WORKING PAPER
Volume 2011 Number 356

The Political Economy of Stabilisation Funds: Measuring their Success in Resource-Dependent Countries

Gustavo Yudi Bagattini
January 2011

CENTRE FOR THE FUTURE STATE

IDS Institute of Development Studies

About IDS

The Institute of Development Studies is one of the world's leading charities for research, teaching and communications on international development. Founded in 1966, the Institute enjoys an international reputation based on the quality of its work and the rigour with which it applies academic skills to real world challenges. Its purpose is to understand and explain the world, and to try to change it – to influence as well as to inform.

IDS hosts five dynamic research programmes, five popular postgraduate courses, and a family of world-class web-based knowledge services. These three spheres are integrated in a unique combination – as a development knowledge hub, IDS is connected into and is a convenor of networks throughout the world.

The Institute is home to approximately 80 researchers, 50 knowledge services staff, 50 support staff and about 150 students at any one time. But the IDS community extends far beyond, encompassing an extensive network of partners, former staff and students across the development community worldwide.

For further information on IDS publications and for a free catalogue, contact:
IDS Communication Unit
Institute of Development Studies
at the University of Sussex
Brighton BN1 9RE, UK

Tel: +44 (0) 1273 915637
Fax: +44 (0) 1273 621202
E-mail: bookshop@ids.ac.uk
Web: www.ids.ac.uk/ids/bookshop

IDS WORKING PAPER 356

The Political Economy of Stabilisation Funds: Measuring their Success in Resource-Dependent Countries

Gustavo Yudi Bagattini

January 2011

Institute of Development Studies at the University of Sussex Brighton BN1 9RE UK

The Political Economy of Stabilisation Funds: Measuring their Success in Resource-Dependent Countries
Gustavo Yudi Bagattini
IDS Working Paper 356
First published by the Institute of Development Studies in January 2011

ISSN: 2040-0209 ISBN: 978 1 85864 964 1

A catalogue record for this publication is available from the British Library.

Available from:
Communication Unit
Institute of Development Studies
at the University of Sussex
Brighton BN1 9RE, UK
Tel: +44 (0) 1273 915637
Fax: +44 (0) 1273 621202
E-mail: bookshop@ids.ac.uk
Web: www.ids.ac.uk/ids/bookshop

Typeset by Warwick Printing, Leamington Spa, UK. Printed by Nexus, Brighton, UK.
IDS is a charitable company limited by guarantee and registered in England (No. 877338).

The Political Economy of Stabilisation Funds: Measuring their Success in Resource-Dependent Countries

Gustavo Yudi Bagattini

Summary

This paper seeks to make a meaningful contribution to the literature on the use of stabilisation funds in resource-dependent countries, by proposing a new manner by which to measure their effectiveness. Since the 1950s, over 30 countries have used these instruments to stabilise resource revenues into their budgets to avoid the resource curse and Dutch disease and/or to save income from non-renewables. As has been documented by case studies, these countries have had a mixed record in attaining their goals.

This paper is novel in that it aggregates quantitative results of fund performance through the compilation of a new database of detailed fiscal indicators for, put together through the extraction of data from hundreds of IMF documents containing official government data. The cross-country analysis of fiscal performance provides a new direction for the measurement of the effectiveness of stabilisation funds and the underlying political economy reasons for their success or failure.

Because these funds serve a purpose of both stabilisation and savings, it is argued that their effectiveness should be measured by a *success* variable which is an indicator of sustainable fiscal performance. This is defined by its impact along three dimensions: fiscal revenues, fiscal expenditures and savings. By looking at the underlying economic and political conditions, as well as the attributes of stabilisation funds which drive *success*, some interesting conclusions are reached.

First, stabilisation funds matter. Although there is no *a priori* economic reason to create one, their presence leads to better fiscal outcomes.

Second, the governance of stabilisation funds is the most important factor in determining their success. An independent civil service is positive for success, while open and regulated political systems are actually found to be detrimental, contrary to what the literature assumed.

Finally, the rules of the stabilisation fund are also crucial. Discretion over resources is negative for *success*, while earmarking is positive. This means that these funds work best when they are relatively rigid and less susceptible to capture by politicians.

Keywords: stabilisation fund; savings fund; sovereign fund; natural resources; resource dependency; commodities; volatility; governance; budgets; Dutch Disease; resource curse; transparency; accountability; earmarking.

Gustavo Bagattini completed his MPhil in Development Studies at IDS. He joined HM Treasury as an economist in 2008, while retaining ties to the IDS. His interest and research in politics and economics led him to his work as an Assistant Private Secretary to one of the Treasury Ministers. He is currently European Economist at RBC Capital Markets.

Contents

Tables

Acknowledgements

The author wishes to thank his dissertation supervisor, Andrés Mejía Acosta, for invaluable assistance and incredible patience throughout the research process, as well as his peer reviewers, Mark Hallerberg and Marc P. Berenson. The author is also indebted to Stephen Barnett, for digging through his old files to fulfil a request from an ex-colleague, and to the participants of the 2008 Centre for the Future State Annual Meeting, for their helpful comments. Stephanie Barrientos, Linda Bateman (rest in peace), Bob Baulch, Deepta Chopra, Hanny Cueva, Paolo de Renzio, Stephen Devereux, John Gaventa, Ricardo Gottschalk, Martin Greeley, Stephany Griffith-Jones, Felicity Harrison, John Humphrey, Florence Jean-Jacobs, Robin Luckham, Mick Moore, Zander Navarro, Celestine Nyamu, Rachel Sabates-Wheeler, Hubert Schmitz, Aaron Schneider, Linda Waldman and especially Angela Dowman, have all made important contributions during the two years the author spent at the Institute of Development Studies.

The author is extremely grateful for all the support, patience, attention and inspiration received from his wife María, without whom this work would not have been possible.

Any errors are the sole responsibility of the author.

Abbreviations

APF	Alaska Permanent Fund
CEPAL	Comisión Económica para América Latina y el Caribe
CPIA	Country Policy and Institutional Assessments
EITI	Extractive Industries Transparency Initiative
ESMAP	Energy Sector Management Assistance Programme
FAEP	Fondo de Ahorro y Estabilización Petrolera (Colombia)
FEF	Fondo de Estabilización Fiscal (Peru)
FEIREP	Fondo de Estabilización Social y Productiva y Reducción del Endeudamiento Público (Ecuador)
FEM	Fondo de Estabilización Macroeconómica (Venezuela)
FEP	Fondo de Estabilización Petrolera (Ecuador)
FFG	Fund for Future Generations (Chad)
FGF	Future Generation Fund (Kuwait)
FIEM	Fondo de Inversión para la Estabilización Macroeconómica (Venezuela)
GDP	gross domestic product
HDI	Human Development Index
HIPC	Heavily-Indebted Poor Country initiative
HSF	Heritage and Stabilization Fund (Trinidad & Tobago)
ICRG	International Country Risk Guide
IDB	Inter-American Development Bank
IMF	International Monetary Fund
IRSF	Interim Revenue Stabilization Fund (Trinidad & Tobago)

MDRI	Multilateral Debt Relief Initiative
MRSF	Mineral Resources Stabilization Fund (Papua New Guinea)
NFRK	National Fund for the Republic of Kazakhstan
NGO	non-government organisation
OECD	Organisation for Economic Cooperation and Development
OPEC	Organisation of Petroleum Exporting Countries
OSF	Oil Stabilisation Fund (Iran)
PCSE	panel-corrected standard error
PIH	Permanent-Income Hypothesis
PSA	Production-Sharing Agreement
RERF	Revenue Equalization Reserve Fund (Kiribati)
SOFAZ	State Oil Fund of Azerbaijan
TLPF	Timor-Leste Petroleum Fund
VAT	Value-Added Tax
WB	World Bank
WBGI	World Bank Governance Indicators
WEO	World Economic Outlook

Introduction

The historically high commodity prices of recent times, combined with new discoveries of hydrocarbons in some developing countries, have provided a windfall of revenue for some of the world's poorest nations. Recent discoveries of oil and gas, in countries such as Timor-Leste, Chad and Kazakhstan, put the onus on policymakers to use these 'blessings' in a manner which is beneficial to the widespread development of their countries. While this price boom lasted, resource-rich countries were receiving increased non-tax revenues, which allowed them to increase spending, pay off part of their debts, or save for the future.

