the long run some sort of a target budget deficit, and thus of public debt, to GDP ratio.

How does one problematize these policy prescriptions? First, it is unclear what such a long-run desired or desirable target should be. Much depends on what the IMF means by the *long run* which in the neoclassical view means that growth path which is consistent with zero involuntary unemployment, i.e. the natural rate of unemployment. This of course requires one to have faith in such a view of the economy's long-run.

Second, the IMF is correct in alerting us to the fact that bond-holders will refuse to hold bonds *beyond some limit* quite simply because they have portfolio choices. One can clearly see this in the contemporary problems of the Greek government as well as the decisions by European governments to pursue austerity policies<sup>7</sup>. The question is what point? This is an issue that no government can foretell *a priori*. In the meantime it is easy to slip into two polar extremes, one of which is to pursue austerity in a single-minded fashion (as in the UK) and the other is to be sanguine about it (a kind of "wait and see" attitude).<sup>8</sup> Both of these opposing viewpoints make an essentially benign assumption about markets. For the neoliberal view, the assumption is that public cutbacks will enable private investment to flow in a seamless fashion with no consideration being given to effective demand constraints. For the wait-and-

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<sup>7</sup> In a recent article The New York Times reports that the pursuit of austerity in the UK is in part justified by pressures put on the State running large budget deficits by bond markets ("Keynes Who? Europe Avoids His Approach", <http://www.nytimes.com/2010/10/21/world/europe/21austerity.html?emc=eta1>).

<sup>8</sup> The second position would be that of Paul Krugman's view. See his New York Times op-ed "British Fashion Victims" (<http://economistsview.typepad.com/economistsview/2010/10/paul-krugman-british-fashion-victims.html>).

see perspective, there is very little discussion about the discrepancy between the amount of bonds that a State would *desire* to sell (in line with its own policy objectives) and private bondholders' *desired* stock of bonds (in line with their own portfolio choices) at any moment in time.

Our view is that the discussion on expansionary fiscal policies has to go beyond the market-driven approach to policymaking. Much of the current conventional policy debates assume that no other institution can exist that could absorb some of the government's bonds. We would argue that, given the importance of expansionary fiscal policies in general and public investment policies, in particular, the external finance constraint faced by the State requires that it become a central player in the financing of public spending. In short, central banks and/or public sector banks should behave in a Chartalist manner rather than pursue the conventional strategy of attempting to target inflation. Higher shares of public investment, judiciously directed to improve existing infrastructure and lay the foundations for future technologies (e.g. in alternative energy)<sup>9</sup>, could be at least in part financed in this manner.

In recent years a number of authors such as Epstein (2006) and Lapavistas (2010) have advocated the need for public banks or development-oriented central banks to facilitate the State's fiscal operations. One way by which they could satisfy such a role is for such banks to absorb a greater proportion of the government's debt by providing the Treasury the finance it needs to carry out its expenditure policies in general and investments in particular. Such a public sector banking system would loosen the links between public investment and public savings. Alternatively, as proposed in the National Infrastructure Bank Act of 2007 by Senators Christopher Dodd and Chuck Hagel, there could be an independent public sector bank charged with the mission of financing public investments.

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<sup>9</sup> Such a policy strategy could also avoid being criticized as a short-term palliative in which money is printed to finance boondoggles.

Would not such public banks be passive supporters of the State's fiscal operations and therefore be susceptible to misuse? One can respond to this objection by saying that it can be used as a critique of *any* type of interventionist policies pursued by the State including the provisioning of subsidies etc. However, the logical implication of such a critique is that State involvement should be reduced to zero, i.e. become a nightwatchman state. After thirty years of neoliberalism, the current economic crisis should provide little comfort to this viewpoint.

One can in fact suggest that the public finance option suggested by the above authors will work if it is used in a way to finance public investment that is equivalent to what is known as *strategic industrial policy* (Chang 2004), a form of state-led industrialization pursued in South Korea, Japan, and Taiwan that prioritized core sectors and extracted performance standards from them in return for credit, subsidies, etc. If public banks are successful in maintaining a sufficient degree of autonomy vis-à-vis the State, then they could pursue a formation of *strategic financing policy* in which important public investment projects would not get a "blank check" but would need to be justified on economic and social grounds.

What would ensure such an institutional framework? Much will depend on the institutional context in which such banks operate including the degree to which elected representatives and civil society exercise oversight over them, thereby ensuring that they do not become passive tools of the State. As discussed above there is empirical evidence regarding highly efficient state-owned enterprises run along strictly professional lines.<sup>10</sup>

Of course, such a Chartalist approach to public investment will not escape external financial

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<sup>10</sup> Brazil under military dictatorship had a relatively corruption-free state sector (Kohli 2004) as did Austria (Katzenstein 1984).

constraints in the case of a small country running persistent trade deficits (see section 3). We would argue that taxation revenue to bolster the public savings rate should be another finance component, i.e. capital budgeting. Free market policies over the last several decades have led to a drop in tax revenues for many States because of the pursuit of cuts in direct taxes. Furthermore, the lowering of import tariffs has produced the fall of an important source of taxation revenue in particular for developing countries such as Mexico (Weisbrot and Baker 2002), where the State depend to a large extent on indirect taxes, i. e., tax oil revenues which represent around the 38% of the total fiscal revenues .