However, the historical performance of resource-rich countries is grim. Economic growth is slower than that of countries with more diversified economies. Volatile international commodity prices make long-term fiscal planning more complex. Pro-cyclical policies lead to overheated economies, increased deficits and unsustainable fiscal positions. Dutch disease (the appreciation of the local currency due to the capital inflow of resource revenues) affects competitiveness and export diversification. Large infrastructure projects are poor investments or a facade for stealing from government coffers. Rent-seeking behaviour creates vicious cycles of corruption and capital evasion, and fuel military spending and civil wars. Poverty is still widespread.

One measure that several resource-rich countries have taken to try to avoid this 'resource curse' has been the establishment of stabilisation funds.[1] A stabilisation fund is an instrument intended to smooth revenue streams from natural resources and bring more predictability into the country's budget. Although varied in shape and form, these funds have generally been used to decrease volatility and to save some revenues for a rainy day or for future generations to benefit from proceeds from non-renewable resources. There have been high expectations surrounding stabilisation funds and their ability to increase transparency and accountability. Countries have tried to emulate successful examples in Norway, Chile or Botswana, but these funds have not been a panacea for fiscal success. Increased resource revenues lead to increased political pressure for more spending. Whether due to poor design or lack of opposition, stabilisation funds have been vulnerable to political discretion and been drawn down to finance larger budget deficits, or even personal foreign accounts.

Several questions thus arise from this gap between expectations of stabilisation funds and their real performance. First, how does one define and measure success for a stabilisation fund? Under what conditions is a stabilisation fund successful? Are these *ex ante* conditions, such as the maturity of a country's political system, the presence of a strong opposition, or the existence of a free press or an active civil society? Are they endogenous to the design of the funds themselves? If so, what characteristics of a stabilisation fund make it more likely to be successful?

1 There are other fiscal measures which can be undertaken, such as the formulation of medium-term expenditure frameworks, establishment of fiscal rules and use of contingent financial instruments, but these are outside the scope of this paper. See Barnett and Ossowski (2002) for a brief introduction to these options.

And finally, to what degree have countries which recently established these funds been successful?

To tackle these questions, the paper is structured in the following manner: Section 1 discusses the recent commodities boom and how this affects developing countries, with a review of the literature on the resource curse. Section 2 describes how stabilisation funds have been devised as an instrument to combat some of the curse's effects. The expectations around and limitations of stabilisation funds are presented. However, it is recognised that these funds are not homogeneous and thus a typology of different characteristics of existing funds is presented in Section 3. In Section 4, it is argued that the starting point for measuring the effectiveness of stabilisation funds is through the analysis of fiscal indicators. More specifically, one can look at how stabilisation funds affect the sustainability of a country's budget and of the non-resource sectors of the economy. A stabilisation fund success variable is introduced. Section 5 presents the data and indicators used in the quantitative analysis. In Section 6, cross-country data on historical fiscal performance of countries with stabilisation funds are examined, prior to and after the establishment of these funds. Statistical regressions are also used to identify the determinants of fiscal outcomes and of stabilisation fund success. Section 7 presents a discussion of the paper's findings, and how these deviate from our existing understanding of stabilisation funds. Section 8 concludes with a focus on the main characteristics that can be found in successful stabilisation funds, policy implications for resource-dependent countries, as well as suggestions for further research.

It is argued that the success of a stabilisation fund should be defined by its impact along three dimensions: fiscal revenues, fiscal expenditures and savings. A new indicator – *success* – is measured based on these components of stabilisation fund success. A statistical exercise is then carried out to determine which attributes of stabilisation funds and which political economy variables are important for this *success*.

The main finding is that, although there is no *prima facie* economic reason for their existence, stabilisation funds have generally been effective instruments in resource-dependent countries that sought to stabilise budget transfers from resources and save funds for future generations. Although the evidence is mixed, countries that set up these instruments have improved their fiscal position – government fiscal balances have improved by four per cent and public debt has decreased by 19 per cent of GDP, on average.

This does not mean that all resource-rich countries should set up a stabilisation fund – although there are lessons that can be learned about the type of fund one should create, the existing governance structures are also crucial for their success. A more democratic political environment, with an independent civil service, is more favourable to the successful functioning of a stabilisation fund. However, there is some evidence that there can be too much participation and change – a plethora of interests may lead to changing rules for the fund that undermine its effectiveness. Thus, the fund must be robust to be successful – it needs to be sufficiently independent, with some resources clearly earmarked to avoid capture and with little room for discretionary use by the head of state.

1 The commodities boom and the resource curse

1.1 The commodities boom

The recent boom in the prices of commodities, such as oil and copper, has provided a revenue windfall for several countries around the world, many of which are developing countries without mature democratic institutions and which are reliant on a single export product. Oil prices are the highest they have been since the 1970s crisis, while copper prices are at a historical high not seen before.

There are over 100 oil-producing nations in the world, but less than 40 were net exporters in 2008 (see Table 1.1 below). Of these, practically all are from emerging markets (Norway, Mexico, Canada and Denmark are the only OECD members in the list) and the majority have used or are presently using a resource revenue stabilisation fund.[2]

Table 1.1 Top world oil net exporters, 2008

Rank	Country	Net exports ('000 barrels/day)	Rank	Country	Net exports ('000 barrels/day)
1	*Saudi Arabia	8,406	21	*Colombia	319
2	*Russia	6,874	22	*Ecuador	314
3	*UAE	2,521	23	Gabon	232
4	*Iran	2,433	24	Congo	231
5	*Kuwait	2,390	25	Argentina	198
6	*Norway	2,246	26	Malaysia	191
7	Angola	1,948	27	Syria	153
8	*Venezuela	1,893	28	Yemen	148
9	*Algeria	1,888	29	*Brunei	142
10	*Nigeria	1,883	30	*Chad	125
11	Iraq	1,769	31	*Trinidad & Tobago	112
12	*Libya	1,597	32	Denmark	108
13	*Kazakhstan	1,185	33	*Turkmenistan	86
14	**Canada	1,089	34	Cameroon	51
15	*Qatar	1,085	35	Vietnam	33
16	*Mexico	1,057	36	Cote d'Ivoire	33
17	*Azerbaijan	754	37	DR Congo	8
18	*Oman	665	38	*Papua New Guinea	7
19	Sudan	391	39	*Bahrain	5
20	Equitorial Guinea	358			

Source: EIA, www.eia.doe.gov
* Indicates country has or has used a stabilisation fund by 2008
** Indicates province of the country has or has used a stabilisation fund by 2008

2 See Appendix I for a list of countries with stabilisation funds.

With regards to copper-exporting countries, the list includes a smaller proportion of developing economies, but major cases include Chile, China, Russia, Peru, India, Kazakhstan, Indonesia and Zambia. The two ex-Soviet nations also feature among the leading oil exporters shown in the table above.

Among the implications of these increased commodity prices are increased non-tax revenues for these countries, usually in the form of royalties and licensing fees, and budgetary planning required to deal with such revenue volatility. For example, when Hugo Chavez came to power in 1999, the Venezuelan government's oil revenues were $7 billion per year. In 2007, these increased to $43.5 billion and prior to the financial crisis, it was estimated that the figure would have risen to $75 billion in 2008 (*The Economist* 2008). The well-documented resource curse theory has shown that countries with a reliance on natural resources tend to have a poorer economic performance than countries with more diversified economies.

1.2 Resource curse and revenue volatility

There are several economic and political problems which have arisen in resource-dependent countries. According to the resource curse literature, natural resources can fuel corruption, economic stagnation and civil war, rather than economic growth and development.[3] For example, Ross (1999) finds that countries with higher resource dependence have lower HDI values, larger shares of their population in poverty, spend more on the military and are more authoritarian. Economic ills include, *inter alia*, Dutch disease, commodity price volatility and the fiscal challenge of dealing with increased revenues. Political problems include the existence of resource rents, which provide room for kleptocracy and decreased governance, and the substitution of tax revenues for resource revenues, which decrease political accountability.