One way out of the fiscal crunch thus produced is the financial transactions tax (FTT) which has been discussed extensively in recent years both as a means to deter speculative activity but also as an important source of State revenue (Baker, et al. 2009). This too is a proposal that has entered mainstream discussions, for example the support of British Prime Minister Gordon Brown and French Prime Minister Nicholas Sarkozy.<sup>11</sup> Recently a resolution to investigate such a tax was passed by an overwhelming majority in the European Parliament.<sup>12</sup>

There are other possibilities too, such as expenditure taxes as discussed by Kaldor who, commenting on the development strategies in Chile observed:

*“The high propensity to consume of the capitalist class [can be found in the fact that they] appear to have spent on personal consumption more than two-thirds of their gross income, or three-quarters of their net income after tax...the luxury consumption of the property-owning classes appears to take up an altogether disproportionate share of national resources, part of which would be automatically released for investment purposes if a more efficient system of progressive taxation were introduced and/or if effective measures were taken to encourage the retention of profits by enterprises”* (Kaldor, 1956, p. 266. Cited from Palma and Marcel, 1989, p. 250. Emphasis added).

As Palma and Marcel (1989, p. 252) conclude:

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<sup>11</sup> For further references the reader can consult the article “Britain’s Idea to Tax Financial Transactions” <http://www.time.com/time/business/article/0,8599,1938594,00.html>

<sup>12</sup> To analyze this point the reader can consult the text “What Shape for a Financial Transactions Tax?” ([http://www.europarl.europa.eu/news/expert/infopress\\_page/044-70277-067-03-11-907-20100309IPR70276-08-03-2010-2010-false/default\\_en.htm](http://www.europarl.europa.eu/news/expert/infopress_page/044-70277-067-03-11-907-20100309IPR70276-08-03-2010-2010-false/default_en.htm)).

“Kaldor’s main proposition from this point of view was that a developing country like Chile *does* generate a surplus large enough to sustain a level of investment needed for a fast rate of growth and high levels of employment. Nevertheless, too large a proportion of that surplus was wasted in luxury consumption by the high-income groups... Government intervention, particularly through taxation *and an effective investment policy by the public sector*, was the most appropriate way to achieve a dynamic equilibrium. In other words, what Kaldor proposed were institutional changes that would make the Chilean public sector both a high-saving (through better taxation) *and* a high-investing affair”.

The existence of relatively high interest rates to attract short-term capital flows so as to finance trade deficits is likely to exacerbate the public savings rate as they raise the government’s finance charges on its debt (Taylor, 1988). If the real exchange rate is regulated by productivity differentials (Ruiz-Nápoles 2004; Sarich 2006; Shaikh 2007; Martinez 2010) then free trade will not automatically produce balanced trade. These theoretical linkages jointly imply that a public investment program has to be tied to the policy of increasing international competitiveness, a goal that is likely to involve considerable degrees of State intervention.<sup>13</sup>

In short, public banking, taxation, and foreign trade policy should become crucial aspects of this alternative public investment strategy. Clearly the ability of the State to implement higher taxes would be enhanced if capital cannot easily flow overseas. In this regard it is interesting to note that, recognizing the destabilizing nature of rapid financial flows, the IMF has come out in favor of capital controls (Gallagher 2010).

Finally as Roy et al. (2006) argue that there is a need not to fixate on overall budget deficit targets but rather to pursue a fiscal policy that separates out current from capital expenditures in which some combination of a current surplus and debt would finance public investment. This is of course a familiar argument made by the classic development authors mentioned in the introduction.

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<sup>13</sup> Clearly, the key issue is the theory of competition and price formation that underpins foreign trade. If relative international prices are regulated by relative unit labor costs (Shaikh 2007) then the persistence of trade imbalances will reflect technological and wage differentials across the world. This has nothing to do with any putative “market imperfections”. The reader is referred to an alternative theory of competition that includes the contributions of Smith, Marx, Hayek, and the Oxford Economists’ Research Group. See Moudud (2010) for a discussion of this literature which includes the contributions of contemporary authors such as McNulty (1967), Clifton (1977), Shaikh (1982), Semmler (1984), Bina (1985), Botwinick (1993), among others.

## 5. CONCLUSION

When Margaret Thatcher rode triumphantly to power about three decades ago her war cry was “TINA” –There Is No Alternative. The policy prescription of the New Right called for, among other things, drastic cuts in public expenditures of various different types including public investment. The assumption was that such measures accompanied by deregulation and tax cuts would make private investment flow in to fill the void. This did not happen and the general consequence of the New Right’s *laissez faire* agenda has been an infrastructure deficit in many developed and developing countries.

The consequences of such austerity in terms of nation-building have already been discussed above. On the other hand, an expansion of public investment would not only deal with infrastructural problems but also directly stimulate growth and employment—an urgently needed policy in the current world crisis. Part of this public investment could involve government purchases of goods and services from the private sector to produce infrastructure. The remaining type could be direct production activity by SOEs whose outputs could be targeted to provide important production inputs into the private sector. Opponents of such a public sector jobs program could not accuse it of being a boondoggle as it could have the potential to raise productivity, which would stimulate private investment, and thus effective demand.<sup>14</sup>

Instead the tendency in many countries has been to attempt to cut the aggregate budget deficit by slashing the public investment share when the public savings share fell during the economic crisis of the 1970s and 1980s. Conversely, the single-minded pursuit of a budgetary surplus (as under Clinton) lead to stagnating public investment shares during the boom of the 1990s. These kinds of

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<sup>14</sup> Such a strategy of using public finance to expand SOE production is an important component of the current Chinese stimulus package. See “China Fortifies State Businesses to Foster State Growth” (<http://www.nytimes.com/2010/08/30/world/asia/30china.html?pagewanted=1&r=1>).

policies will prove to be disastrously counterproductive in the current economic crisis when there is a need to expand public expenditures of several different types, in particular public investment.

These impacts as well as other negative socio-economic consequences of neo-liberalism have, quite justifiably, invoked calls for State intervention by many economists. However the argument that there *are* alternatives, *contra* New Right triumphalism, by no means implies that “anything goes” as far as progressive policies are concerned. To make such a claim would be to assume that the capitalist State has no structural underpinnings and that purely institutional factors determine the nature of policies. And yet there are structural limits to the ability of the State to sell a desired number of bonds, put in place some desired taxation rate or expand SOE investment. The limits arise from the private sector’s portfolio choices, the impact that higher tax rates may have on capitalist investment decisions, and last but not least the perceptions by capitalists of the sort of policy strategy proposed in this paper. There is nothing particularly radical about such a strategy, given the postwar histories of many countries. However, in the current right-wing climate with a weak labor movement in many parts of the world, the political pressures of powerful business groups in the United States and Europe against the role of an activist state have to be reckoned with –in particular, given the weakness of the labor movement. Thus it would be naïve to claim that the capitalist State can step in and wave some type of a magic policy wand.

We would suggest that the capitalist State does not have the luxury to remain aloof from the political pressures of powerful economic classes and carry out meaningful social goals as an omnipotent planner. Quite the contrary, it is an *embattled planner* (Chibber 2003) caught in the turbulence and crosswinds of the capitalist economy. The position taken in this paper is that, given market forces and the forces of uncertainty, the State has to constantly negotiate the rival push-pull effects of social relief, job creation, and long-term nation-building projects, on the one hand, and the satisfaction of capitalist

prerogatives, on the other. It remains to be seen how far a given capitalist State can satisfy these rival demands without becoming paralyzed.