The nature of resource extraction has an important impact on a resource-dependent country's economy. For example, the oil industry acts as an enclave, employing few domestic capital and human resources. Thus, revenues coming from this sector are conceptually more like a transfer or rent, as they otherwise have a minimal effect on the rest of the economy, with which it has weak positive linkages. These oil rents are usually paid directly to the government, which must thus act as the conduit of these revenues into the economy. Because of this, fiscal policy is crucial to real exchange rate movements.

Dutch disease takes place when the capital inflow of natural resource revenues, converted into national currency, causes the exchange rate to appreciate.[4] This appreciation decreases competitiveness of the domestic non-resource sectors, leading to slower growth, inflationary pressures, reduced exports leading to widening

3 The resource curse is also known as the paradox of plenty (see Karl 1997). Other seminal pieces of the resource curse literature include Gelb and associates (1988), Sachs and Warner (1995), Ross (1999) and Auty (2001). Important pieces put forward by NGOs include Global Witness (1999), Christian Aid (2003) and Gary and Karl (2003).

4 The 'disease' is named after the experience suffered by Holland when gas deposits were discovered in the 1960s.

current account deficits and higher unemployment (see Sachs and Warner 1995; Leite and Weidmann 1999; and Glyfalson, Herbertsson and Zoega 1999).[5] Because the natural resource sector tends to be capital-intensive, the growth of this sector is not enough to absorb the lost jobs in other more labour-intensive sectors.[6] In turn, this makes the economy de-industrialise and become more dependent on the resource sector, which reinforces the vicious cycle and also increases economic volatility.

This volatility comes primarily from the variation in natural commodity prices, as most countries are international price-takers. A resource flow which is not explicitly linked to the domestic political or economic process, but is rather determined by exogenous factors (the international price of the natural resource in question), induces uncertainty in the budget process, as revenues from year to year are not guaranteed and can vary widely. The larger the proportion of government revenue that is dependent on the resource, the higher the volatility it can experience, which makes budgeting more complex.

Another regular feature of resource-dependent countries is the existence of pro-cyclical fiscal policies, leading to increased expenditures during boom periods in which commodity prices are high.[7] A resource boom increases expectations and contributes to the fomentation of projections of higher future income. This, in turn, leads to more political pressure to increase spending. These extra expenditures have subsequently proved to be difficult to rein in during bust cycles, thus leading to increased deficits and debt stocks, as well as sustainability concerns.

Some countries also used the windfall to embark on large infrastructure projects, which have a large sunk cost and are usually financed abroad. Unfortunately, these have proved to have a lower return than other investments and, worse, provided a vehicle for corruption and influence-peddling. The result is a worsening of the fiscal accounts, increased debt and the development or enhancement of a culture of corruption.

The existing literature acknowledges that the presence of natural resource earnings significantly shapes budget outcomes. Windfall revenues reduce the pressure on governments to tax their own citizens, thus undermining political accountability. This ‘substitution effect’ increases the governments’ discretionary power to make budgetary allocations without necessarily promoting a more equal redistribution of resources among citizens. In this sense, foreign revenue flows that are administered by the state may undermine government’s accountability and responsiveness, as the link between government and civil society is weakened. These inflows also provide an economic incentive for holding on to power to wield control over these resources, which can mean paying for political support, increased military spending, or the development of an autocracy (or even kleptocracy).

---

5 The central bank can also buy the foreign exchange and use it to increase foreign reserves and avoid a nominal appreciation of the currency. However, this may still lead to increased liquidity and real exchange rate appreciation.

6 Governments may adopt protectionist policies to protect certain sectors, but these tend to be very costly, and often unsustainable, measures.

7 See World Bank (1994) and García Osío *et al.* (1997) for a discussion of pro-cyclical fiscal policies in Nigeria and Venezuela, respectively.

Thus, more recent literature on the resource curse has placed the focus on 'the primacy of institutions' (see Rodrik, Subramanian and Trebbi 2002). Good public institutions are necessary, as these are responsible not only for the management of resource revenues, but also for their use in stabilising the economy, spending on poverty reduction, infrastructure and debt reduction, and the promotion of an enabling environment with democracy and the rule of law. Mehlum *et al.* (2006) argue that it is the quality of institutions what explains the divergence in growth among resource-dependent countries, by decomposing the original Sachs and Warner (1995) data.

A series of studies also suggest that the existence of natural resources has a negative association with the quality of institutions. In other words, they have a deteriorating effect on existing weak institutions. For example, Lane and Tornell (1999) argue that this is due to the incentive for rent-seeking. A higher level of corruption in resource-dependent countries is empirically found through the work of Leite and Weidmann (1999) and Glyfalson *et al.* (1999). Boschini, Pettersson and Roine (2004) find that there are institutional differences among resource-dependent countries prior to the discovery of the resource, and that these have an impact on future growth. The implication for this is that the institutional context applies directly to stabilisation funds: they are least effective where they are most needed. If institutions are good, the resources can be a blessing and otherwise, a curse.

2 Stabilisation funds

2.1 Defining stabilisation funds

Resource-dependent countries have several policy options available to deal with the flow of revenues from commodities. One mechanism that has been used for countries to self-insure by decreasing revenue volatility and, in some cases, increase transparency, is the creation of a stabilisation or savings fund.[8] Stabilisation funds have generally been used in two situations (or both) – to manage the volatility of export earnings by smoothing transfers to the budget and to manage earnings from non-renewable sources in order to create a store of wealth for future generations. Without proper mechanisms that secure revenues into stabilisation funds, foreign resource inflows may undermine the efficiency or sustainability of budget outcomes.

In this paper, 'stabilisation fund' will be used in a comprehensive sense to refer to all of those types of resource-based funds that seek to smooth their revenue

8 The nomenclature of these funds varies from country to country, or even within states or provinces of larger countries. The Chilean fund was previously known as the Copper Stabilisation Fund but is now called the Social and Economic Stabilisation Fund, having its name changed from the commodity to its function. The Heritage Savings Trust Fund of Alberta (Canada) explicitly mentions the fund's saving mechanism. Others have more generic names, such as the Alaska Permanent Fund (in the United States) and the Kazakhstan National Fund.

streams and bring more predictability into the budgeting framework. A distinction must be made with sovereign wealth funds (SWFs), which act as investment funds and whose primary purpose is to increase the assets of a country or its government. Not all SWFs are commodity-based or are set up for stabilisation purposes.[9] In some cases, the stabilisation fund is the precursor of the SWF – once the stabilisation fund has enough assets to fulfil its stabilising function, it may then seek to increase its asset base through a higher-risk investment strategy, or a separate SWF may be spun off from the original (e.g. Russia).

Over 30 countries have used stabilisation funds over the past half-century, with a mixed record.[10] The Norwegian fund is generally regarded as the example of best practice in stabilisation funds.[11] Its success has come through a combination of precautionary measures: a high savings rate and a build-up of foreign assets. Thus, the country resists 'potential damage to the non-oil tradable sector from Dutch disease, and [is] able to withstand negative oil market developments' (Barnett and Ossowski 2002: 18). It has also served as a model in the establishment of other similar funds, such as that in Timor-Leste in 2005. Some have run out of assets (Nauru), been continuously replaced by new funds (Ecuador), or seen their rules changed by politicians looking to appropriate these resources or increase spending (Chad). In the better cases, the countries have generally maintained very good governance practices, as well as integrated the fund's operations into the budget process, thus facilitating the management and supervision of revenues and preventing off-budgetary spending.[12]

If stabilisation funds are no guarantee of success, why have so many countries attempted to set one up? There are both economic and political reasons for this, which are presented below. I find that it is usually a combination of the two which leads to the use of this fiscal instrument.

2.2 Economic expectations and limitations

First of all, stabilisation funds can help a country shield itself from the negative effects of revenue volatility. They reduce the uncertainty arising from fluctuations in commodity prices and their impact on resource revenues. When prices are high, revenues are absorbed into the fund to prevent a destabilising flood of revenues into the budget and the adverse affects of Dutch disease. When they are low, the fund can release money to the budget, to smooth revenues and allow predictability in the fiscal environment. Overall fiscal discipline may also be improved, to the extent that government expenditures are tied to fund revenues.