## APPENDIX 1

	Variables	Augmented Dickey-Fuller			Phillips Perron			KPSS		Order of Integration
		A	B	C	A	B	C	A	B	
Australia (1960-2009)	AUS	-2.33	-1.31	-0.56	-2.33	-1.31	-0.57	0.10*	0.75	I(1)
	Δ AUS	-5.85*	-5.92*	-5.97*	-5.83*	-5.90*	-5.95*	0.092*	0.09*	
Austria (1960-2009)	AUT	-2.66	0.39	-1.62***	-2.66	0.20	-1.42	0.18	0.84	I(1)
	Δ AUT	-6.31*	-6.15*	-5.79*	-6.30*	-6.16*	-5.93*	0.11*	0.27***	
Canada (1961-2009)	CAN	0.92	-1.52	-0.26	1.42	-1.56	-0.73	0.21	0.69	I(1)
	Δ CAN	-5.50*	-2.10	-2.24**	-5.35*	-4.84*	-4.89*	0.11	0.52*	
Germany (1991-2009)	GER	0.09	-1.63	-1.90	-0.17	-1.59	-1.65	0.16	0.51	I(1)
	Δ GER	-4.01**	-2.44***	-2.15**	-4.06**	-2.70***	-2.38**	0.10*	0.26**	
Denmark (1971-2009)	DNK	-1.40	-3.16**	-2.70*	-1.47	-3.06**	-2.70*	0.19*	0.61*	I(0)
	Δ DNK	-5.18*	-4.53*	-4.44*	-5.09*	-4.53*	-4.37*	0.05*	0.56	
Finland (1960-2009)	FIN	-5.00*	-1.46	-0.37	-4.95*	-3.98*	-0.34	0.23	0.54**	I(0)
	Δ FIN	-9.00*	-8.94*	-9.04*	-19.67*	-14.55*	-14.82*	0.17	0.20**	
France (1960-2009)	FRA	-3.50	-2.41	0.05	-3.45	-2.41	-0.01	0.06*	0.44***	I(1)
	Δ FRA	-5.13*	-5.19*	-5.25*	-5.04*	-5.11*	-5.18*	0.09*	0.12*	
Great Britain (1963-2009)	GBR	-0.94	-1.10	-0.88	-1.39	-1.22	-0.89	0.14**	0.69	I(1)
	Δ GBR	-5.87*	-5.81*	-5.83*	-5.87*	-5.81*	-5.84*	0.13**	0.17**	
Greece (1960-2009)	GRC	-2.65	-2.72	-1.19	-2.75	-2.79	-1.18	0.18	0.44***	I(1)
	Δ GRC	-6.14*	-6.12*	-6.11*	-6.12*	-6.11*	-6.10*	0.04*	0.10**	
Japan (1960-2009)	JPN	-2.50	-1.00	-0.83	-2.44	-0.70	-0.69	0.14**	0.59	I(1)
	Δ JPN	-5.00*	-4.92*	-4.90*	-4.99*	-4.82*	-4.82*	0.05*	0.27**	
Korea (1975-2009)	KOR	-3.97**	-1.66	0.65	-2.33	-1.41	1.66	0.06*	0.65	I(1)
	Δ KOR	-4.50*	-4.55*	-4.46*	-4.34*	-4.41*	-4.28*	0.18596	0.18**	
Netherlands (1960-2009)	NLD	-0.63	-1.16	-0.72	-1.30	-1.05	-0.72	0.17	0.73	I(1)
	Δ NLD	-2.68	-6.01*	-6.03*	-5.94*	-5.95*	-5.98	0.18	0.20**	
New Zealand (1962-2009)	NZL	-2.07	-1.53	-0.76	-2.10	-1.45	-0.76	0.11	0.57	I(1)
	Δ NZL	-6.67*	-6.75*	-6.82*	-6.67*	-6.75*	-6.82*	0.08*	0.08*	
Norway (1968-1995)	NOR	-3.25	-1.65	-0.19	-2.40	-1.79	-0.21	0.10*	0.50	I(1)
	Δ NOR	-5.51*	-5.55*	-5.61*	-5.54*	-5.58*	-5.64*	0.08*	0.10*	
Sweden (1960-2009)	SWE	-2.03	-0.76	-0.70	-2.38	-1.01	-0.67	0.09*	0.76	I(1)
	Δ SWE	-4.40*	-4.46*	-4.51*	-4.40*	-4.46*	-4.51*	0.14**	0.14*	
USA (1929-2009)	USA	-1.83	-1.04	-1.25	-4.46**	-1.76	-0.28	0.20	0.78	I(1)
	Δ USA	-2.64	-2.64***	-2.66*	-5.41*	-5.39*	-5.44*	0.12*	0.15**	

Notes: Δ indicates differences

Model A adds a constant and a time trend, model B adds only a constant and model C does not include the constant and trend.

\*, \*\*, and; \*\*\* indicate the rejection of the null hypothesis (presence of a unit root) at 1%, 5%, and 10% significance level.

In the KPSS test statistics the null hypothesis considers that the series are stationary in levels or around a deterministic trend, respectively.

I(0) indicates that the time series is stationary and I(1) indicates that the time series is non-stationary.

Source: Own elaboration based on Eviews 6.

	Variables	Augmented Dickey-Fuller									Phillips Perron			KPSS		Order of Integration
		A			B			C			A			B		
Australia (1960-2009)	AUS	-2.24	-2.25	-2.16**	-2.38	-2.38	-2.29**	0.19	0.18					I(1)		
	Δ AUS	-5.62*	-5.81*	-5.87*	-5.65*	-5.84*	-5.89*	0.07*	0.08*							
Austria (1960-2009)	AUT	-2.57	-1.46	-1.67	-2.60	-1.13	-1.48	0.17	0.71					I(1)		
	Δ AUT	-5.85*	-5.95*	-5.86*	-6.57*	-6.61*	-5.4*	0.14**	0.15*							
Canada (1961-2009)	CAN	-1.56	-1.54	-1.41	-1.79	-1.76	-1.63	0.18	0.22					I(1)		
	Δ CAN	-4.85*	-4.95*	-5.00*	-4.85*	-4.94*	-5.00*	0.09*	0.08*							
Germany (1991-2009)	GER	-4.63**	-4.78*	-4.02	-2.30	-2.36	-1.10	0.08*	0.09*					I(1)		
	Δ GER	-3.22	-3.92**	-4.03*	-1.80	-2.06	-2.14**	0.05*	0.05*							
Denmark (1971-2009)	DNK	-3.40***	-3.02**	-3.08*	-2.43	-2.36	-2.45**	0.166*	0.17					I(0)		
	Δ DNK	-3.58**	-4.38*	-4.44*	-3.60**	-3.71*	-3.71*	0.07*	0.18*							
Finland (1960-2009)	FIN	-3.15	-2.30	-1.82***	-2.62	-2.02	-1.68***	0.08*	0.44***					I(0)		
	Δ FIN	-3.72**	-3.82**	-3.86**	-3.72**	-3.82*	-3.86*	0.05*	0.06*							
France (1978-2009)	FRA	-3.18	-2.17	0.52	-1.90	-0.96	-0.06	0.09	0.49					I(1)		
	Δ FRA	-2.46	-2.85***	-2.41**	-2.67	-2.71	-2.63**	0.09*	0.18							
Great Britain (1970-2009)	GBR	-3.17	-2.32	-2.03**	-2.47	-2.28	-2.29	0.10*	0.42***					I(1)		
	Δ GBR	-2.71	-3.09**	-2.97**	-1.99	-2.27	-2.13**	0.12*	0.12*							
Greece (1960-2009)	GRC	-1.78	-1.02	-1.02	-1.78	-0.99	-0.27	0.16	0.65					I(1)		
	Δ GRC	-5.98*	-6.08*	-5.89*	-5.95*	-6.05*	-5.89*	0.10*	0.09*							
Japan (1960-2009)	JPN	-1.49	-0.27	-0.78	-0.91	0.51	-0.44	0.14**	0.58					I(1)		
	Δ JPN	-3.93**	-3.80*	-3.62*	-3.92**	-3.83*	-3.77*	0.08*	0.33*							
Korea (1970-2009)	KOR	-2.13	-1.58	-0.92	-2.35	-1.67	-0.92	0.11*	0.57					I(1)		
	Δ KOR	-4.45*	-4.57*	-4.63*	-4.36*	-4.51*	-4.57*	0.16	0.18**							
Netherlands (1960-2009)	NLD	-0.63	-1.16	-0.72	-1.30	-1.05	-0.72	0.17	0.73					I(1)		
	Δ NLD	-2.68	-6.01*	-6.03*	-5.94*	-5.95*	-5.98*	0.18	0.20**							
New Zealand (1986-2009)	NZL	-3.22	-2.52	-2.27***	-1.85	-1.64	-1.31	0.06*	0.48					I(2)		
	Δ NZL	-1.52	-1.51	-1.61	-1.73	-1.75	-1.85	0.09*	0.12**							
Norway (1962-2009)	NOR	-2.38	-2.11	-0.86	-2.38	-2.12	-0.68	0.17	0.29***					I(1)		
	Δ NOR	-5.06*	-5.21*	-5.28*	-4.16**	-4.62*	-4.76*	0.22	0.19**							
Sweden (1960-2009)	SWE	-3.68**	-2.80***	-2.64*	-2.51	-2.01	-1.76	0.13**	0.45***					I(1)		
	Δ SWE	-3.65**	-3.70*	-3.72*	-3.73**	-3.78*	-3.81*	0.05*	0.05*							
USA (1929-2009)	USA	-3.82**	-1.99	-1.53	-2.89	-1.96	-1.62	0.18	0.66					I(1)		
	Δ USA	-7.17*	-7.24*	-7.24*	-9.32*	-9.95*	-7.74*	0.18	0.18**							

Notes: Δ indicates differences

Model A adds a constant and a time trend, model B adds only a constant and model C does not include the constant and trend.

\*, \*\*, and \*\*\* indicate the rejection of the null hypothesis (presence of a unit root) at 1%, 5%, and 10% significance level.

In the KPSS test statistics the null hypothesis considers that the series are stationary in levels or around a deterministic trend, respectively.

I(0) indicates that the time series is stationary and I(1) indicates that the time series is non-stationary.