9 The Sovereign Wealth Fund Institute (2008) has estimated that 61 per cent of SWFs are based on oil and gas receipts.

10 See Appendix I.

11 As of April 2007, it was the second largest pension fund in the world, with a value of over $300 billion, of which about half is invested in global stock markets (see Norges Bank 2007). To put this in perspective, Norway has a population of 4.7 million (see Statistics Norway 2007), which means that if the fund was terminated and paid off as a dividend, each Norwegian would receive $67,000. In contrast, the Democratic Republic of the Congo, another resource-rich country, has a GDP per capita of about $300.

12 See Heilbrunn (2002) for a more complete treatment of best practices in the management of natural resource funds.

They may also serve a simpler purpose – to save a portion of the proceeds from non-renewable resource revenues of which future generations can make use. The theory, thus, is that using all the resource wealth during the lifespan of the resource is not only economically destabilising, but also unjust to the future generations which could have benefited from the resource. Savings funds are thus used to substitute below-the-ground wealth with above-the-ground resources,[13] provided that the real value is kept constant and that only the income from these resources are spent.

However, a stabilisation fund is not a panacea and cannot substitute for good fiscal policy. It is important to note that there is no economic reason to establish a separate fund to address issues of stabilisation and savings (see Davis *et al.* 2001b). The functions of a stabilisation fund can be replicated in a country's fiscal policy without the creation of an actual fund. Or as one author put it, it can be equally said that 'anything that a government could achieve by means of creating a constitution could equally be achieved with no constitution if political leaders simply consistently acted with restraint, coherence, and unanimity' (see Stephan 2003: 5). One should also clarify that, despite its name, a stabilisation fund cannot stabilise resource revenues, as these are dependent on international prices, but rather they can serve to stabilise revenue transfers to the budget.

There is also no guarantee that the mere presence of a fund will prevent the fiscal authority from spending revenue windfalls or financing increased expenditures through borrowing. A government may even be able to borrow against the assets in the fund and thus avoid any income restraints posed by the existence of the fund. Money is fungible, meaning that the size of the fund can be misleading if government is borrowing heavily.

2.3 Political expectations and limitations

Perhaps most important are the political and governance reasons for the creation of a stabilisation fund. First, even if there is no economic reason for establishing such a fund, the mere act of doing so can be a powerful signalling device to markets and other stakeholders that policymakers are attempting to stabilise budget revenues.[14] Also, a fund can pre-empt kleptocracy through transparent mechanisms which control its inflows and outflows. If properly designed, it can also contribute to creating a sense of citizen ownership of the fund's resources. Some even argue that such a fund can contribute to reducing the risk of civil war and conflict; for example, by earmarking a share of commodity revenues to certain regional or local governments to ensure a fairer regional distribution (see Palley 2003: 3).

Furthermore, focusing on economics ignores the impact of resource revenues on different stakeholders in government and the private sector. The creation of such a fund is also justifiable due to political economy considerations, as they allow the formation of institutional mechanisms to potentially increase transparency and accountability and decrease rent-seeking behaviour. A stabilisation fund should be

13 See Corden (1995, cited in Devlin and Lewin 2004: 6).
14 I thank Mick Moore for bringing up this point.

designed to make it possible to keep track of the amount of funds that are accumulated, how these funds are managed and the amounts which get transferred to the budget, thus increasing public scrutiny of government finance. Those who back these funds argue that they help to maintain fiscal discipline by giving institutional support to the idea that a resource revenue boom should not lead to a similar increase in expenditures, but rather allow for the accumulation of savings for future use. This is important given the impact of resource rents on the nature of commodity-exporting regimes.

There are several political limitations to the use of stabilisation funds. For example, there is no *ex ante* guarantee that the funds will be used in any redistributive manner for the benefits of citizens. Also, there is scepticism about the transparency of these funds and the potential of their use to hide a country's true fiscal position. Thus, as described at the end of the previous section, some argue that stabilisation funds do not increase governance and transparency, but rather require them to function properly.

3 Typology of stabilisation funds

3.1 Characteristics of stabilisation funds

There are several examples of these funds, which vary from country to country in the manner in which they are created. The main characteristics of a stabilisation fund can be defined as: its purpose, the source of revenues, the rules determining how revenues flow into and out of the fund, its relationship to the budget, the structures and institutions that are responsible for managing its operations, including their degree of discretion, and the use of the fund's resources. Finally, the size of a stabilisation fund's assets is also important. Table 3.1, on the following page, summarises their main characteristics.

3.2 Purpose

As previously stated, stabilisation funds typically are designed with one or more of the following purposes. First of all, they can have a stabilisation function within the fiscal framework, helping to shield the economy from volatile commodity prices. Secondly, they can have a savings function, in an attempt to share income across generations in a more equitable manner. Some countries may have explicitly determined that the fund is an efficient instrument to curtail government spending by restricting the flow of resources into the national budget. Finally, they may also seek to foster economic diversification, by channelling funds for investment in sectors other than that of the exploitation of natural resources. A country may also choose to set up a fund for a combination of these reasons.

3.3 Inflow and outflow rules

Countries usually use pre-announced or legislated accumulation rules to regulate the inflows to and outflows from stabilisation funds. These tend to be contingent on

Table 3.1 Attributes of stabilisation funds[15]

Purpose	i. Stabilisation ii. Savings iii. Curtail spending iv. Economic diversification v. Ambiguous
In/outflow rules: reference	i. Commodity price threshold ii. Revenue level threshold iii. All resource revenues iv. Fixed amount v. Discretionary vi. Other (budget surplus, privatisation proceeds, etc.)
In/outflow rules: target	i. Fund size/savings level ii. Government expenditure level iii. None
Relationship to budget	i. Within budget framework (virtual/financing fund) ii. Extra-budgetary
Institutions: operational	i. Ministry of Finance/Treasury ii. Central bank iii. Committee of experts iv. Independent agency v. Civil society
Institutions: accountability	i. Horizontal accountability ii. Vertical accountability iii. Both iv. None
Institutions: transparency	i. Full reporting/auditing ii. Partial reporting/auditing iii. No reporting/auditing
Use of resources: asset management	i. Per cent of assets invested in international portfolio ii. Risk level of portfolio
Use of resources: earmarking	i. Earmarking of all resources ii. Earmarking of part of the resources iii. No earmarking of resources
Use of resources: purpose	i. Stabilisation/budget financing ii. Debt reduction iii. Social expenditure iv. Transfer to local government(s) v. National emergencies vi. Dividends/income
Discretion by head of state	i. Total ii. Some iii. None
Size	i. Total assets ii. Asset ratios (to GDP, exports, government revenue)

15 This is not meant to be an exhaustible list, as it is based on the experiences of the countries examined in the quantitative analysis of this paper.

the natural resource price (e.g. Chile), on revenue levels (e.g. Alaska), or both (e.g. Venezuela). A threshold is usually established based on formula-based historical or projected values for prices or revenues, although some countries set these values arbitrarily and may review them continuously. When prices or revenues exceed the threshold level, a portion is accumulated into the stabilisation fund; when they fall below the threshold level, funds are released to finance the budget. In other countries (e.g. Norway or Timor-Leste), all of the resource revenues flows directly into the fund.

Countries which operate funds with a savings component deposit a share of the resource income into an account to benefit future generations once the non-renewable resource is depleted. In these cases, inflow rules are usually a fixed percentage of the resource revenues, of total government revenues, or a pre-determined fixed monetary contribution.

Some stabilisation funds, if incorporated into the budget process, stipulate that all of the resource revenues must flow directly into the fund first and are then used for budgetary purposes. Resources may also enter a fund during special circumstances, such as through the proceeds of privatisation or the availability of budget surpluses.

In most of these cases, these rules tend to specify the amount of resources that are *saved* inside the fund, while some authors (see Rigobon 2006) suggest that a better practice would be for these rules to target an *expenditure* level, rather than a savings one.

3.4 Relationship to the budget

Many stabilisation funds are established as extra-budgetary funds, which may even have the oversight of an independent authority. This usually means that transfers from the fund to the budget are treated as below-the-line financing.

Other countries, such as Norway, handle the revenues within the framework of a unified budget. These ‘virtual funds’ are the closest thing to a full integration of a stabilisation fund into the government budget, provided that there is ‘adequate accounting, reporting, and auditing’ (see Petersen and Budina 2002: 4).