**Source: Own elaboration based on Eviews 6.**

## APPENDIX 2

Table 3: Vector Error Correction Models										
	# of Cointegration Vectors*					VAR lags	TESTS			
	1	2	3	4	5		Normality	Heteroskedasticity	Autocorrelation LM	
1 Australia (1964-2009)					2	3	Fine (I and III)	Fine	Fine	
2 Austria (1962-2009)	1					1	Fine (I, II, and III)	Fine	Fine	
3 Belgium	No Cointegrating Vector									
4 Canada (1963-1995)			1			1	Fine (I and III)	Fine	Fine	
5 Deutschland (1993-2009)	1	2	2	1	1	1	Fine (I and III)	Fine	Fine	
6 Denmark (1974-2009)	1	1	1			2	Fine (I and III)	Fine	Fine	
7 Finland (1962-2009)		1	1	1	2	1	Fine (I, II, and III)	Fine	Fine	
8 France (1980-1995)					1 2	1	Fine (I and III)	Fine	Fine	
9 Great Britain (1972-1995)			1		2	1	Fine (I and III)	Fine	Fine	
10 Greece (1962-2009)			1		2	1	Fine (III)	Fine	Fine	
11 Ireland	No Cointegrating Vector									
12 Islandia	No Cointegrating Vector									
14 Japan (1964-2009)			2			3	Fine (I and III)	Fine	Fine	
15 Korea (1975-2009)			1			1	Fine (I and II)	Fine	Fine	
16 Mexico	No Cointegrating Vector					1				
17 Netherlands (1971-2009)		1	2			1	Fine (I, II, and III)	Fine	Fine	
18 New Zealand (1988-2009)	1	1	2		2	1	Fine (I and III)	Fine	Fine	
19 Norway (1968-1995)	1		1		2	5	Fine (III)	Fine	Fine	
20 South Korea (1977-2009)			1			1	Fine (I and II)	Fine	Fine	
21 Spain (1967-1995)	negative relationship				2	2	Fine (I and III)	Fine	Fine	
22 Sweden (1962-2009)			1	1	2	1	Fine (I and III)	Fine	Fine	
23 USA (1962-1995)		2	2	1	2	1	Fine (I and III)	Fine	Fine	
24 USA (1951-1994)		1	1			4	Fine (I and III)	Fine	Fine	
<b>* Johansen Procedure (VECM)</b>							<b>Normality test</b>			
Cointegration between IGRATE= gross government investment/GDP and SAVGRATE=government savings/GDP							I Cholesky of covariance (Lutkepohl)			
1: No intercept or trend in CE or test VAR							II Square root of correlation (Dornik-Hansen)			
2: Intercept (no trend) in CE -no intercept in VAR							III Square root of covariance (Urzua)			
3: Intercept (no trend) in CE and test VAR										
4: Intercept and trend in CE -no trend in VAR										
5: Intercept and trend in CE -linear trend in CE -linear tend in VAR										

**Table 4: Vector Error Correction Estimates**

<b>AUSTRALIA:</b> Sample (adjusted): 1964 2009 Included observations: 46 after adjustments 3 lags, t-statistics in [ ]			<b>AUSTRIA:</b> Sample (adjusted): 1962 2009 Included observations: 48 after adjustments 1 lag, t-statistics in [ ]			<b>CANADA:</b> Sample (adjusted): 1963 1995 Included observations: 33 after adjustments 1 lag, t-statistics in [ ]		
Cointegrating Eq:	CointEq1		Cointegrating Eq:	CointEq1		Cointegrating Eq:	CointEq1	
IGRATEAUS(-1)	1		IGRATEAUT(-1)	1		IGRATECAN(-1)	1	
SAVGRATEAUS(-1)	-0.076213		SAVGRATEAUT(-1)	-1.199556		SAVGRATECAN(-1)	-0.205018	
	[-2.24597]			[-5.36453]			-0.02844	
Trend (60)	0.000501						[-7.20800]	
C	-0.044765					C	-0.03806	
Error Correction:	D(IGRATEAUS)	D(SAVGRATEAUS)	Error Correction:	D(IGRATEAUT)	D(SAVGRATEAUT)	Error Correction:	D(IGRATECAN)	D(SAVGRATECAN)
	-0.506649	0.14065		-0.043619	0.068484		-0.146145	1.98596
	[-4.11369]	[ 0.18447]		[-3.60730]	[ 0.95212]		[-1.65446]	[ 3.56845]
R-squared	0.372162	0.087546	R-squared	0.231567	0.041972	R-squared	0.213958	0.346
Adj. R-squared	0.236414	-0.109742	Adj. R-squared	0.197414	-0.000607	Adj. R-squared	0.132644	0.278345
Sum sq. resids	0.00021	0.008038	Sum sq. resids	0.00019	0.00672	Sum sq. resids	0.000113	0.004471
S.E. equation	0.002381	0.014739	S.E. equation	0.002054	0.01222	S.E. equation	0.001971	0.012417
F-statistic	2.741555	0.443747	F-statistic	6.780359	0.985741	F-statistic	2.631239	5.114179
Determinant resid covariance	1.04E-09		Determinant resid covariance	6.21E-10		Determinant resid covariance (dof adj.)	5.97E-10	
Determinant resid covariance	6.70E-10		Determinant resid covariance	5.45E-10		Determinant resid covariance	4.61E-10	
<b>Germany:</b> Sample (adjusted): 1993 2009 Included observations: 17 after adjustments 1 lag, t-statistics in [ ]			<b>Denmark:</b> Sample (adjusted): 1974 2009 Included observations: 36 after adjustments 2 lags, t-statistics in [ ]			<b>Finland:</b> Sample (adjusted): 1962 2009 Included observations: 48 after adjustments 1 lag, t-statistics in [ ]		
Cointegrating Eq:	CointEq1		Cointegrating Eq:	CointEq1		Cointegrating Eq:	CointEq1	
IGRATEDEU(-1)	1		IGRATEDNK(-1)	1		IGRATEFIN(-1)	1	
SAVGRATEDEU(-1)	-0.595988		SAVGRATEDNK(-1)	-0.7109		SAVGRATEFIN(-1)	-0.117922	
	[-6.19359]			[-4.43244]			[-4.24219]	
C	-0.026217		C	-0.02266		C	-0.026929	
Error Correction:	D(IGRATEDEU)	D(SAVGRATEDEU)	Error Correction:	D(IGRATEDNK)	D(SAVGRATEDNK)	Error Correction:	D(IGRATEFIN)	D(SAVGRATEFIN)
	-0.128431	1.198407		-0.031802	0.485443		-0.509516	1.647129
	[-2.94955]	[ 3.17907]		[-2.39214]	[ 3.20984]		[-3.98992]	[ 2.59997]
R-squared	0.533912	0.556339	R-squared	0.421498	0.334448	R-squared	0.408243	0.189682
Adj. R-squared	0.426354	0.453956	Adj. R-squared	0.325081	0.223523	Adj. R-squared	0.367896	0.134433
Sum sq. resids	1.26E-05	0.000948	Sum sq. resids	7.54E-05	0.009757	Sum sq. resids	0.000711	0.01751
S.E. equation	0.000986	0.008539	S.E. equation	0.001585	0.018034	S.E. equation	0.004021	0.019949
F-statistic	4.963919	5.433891	F-statistic	4.371619	3.02E+00	F-statistic	10.1183	3.433221
Determinant resid covariance	5.10E-11		Determinant resid covariance	8.17E-10		Determinant resid covariance	6.40E-09	
Determinant resid covariance	2.98E-11		Determinant resid covariance	5.68E-10		Determinant resid covariance	5.38E-09	
<b>France:</b> Sample (adjusted): 1980 1995 Included observations: 16 after adjustments 1 lag, t-statistics in [ ]			<b>Great Britain:</b> Sample (adjusted): 1972 1995 Included observations: 24 after adjustments 1 lag, t-statistics in [ ]			<b>Greece:</b> Sample (adjusted): 1962 2009 Included observations: 48 after adjustments 1 lag, t-statistics in [ ]		
Cointegrating Eq:	CointEq1		Cointegrating Eq:	CointEq1		Cointegrating Eq:	CointEq1	
IGRATEFRA(-1)	1		IGRATEGBR(-1)	1		IGRATEGRC(-1)	1	
SAVGRATEFRA(-1)	-0.157905		SAVGRATEGBR(-1)	-0.732087		SAVGRATEGRC(-1)	-0.065466	
	[-8.46101]			[-4.56715]			[-2.76289]	
Trend (60)	-0.000598		C	-0.034342		C	-0.033254	
C	-0.017963		Error Correction:	D(IGRATEGBR)	D(SAVGRATEGBR)	Error Correction:	D(IGRATEGRC)	D(SAVGRATEGRC)
				-0.112769	0.36344		-0.409694	0.268314
				[-2.08252]	[ 2.46169]		[-3.99424]	[ 0.44127]
R-squared	0.697779	0.218214	R-squared	0.274923	0.394496	R-squared	0.304736	3.93E-02
Adj. R-squared	0.622224	0.022767	Adj. R-squared	0.166161	0.30367	Adj. R-squared	0.257332	-0.026165
Sum sq. resids	8.41E-06	0.00086	Sum sq. resids	0.000316	0.002347	Sum sq. resids	0.000351	0.012343
S.E. equation	0.000837	0.008467	S.E. equation	0.003973	0.010832	S.E. equation	0.002825	0.016749
F-statistic	9.235364	1.116487	F-statistic	2.527757	4.343437	F-statistic	6.428445	0.60053
Determinant resid covariance	3.54E-11		Determinant resid covariance	1.74E-09		Determinant resid covariance	2.23E-09	
Determinant resid covariance	1.99E-11		Determinant resid covariance	1.21E-09		Determinant resid covariance	1.88E-09	