3.5 Structures, institutions and transparency

Stabilisation funds can have a variety of structures and institutions that govern them and thus have a varying impact on the degree of transparency and accountability of the funds. An appropriate organisational form is necessary, including safeguards for transparency in the fund’s transactions and for management accountability. Rules governing the fund’s management structure need to include provisions for accountability through appropriate representative bodies and other state agencies that interweave lines of supervision over the fund. If properly incorporated, good governance practices can build a strong ethic of transparency and clear accountability.

Practices to enhance transparency include the publication of reports and audits of the fund’s operations, as well as meritocratic human resource practices.

Accountability can be either horizontal or vertical.[16] Horizontal accountability is present through the existence of independent officials who receive reports on fund portfolio performance and through the publication of reports and audits. The existence of an active civil society or NGO watchdog agencies can also enforce horizontal accountability. Vertical accountability exists through the reporting responsibilities of the fund management structure up to the Ministry of Finance. To prevent the executive or head of state from having discretionary power over the use of the fund's resources, parliamentary or legislative oversight of fund operations can be included in its design.

Timor-Leste can be used to exemplify the kinds of structures which can exist in a country with a stabilisation fund. The Minister of Finance is responsible for fund management. Operational management is delegated to the central bank and an investment committee of independent experts advises on the portfolio investments (see Republica Democratica de Timor-Leste 2004). Independent watchdogs and/or civil society organisations are invited to form part of discussions as watchdog agencies.

3.6 Use of resources and discretion

The asset management strategy of a stabilisation fund is of high importance. Fund managers must 'set benchmarks to attain the desired risk-return profile, liquidity, and macroeconomic effects consistent with the fund's objectives' (see Petersen and Budina 2002: 5). It is crucial that this is also consistent with the overall net asset position of the consolidated government, for which the cooperation between the fiscal and monetary authorities is crucial. As stated previously, transparency must be maintained through the publication of reports and audits, and accountability is crucial. In savings funds, resources are invested and the returns on these investments are anticipated to allow future generations to enjoy consumption levels comparable to those of present generations.[17]

Countries with these funds typically invest a portion of the revenues (a fixed amount or, more often, fixed percentage) into an international portfolio of equities, bonds and other financial products. Some are limited to very liquid and low-risk investments, such as US treasury bonds. However, a better investment strategy would be to diversify risk into assets which are not correlated with the fund's revenue source.[18] Others (e.g. Hannesson 2001) suggest that the best strategy is to invest in the highest-returning long-term assets, such as equities, infrastructure and education. Some funds are also used as collateral by fiscal authorities seeking to borrow and increase spending.

16 These are labels used in the context of this paper and should not be confused with the use of horizontal and vertical accountability in political science literature.

17 The IMF has used the Permanent-Income Hypothesis (PIH) to elaborate a strategy for optimum stabilisation funds in oil-producing countries. The estimated lifespan of the natural resource is the decisive argument in favour of placing its proceeds abroad, where income can accrue based on the PIH.

18 For example, US treasury bonds tend to move in conjunction with oil prices, suggesting that an oil stabilisation fund which invests in these bonds would be pro-cyclical and thus have less of a stabilising function than if it invested in assets which are negatively correlated to the price of oil.

Withdrawal rules are usually not conditional on the price or revenue falling below a threshold level, as is the case for inflows. In some cases, the outflow is used to finance the exact non-resource budget deficit.[19] This means that a prudent fiscal policy is essential for the sustainability of the stabilisation fund.[20]

If the fund is integrated into the budget, outflows from the fund form part of the regular budget process. Part or all of the resources coming from the stabilisation fund may be earmarked for provincial and local governments or for certain types of expenditure, such as poverty reduction or debt amortisation. This is beneficial in that it brings about some certainty with regards to revenue flows and decreases the amount of money which can be expropriated. However, it reduces flexibility and adaptability of the use of the fund's resources.

Discretion is especially important with regards to the withdrawal of money from stabilisation funds. As has been examined in the literature,[21] the outflow of resources from funds tends more often to be discretionary, rather than rules-based, as many transfers are made to the budget when needed only. This has been the case, *inter alia*, in Canada (more specifically, in the province of Alberta), Kiribati and Kuwait, and can contribute to decreased transparency, accountability and governance.

3.7 Size of stabilisation fund assets

Stabilisation funds vary widely with regard to the size of their resources. These variations are a reflection of many factors, including the size of transfers which they have received (which, in turn, can be a reflection of international commodity prices), the longevity of the fund and its asset management strategy. The largest resource-based stabilisation funds are shown in Table 3.2. Although most of these funds have had many years to accumulate resources, a few of the countries on the list established stabilisation funds relatively recently – Iran in 1999, Kazakhstan in 2000 and Russia in 2003.

It is interesting to note that, based on Deaton's (1991) precautionary saving model,[22] Arrau and Claessens (1992: 22–3) have estimated that the optimal stabilisation fund for a risk-averse, credit-constrained country would be small in size (equivalent to less than one month's exports), due to the opportunity cost of holding large liquid foreign reserves.[23] Nonetheless, they recognise that stabilisation funds are often much larger and theorise that this is because there are positive externalities which arise out of having these funds. These include

19 These types of funds are sometimes known as financing funds.

20 Another exception is the state of Alaska in the USA, which has its own fund and pays an annual dividend to all of its citizens. This also has an impact of building citizen ownership and engagement with the fund, thus increasing the potential for transparency of its operations.

21 See Fasano-Filho (2000), Davis *et al.* (2001a) and Heilbrunn (2002).

22 In this model, a country cannot smooth revenue fluctuations due to borrowing constraints, a condition faced by most developing countries.

23 The authors use the Chilean Social and Economic Stabilisation Fund to illustrate this, arguing that the actual level of this fund (about $22 billion) has been much larger than required (one month of exports is equivalent to about $6 billion).

increasing market confidence and reducing public pressure to spend windfall gains quickly or inefficiently. The opportunity cost may also be smaller than that estimated by the authors, depending on the asset management strategy of the stabilisation fund.

Table 3.2 Resource-based stabilisation funds

Country	Funds	Estimated assets (US$ billion)
United Arab Emirates	Various funds	677
Norway	Government Pension Fund	445
Saudi Arabia	Various funds	436
Kuwait	Kuwait Investment Authority	203
Russia	National Welfare and Reserve Funds	179
Libya	Libyan Investment Authority	70
Qatar	Qatar Investment Authority	65
Algeria	Revenue Regulation Fund	47
Kazakhstan	National Fund	38
Brunei	Brunei Investment Agency	30
Alaska (USA)	Alaska Permanent Fund	27
Chile	Social and Economic Stabilisation Fund	22
Iran	Oil Stabilisation Fund	13
Alberta (Canada)	Alberta Heritage Fund	11
Botswana	Pula Fund	7

Source: SWF Institute (2008).

4 Measuring the success of stabilisation funds

4.1 Previous studies

Few studies have tackled the degree of effectiveness of stabilisation funds across a cross-section of countries. Davis *et al.* (2001b) used time-series analysis and structural breaks to determine whether the existence of a fund had a significant impact on government expenditure. The empirical data provided mixed results: countries with funds had a lower correlation between expenditure and revenue changes than those without funds, yet this was not uniform across the countries in the data. Furthermore, the creation of a stabilisation fund had no impact on government expenditures. However, the failure of funds was largely due to the frequency of changes to the governing rules and mechanisms of stabilisation funds.

Crain and Devlin (2002) used pooled cross-section and time-series data to build on the first study. Among their conclusions, they found that stabilisation funds can actually increase volatility of government expenditures in oil-exporting countries,

due to their inability to ensure fiscal restraint. Also, funds had a dampening effect on spending (as a percentage of GDP), but at the cost of higher deficits during a resource boom.

A few country-specific studies have found that stabilisation funds can bring about other favourable outcomes, such as less volatility in government spending, as well as a lower expenditure level. On the other hand, Rigobon (2006) claims that most of these funds have their rules changed and end up stabilising very little, getting expropriated along the way, and that this is a result of flawed designs and the politics of these funds.

4.2 Budget sustainability and expenditure restraint[24]

Although there is no consensus as to what constitutes a *sustainable* fiscal position for a resource-dependent country, this paper will define it as one in which public debt is relatively low or not increasing *and* one of the following conditions is met:

(i) The fiscal balance is not negative;
(ii) The fiscal balance is slightly negative but non-resource revenues are increasing (as a share of GDP or of total government revenue);
(iii) The fiscal balance is improving.

As mentioned in the previous section, the non-resource balance is a key indicator of a country's fiscal sustainability. This is not to say that any non-resource deficit is unsustainable, as different countries can potentially afford to run non-resource deficits, depending on a number of factors such as the country's debt structure, the relative importance of the resource in the economy and the ownership and taxation structure in the resource sector. However, fiscal prudence is justifiable due to the uncertainty regarding resource revenues and the fact that many of these countries face interest rate premiums on their sovereign debt due to these recurrent fiscal deficits (Barnet and Ossowski 2002: 4). By conceptually thinking of resource revenues as a transfer, or budget financing, it follows that the non-resource deficit is financed from revenues coming from the resource stabilisation fund.

According to Devlin and Lewin (2004: 5), fiscal policy is the key to managing resource booms, as the government acts as the conduit of resource revenues into the rest of the economy. The authors propose that a combination of revenue management and expenditure restraint is the key for success. Expenditure restraint is important for the reasons delineated in the previous sections – the boom in resources leads to political pressure to increase government spending, but this has proved unsustainable in most cases, as it is politically very difficult to cut expenditure when the boom period is over.

Devlin and Lewin also make the point that it is important to look at the consolidated government position. 'Saving all the oil revenues does not in itself indicate the net accumulation of assets by the government, as this can be offset by the

24 See Chalk and Hemming (2000) for an analytical approach to assessing fiscal sustainability.

accumulation of other liabilities' (Devlin and Lewin 2004: 5). The same logic is applicable to the government's debt position. Thus, the fiscal data that is analysed quantitatively in this paper corresponds to the consolidated government operations and not just that of the central government.

4.3 Accumulation of assets

A successful stabilisation fund, in a favourable environment, will see a net real increase in its resources from year-to-year. This can be achieved through a combination of transfers from its revenue source (whether through discretionary transfers or price/revenue formulas in years of high commodity prices) and through an active and effective asset management strategy.

A judgement will not be made here about an optimal level that a fund should try to reach or keep. As previously mentioned, some authors suggest that stabilisation funds should have a small size (less than one month of exports), due to the opportunity cost of holding large liquid reserves. This can be contrasted with the IMF's rule of thumb for a country's vulnerable international reserve position, of two months of imports of goods and services.[25] Instead, it is argued here that a higher accumulation of assets indicates a higher level of success for a fund and a higher probability that it will be able to carry out its stabilising and savings functions in the future. More assets mean the ability to weather larger drops in commodity prices and to save a larger share of resources for future generations.

4.4 Defining the dependent variable: 'success' for stabilisation funds

As described in the previous section and in the few studies cited above, there has been a wide variety of experiences in the use of stabilisation funds. It is argued here that to gauge what constitutes 'success', one should measure how well the fund performs against its two possible functions – stabilisation and savings.[26]

This assumption is based on the work of Barnet and Ossowski (2002), who argued that there are three general principles that resource-rich countries should follow when designing their fiscal policy.[27] First of all, the fiscal balance should be broken down into the balance including and excluding the resource revenues. The evolution of the *non-resource* balance is crucial to evaluate the sustainability of the country's fiscal position. In second place, and in accordance with the resource curse literature, expenditure management is very important, and adjustments

25 Although different instruments, the size of a country's international reserves and of the assets of a stabilisation fund are both indicators of a country's vulnerability.

26 Although one could argue that an increase in the size of the fund might be an indicator of its success, such an analysis would be too simplistic. First, there is no consensus on whether a larger fund is more desirable than a smaller, more flexible one. Secondly, there would probably be a strong correlation between the fund size and world commodity prices. Finally, and most importantly, there would be no indication of the fund's stabilising impact on the government's fiscal position.

27 The authors specifically discuss oil-producing countries, whereas this paper is expanding this application to resource-rich countries in general.

should be gradual due to the difficulty of cutting expenses during down-cycles. Finally, there should be an accumulation of financial assets during the lifespan of the resource. This is especially applicable to non-renewable resources, in which case the revenues generated from their production are 'conceptually more like financing than income' (Barnet and Ossowski 2002: 3).

The same three principles can be applied to measure the effectiveness of stabilisation funds. A successful stabilisation fund should be designed with the principles of stabilisation and savings. On the revenue side, it should not act as a disincentive for government to maintain an active non-resource revenue stream to ensure its long-term budget sustainability. On the expenditure side, a well-functioning stabilisation fund will have established norms to prevent policymakers from usurping its resources to finance large expenditure increases. Finally, a successful fund should have a strong savings component – those assets that are accumulated into the fund should be invested in a diversified portfolio to guarantee that future generations will benefit from the riches generated from the exploitation of non-renewable resources.

Combining the concepts delineated above, a new variable, *success*, can be created to indicate the effectiveness of a stabilisation fund, on any given year, in the context of fiscal policy of a resource-dependent country. This new indicator, to be used as a dependent variable in the quantitative analysis, is created on an additive six-point scale, in which one point is earned for the presence, at the close of a given fiscal year,[28] of each of the following six conditions:

i. The government fiscal balance is not negative;
ii. The government fiscal balance (share of GDP) has improved;
iii. The non-resource fiscal balance is not negative;
iv. The non-resource fiscal balance (share of GDP) has improved;
v. Non-resource revenues (share of GDP), have increased;
vi. Public debt (share of GDP) has been reduced.[29]

If in any given year, country X performs admirably, fulfilling all conditions above, a score of 6 would be given for that year. Conversely, if country Y has negative overall and non-resource fiscal balances, a rising share of resources in its revenues and increasing debt, it would receive a success score of 0. This simple variable, which tries to encompass different elements of stabilisation fund success into a single integer of value from 0 to 6, allows for the comparison of stabilisation fund performance among different countries and also across time within a given country. Using this indicator, one is able to gauge to what extent stabilisation funds have contributed to fiscal success.[30]

28 Due to the difficulty of measuring the economic cycle across several countries, these conditions instead focus on each individual fiscal year.
29 All conditions, except for i and iii, refer to a change with respect to the previous fiscal year.
30 Due to data constraints, the success variable is only computed when there are values present to allow the computation of conditions i, ii and vi. That is, in a given year, data must be present for fiscal balance, fiscal balance change and public debt change. Where there are missing values, the data point is discarded.

It should be stated that conditions i and ii are independent of one another.[31] On the surface, it may seem that if the fiscal balance is not negative, then the fiscal balance as a per cent of GDP is likely to improve. However, this is not the case. For example, if the fiscal balance in year one is 4 per cent of GDP and in year two it is 3 per cent of GDP, the country will receive 2 points in year one but just 1 point in year two.

There are, however, a few caveats which can be identified with the construction of this variable. *Success* is in a six-point scale which was created by dichotomising six separate variables – these are evaluated on a binary basis and then added up.

First, each of the six conditions of *success* is weighted equally, and it can be argued that some components are more important than others. For example, one could make the case that the level of debt (stock) is more important than the country's fiscal balance on a given year (flow). However, countries rarely engage in zero budgeting from one year to the next, and so the fiscal balance is likely to be closer to the previous year's balance than to zero. Given the lack of evidence or agreement regarding what the appropriate relative weights would be, each component was left with the same weight for consistency.

Second, this aggregate index is useful in identifying an immediate impact, but an improvement may take several years to occur. Movements of components in opposite directions, leaving the overall *success* measure unchanged, may also mask changes to the underlying fiscal conditions of a country.

Finally, *success* does not measure volatility within each of its six conditions. For example, if the fiscal balance is not negative, a point is awarded. However, this says nothing about the volatility of that fiscal balance or the difficult trade-offs a country will have faced to be in surplus. Nonetheless, this simple variable is useful in identifying and measuring the fiscal performance of countries which have used stabilisation funds.

5 Data and indicators[32]

Once the *success* variable was defined, it was necessary to select which countries would be examined, which was a function of their use of stabilisation funds and the availability of disaggregated (resource and non-resource) economic and fiscal data.