**Table 5: Vector Error Correction Estimates**

<b>Japan: Sample (adjusted): 1964 2009</b>			<b>Korea: Sample (adjusted): 1977 2009</b>			<b>Netherlands: Sample (adjusted): 1971 2009</b>		
Included observations: 46 after adjustments			Included observations: 33 after adjustments			Included observations: 39 after adjustments		
3 lags, t-statistics in [ ]			1 lag, t-statistics in [ ]			1 lag, t-statistics in [ ]		
Cointegrating Eq:	CoIntEq1		Cointegrating Eq:	CoIntEq1		Cointegrating Eq:	CoIntEq1	
IGRATEJPN(-1)	1		IGRATEKOR(-1)	1		IGRATENLD(-1)	1	
SAVGRATEJPN(-1)	-0.640772		SAVGRATEKOR(-1)	-0.270816		SAVGRATENLD(-1)	-0.259469	
	[-3.75367]			[-4.99826]			[-3.62993]	
C	-0.068096		C	-0.029798		C	-0.038561	
Error Correction:	D(IGRATEJPN)	D(SAVGRATEJPN)	Error Correction:	D(IGRATEKOR)	D(SAVGRATEKOR)	Error Correction:	D(IGRATENLD)	D(SAVGRATENLD)
	-0.157814	0.084277		-0.526975	0.508996		-0.247122	0.549678
	[-3.34459]	[ 0.72370]		[-3.90705]	[ 0.95923]		[-4.52032]	[ 1.43996]
R-squared	0.325261	2.87E-01	R-squared	0.440972	0.088918	R-squared	0.374439	0.060165
Adj. R-squared	0.200967	0.155397	Adj. R-squared	0.383141	-0.005332	Adj. R-squared	0.320819	-0.020392
Sum sq. resids	0.00067	0.004079	Sum sq. resids	0.000229	0.00355	Sum sq. resids	0.000127	0.006192
S.E. equation	0.004198	0.01036	S.E. equation	0.002813	0.011065	S.E. equation	0.001905	0.013301
F-statistic	2.616866	2.182781	F-statistic	7.625249	0.943432	F-statistic	6.983252	0.746862
Determinant resid covariance		1.78E-09	Determinant resid covariance		9.23E-10	Determinant resid covariance		5.99E-10
Determinant resid covariance		1.21E-09	Determinant resid covariance		7.13E-10	Determinant resid covariance		4.82E-10
<b>New Zealand: Sample (adjusted): 1988 2009</b>			<b>Norway: Sample (adjusted): 1968 1995</b>			<b>Sweden: Sample (adjusted): 1962 2009</b>		
Included observations: 22 after adjustments			Included observations: 28 after adjustments			Included observations: 48 after adjustments		
1 lag, t-statistics in [ ]			5 lags, t-statistics in [ ]			1 lag, t-statistics in [ ]		
Cointegrating Eq:	CoIntEq1		Cointegrating Eq:	CoIntEq1		Cointegrating Eq:	CoIntEq1	
IGRATENZL(-1)	1		IGRATENOR(-1)	1		IGRATESWE(-1)	1	
SAVGRATENZL(-1)	-0.422123		SAVGRATENOR(-1)	-0.390926		SAVGRATESWE(-1)	-0.484695	
	[-4.07565]			[-3.28803]			[-5.45080]	
C	-0.031683		C	-0.015348		C	-0.029863	
Error Correction:	D(IGRATENZL)	D(SAVGRATENZL)	Error Correction:	D(IGRATENOR)	D(SAVGRATENOR)	Error Correction:	D(IGRATESWE)	D(SAVGRATESWE)
	-0.349245	0.352017		-0.250754	1.667717		-0.060943	0.568494
	[-3.91512]	[ 1.39850]		[-1.94620]	[ 2.58266]		[-2.20981]	[ 3.99967]
R-squared	0.469412	0.410377	R-squared	0.423602	0.529908	R-squared	0.22467	0.43615
Adj. R-squared	0.38098	0.312106	Adj. R-squared	0.027329	0.20672	Adj. R-squared	0.171807	0.397705
Sum sq. resids	0.00044	0.003504	Sum sq. resids	0.000135	0.00338	Sum sq. resids	0.000368	0.009783
S.E. equation	0.004944	0.013951	S.E. equation	0.0029	0.014535	S.E. equation	0.002893	0.014911
F-statistic	5.308202	4.175991	F-statistic	1.068965	1.639629	F-statistic	4.250016	11.34496
Determinant resid covariance		4.76E-09	Determinant resid covariance		1.77E-09	Determinant resid covariance		1.82E-09
Determinant resid covariance		3.19E-09	Determinant resid covariance		5.79E-10	Determinant resid covariance		1.53E-09
<b>USA: Sample: 1951 1994</b>								
Included observations: 44								
4 lags, t-statistics in [ ]								
Cointegrating Eq:	CoIntEq1							
IGRATEUSA(-1)	1							
SAVGRATEUSA(-1)	-0.397897							
	[-6.55673]							
C	-0.046455							
Error Correction:	D(IGRATEUSA)	D(SAVGRATEUSA)						
	-0.345989	0.511392						
	[-3.78395]	[ 1.46644]						
R-squared	0.594027	0.398307						
Adj. R-squared	0.486563	0.239036						
Sum sq. resids	0.000299	0.004343						
S.E. equation	0.002963	0.011302						
F-statistic	5.52771	2.500806						
Determinant resid covariance		1.11E-09						
Determinant resid covariance		6.61E-10						

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