A brand new dataset was compiled using available cross-country data to illustrate the relationship between stabilisation funds, macroeconomics, domestic politics and budget institutions. The purpose was to develop a common set of indicators

31 The same applies to conditions iii and iv.

32 The full list of indicators and summary statistics can be found in Appendix II. For detailed explanations on the variables and their component methodology, see Marshall and Jaggers (2005) for Polity IV indicators, Kane, Holmes and O'Grady (2007) for the Heritage Foundation Index of Economic Freedom, World Bank (2006) and Freedom House (2007).

that were linked to the proposed analytical framework outlined in the previous section. The indicators were grouped along three main dimensions: macroeconomic indicators of fiscal outcomes; political institutions and governance; and properties of stabilisation funds. These were used to judge whether countries had been successful following the implementation of a stabilisation fund.

5.1 Country selection and economic indicators

The initial selection of countries for quantitative analysis was based on the set of countries which have used stabilisation funds at one point or another. Over 30 such countries were identified (see Appendix I), across all six continents. The earliest to establish a stabilisation fund was Kuwait in 1953 and the latest example was São Tomé and Principe, which began to set up its fiscal stabilisation fund in late 2006.

The availability of consistent data limited the scope of the data collection exercise. Detailed economic and government data, breaking countries down between their resource and non-resource sectors, were collected by an arduous investigation of IMF Staff Reports, Selected Issues Papers and Statistical Appendices. Although the data collected from these IMF documents are, in theory, consistent with the IMF's *World Economic Outlook* (WEO) publication, many of the series compiled through this exercise represent a more detailed level of disaggregation than that available from the WEO dataset.

Each of these reports usually has historical data that goes back five years from the date of their publication. All data published in these reports were approved by the national governments and their statistical offices prior to publication on the IMF website. This attests to the quality of the data, but also limits their availability to only those countries which have agreed to publish the data and to reports published after mid-1997.[33]

This exercise allowed for the creation of a database covering 12 countries that set up stabilisation funds and their disaggregated fiscal data over a 16-year period from 1992–2007, producing a total of 192 possible country-year data observations.[34]

The macroeconomic data collected was centred on the evolution of the resource and non-resource components of GDP, exports and the government's fiscal position. As defined in the previous section, there are a few different ways to

33 Although recent pressure for increased transparency at the IMF has led to most governments to accept the publication of official IMF reports, some still choose to exercise their discretion to have them with held from the general public. Currently, only documents produced after mid-1997, and with government permission for publication, have been scanned and placed on the IMF website. Unfortunately, many of these are scanned PDF documents which do not allow simple copy and pasting, so much of the data input was done manually, data point by data point.

34 Cut-off dates of 1992 and 2004 for the establishment of a stabilisation fund were used to make the final selection of countries. 1992 was the first year for which historical data in the 1997 reports were usually available, while 2004 was chosen to allow for at least three years of fiscal data after the stabilisation fund's creation. This sub-divided the sample of countries into three groups: 16 countries which formed stabilisation funds prior to 1992 were examined as anecdotal case studies based on existent literature, 12 which created funds within the cut-off dates and were thus analysed quantitatively and five countries which have just begun stabilisation fund operations or are in the process of doing so.

tackle the issue of fiscal sustainability, for which it was necessary to look at not only public debt and the fiscal balance, but also the disaggregated resource and non-resource components in the economy. The IMF reports held sufficient data for these categories across the 12 countries in the dataset, generating over 100 observations for each indicator. These were instrumental in building up the *success* variable for each country-year observation.

5.2 Political indicators

A series of indicators on political institutions and governance were chosen to complement the economic data and allow for a quantitative analysis of the political economy of the institutions surrounding the stabilisation funds, as well as the general environment of the country. These were chosen based on their relative acceptance in the wider political economy literature and the availability of public time series data for the countries in the sample. A detailed explanation for each of the indicators used can be found in Appendix III.

While fiscal data came from a single source, the political economy data came from an investigation across a series of different databases. There is a vast amount of data looking at democracy and governance indicators, although methodologies and time coverage vary tremendously. Some of the most comprehensive datasets to measure these issues include the World Bank Governance Indicators, the Polity IV dataset (see Marshall and Jaggers 2005), the Freedom House Political Rights and Civil Liberties and the Heritage Foundation Index of Economic Freedom. Other sources which were consulted, but ultimately excluded from the final dataset, included Afrobarometer, the Bertelsmann Transformation Index, Global Integrity Scorecard, Open Budget Index, Transparency International Corruption Perceptions Index, World Bank Country Policy and Institutional Assessments (CPIA),[35] and the World Economic Forum Global Competitiveness Index.

These political economy indicators were compiled from the dataset usefully put together by Mejía Acosta and de Renzio (2007) and served to both analyse the political economy of the institutions surrounding the stabilisation funds and give insight about the general governance environment of the country.

An example of a variable expected to be associated with a higher *success* score is the World Bank's measure of government effectiveness, which focuses on the civil service's ability to remain independent from political pressure and formulate, implement and sustain quality public policy. An independent civil service should be better placed to ensure the smooth and transparent management of a stabilisation fund than one that was 'captured' by the executive.

Based on the literature, it would also be expected that countries with more political competition and regulation, as well as more democratic processes, would have

35 The CPIA would have been a useful analysis tool, but at the time of research it was limited to only two years of data, covering 2005 and 2006. It has since been expanded to 2008.

better functioning stabilisation funds. The Marshall and Jaggers (2005) argument is that more (and better regulated) political participation would ensure greater accountability and improved fiscal outcomes.

5.3 Stabilisation fund indicators

Finally, a series of binary and categorical indicators were also devised to characterise stabilisation funds and their typology, based on the availability of data and on the theory presented over the past two sections. Two binary variables are used to embody the purpose and use of these funds, whether they are for stabilisation or savings. Categorical variables describe the inflow and outflow rules of a stabilisation fund. Another variable describes whether the stabilisation fund is extra-budgetary (0) or incorporated into the budget (1). Meanwhile, an earmark variable takes a different value in accordance with the earmarking of resources in stabilisation fund outflows: all resources (2), part of the resources (1), or no earmarked resources (0). Finally, one continuous numerical value is used to measure the size of fund assets as a share of GDP.

Two changes are noteworthy from the typology of stabilisation funds presented in Table 3.1. The asset management characteristic has been removed, due to the lack of data regarding the investment portfolios of stabilisation funds, and a new category, 'general environment', has been added, as a reflection of the conditions in which the funds are operating.

Furthermore, some of the political indicators above can be used as proxies for stabilisation fund characteristics. For example, the ICRG indicator on bureaucratic quality reflects the quality of the institutions responsible for the operations of a stabilisation fund, while the polity2 variable describes the general political environment.

It was expected that countries which have higher polity2 scores (i.e. more democratic) would see less discretionary withdrawals from stabilisation funds and thus have a higher *success* score with them, as the institutional level of accountability mechanisms was presumed to be higher (see Marshall and Jaggers 2005).

6 Quantitative analysis

6.1 Scope of analysis

Several analytical exercises were carried out using the data collected and compiled as described in the previous section. First, fiscal performance was examined prior to and following the implementation of a stabilisation fund in each of the countries in the analysis. The *success* variable was then measured for each country to examine the degree of fiscal success before and after the creation of the fund. These two analyses suggested that there is an association between the creation of a stabilisation fund and improved fiscal performance.

Using STATA, linear regressions with panel-corrected standard errors (PCSE) were then run to determine the importance of stabilisation funds for fiscal performance.

6.2 Fiscal performance, pre- and post-stabilisation fund

An interesting initial exercise of data analysis was to look at the aggregate performance of countries prior to and after the creation of stabilisation funds. Data was available for 11 countries, covering the period of 1992–2007.[36] This back-of-the-envelope calculation looked at the average of a given economic variable in the years prior to the fund and compared it to the average of the same variable in the years after the fund had been in place, to see whether its creation is associated with improved fiscal performance. The aggregate results can be summarised as follows:

– The share of non-resource sectors in GDP dropped by about 5 per cent (and in exports, by over 13 per cent) after the creation of the stabilisation fund. This result is expected, as the creation of a fund is usually correlated to an **increasing importance of the resource sector in the economy**. Chad is the country whose dependence on the resource sector increased the most, by 13 per cent of GDP.

– Government revenues generally increased by 2.4 per cent of GDP after the creation of the stabilisation fund. This was the result of a 3.4 per cent increase in resource revenues and a 1.0 per cent decrease in non-resource revenues. Again, this result can be interpreted as a reflection of the coming on-stream of new resource revenues, which adds **pressure on government to reduce its revenue collection from non-resource areas**, such as direct taxation.

– Government expenditures, measured in per cent of GDP, actually *dropped* by 1.9 per cent upon the creation of a stabilisation fund. This is a very interesting result, as it shows that **countries with stabilisation funds have, on average, shown remarkable expenditure restraint** even with increased government revenues. Russia was the most extreme example, in which expenditures are 8.6 per cent of GDP lower than they were prior to the creation of a stabilisation fund in 2003. Conversely, government expenditures in Colombia *rose* by 7.7 per cent after its fund was created in 1995.

– Thus, the **overall balance improved by over 4 per cent of GDP**, a remarkable improvement coming from both the revenue and the expenditure sides. The non-resource deficit, however, remained relatively stable, but still very large, at over 9 per cent of GDP.

– The improved fiscal position of these countries led to a **large reduction in public debt**, on average by 19 per cent of GDP. Nigeria's sharp reduction, in large part due to debt cancellations through HIPC and MDRI, provide a bit of an outlier. Nonetheless, even removing it from the sample would result in a decrease of 13 per cent of GDP in the public debt of the remaining countries.

The aggregate results are displayed in the following Table 6.1.

36 Venezuela was excluded from the sample, as disaggregated data was only available pre-stabilisation fund (1998) but not thereafter.

Table 6.1 Pre- and post-stabilisation fund fiscal performance for 11 countries, 1992–2007

	Pre-SF	Post-SF	Change
Non-resource GDP (% of GDP) Non-resource exports (% of exports)	83.4 49.4	76.5 36.1	-4.8 -13.2
Revenues (% of GDP) Non-resource revenues (% of GDP)	24.8 17.3	27.2 16.3	2.4 -1.0
Expenditures (% of GDP)	27.5	25.6	-1.9
Balance (% of GDP) Non-resource balance (% of GDP)	-2.7 -9.3	1.6 -9.4	4.2 -0.2
Public debt (% of GDP)	51.8	33.9	-18.8

Sources: IMF reports; and author's calculations.

According to this paper's definition of budget sustainability,[37] only Trinidad & Tobago (and maybe Colombia) could be deemed to be in a sustainable position prior to the introduction of stabilisation funds, but eight of the eleven countries in the sample had sustainable fiscal positions following the introduction of the funds. The fiscal balance was positive in Algeria, Iran, Kazakhstan, Nigeria, Russia and Trinidad & Tobago. Azerbaijan and Ecuador still had small fiscal deficits, but these were matched by improvements in the share of non-resource revenues, signifying a reduced dependence by government on resource revenues. On the other hand, the three countries with the largest deficits – Chad (increased dependence on oil resources), Colombia (deteriorating deficit) and Peru (rising public debt) – were deemed to still have unsustainable fiscal positions even after the creation of the fund.

Although illustrative, this example does not indicate that stabilisation funds were the cause of this improved sustainability in the eight countries, but rather that there was an association between the use of these funds and fiscal discipline.

6.3 The success of stabilisation funds?

A similar exercise was then conducted to gauge the degree to which the presence of a stabilisation fund was associated with *success*, the variable defined in Section 3, with a range from 0 to 6, where 6 indicates maximum *success*. Where possible, the *success* variable was calculated for each country and each year in the sample.[38] The results are shown in Table 6.2.

37 See Section 4. A sustainable fiscal position has been defined as one with low or stable debt and one of the following three conditions: a non-negative fiscal balance; a slightly negative fiscal balance with an increasing share of non-resource revenues; or an improving fiscal balance.

38 This totalled 127 observations, of which 49 were in the years prior to the stabilisation fund and the remaining 78 were in the years of or following its creation. Colombia and Venezuela were excluded due to insufficient data, respectively before and after the creation of the stabilisation fund.

Table 6.2 Pre- and post-stabilisation fund success. Six-point scale, 1992–2007

	Pre-SF	Post-SF	Change
Kazakhstan	1.0	3.7	2.7
Trinidad & Tobago	2.0	3.0	1.0
Algeria	2.5	3.4	0.9
Ecuador	2.5	3.4	0.9
Russia	2.6	3.5	0.9
Peru	1.0	1.8	0.8
Nigeria	2.5	3.3	0.7
Azerbaijan	2.0	2.4	0.4
Iran	2.8	3.0	0.2
Chad	2.3	2.3	-0.1
Average	2.4	2.8	0.4

Sources: Author's calculations.

Almost every country in the sample, regardless of its fiscal situation prior to the creation of a stabilisation fund, has since seen a marked improvement in performance. Kazakhstan has had the best fiscal performance since the creation of its National Fund, with marked improvements in its fiscal balance (total and non-resource) and a halving of public debt. Only one of the ten countries in the dataset – Chad – had a decrease in its *success*, although this decrease was very small.

These descriptive analyses suggested that the presence of stabilisation funds was associated with improved fiscal performance. This suggests that, although there are no *a priori* economic reasons to set them up, the evidence suggests that they do have a positive impact. One can argue that this is because countries with better fiscal management which set up stabilisation funds. However, many of the countries in the data sample are not known for fiscal discipline, and one could thus argue that a reason for setting up a stabilisation fund could be to signal credibility. Even in these cases, fiscal performance improves.

6.4 The adoption of stabilisation funds[39]

The next task was to determine the importance of stabilisation funds for fiscal performance. We isolated their impact and found that they had a positive impact on the fiscal balance (at a 99 per cent confidence interval). This can be expected, as the presence of the fund may indicate that there were higher resource revenues coming on-stream. It is interesting that they also had a positive impact on the non-resource balance. After decomposing the non-resource balance into non-resource

39 The results of the statistical models can be found in Appendices IV and V.

revenues and expenditures, we found that this effect came from a decrease in expenditures.[40] Finally, we also found that stabilisation funds had a negative impact on government debt, i.e. their presence helped in the reduction of debt.

However, in all the cases outlined above, the explanatory power of stabilisation funds was small (e.g. an R2 of .103 in the case of government debt). This means that having a stabilisation fund was not enough for *success*, but that one must also look at other explanatory variables. These include the stabilisation fund attributes (endogenous) and political economy (exogenous) variables presented in Section 5.

The results were robust and can be found in Appendix 4. Stabilisation funds had a significant positive impact on the non-resource balance (Model 1). A significant relationship was also found between the presence of a stabilisation fund and a reduction of government debt, measured in per cent of GDP (Model 2). Finally, and to reinforce results found in previous studies, the presence of a stabilisation fund was found to reduce government expenditure, measured in per cent of GDP (Model 3).

6.5 The workings of stabilisation funds

The dataset was then limited to observations in which stabilisation funds were present, which comprise exactly half (90) of the data points. The purpose of this was to find which political economy variables were significant to determine certain macroeconomic indicators in countries which used stabilisation funds as instruments of fiscal policy. The results can be found in Appendix 5. Model 4 looked at the impact of political economy indicators on resource dependency, as measured by the annual percentage change in the share of GDP of the non-resource sectors.[41] In Model 5, the dependent variable was the annual change in the overall government balance. The year-on-year change of the non-resource balance was analysed in Model 6. Finally, Model 7 looked at the explanatory indicators for changes in total public debt, measured in per cent of GDP. The three variables which were statistically-significant in all these models were a governance variable (polity2), a rule of law variable (rul_law) and a civil liberties one (civ_libs). The first of the three, which yielded the most robust results, was the variable used as a proxy for the degree of discretion that policymakers have to make use of fund resources, which supports the findings from the existent case studies in the literature. Rule of law and civil liberties were both indicative of an environment upon which civil society could thrive and hold governments accountable, leading to a more sustainable fiscal policy.

6.6 Determinants of stabilisation fund success

This analysis had thus confirmed that stabilisation funds do matter and that there were certain political-economy factors that facilitated the success of these funds.

40 There was a positive, but not statistically significant, impact on non-resource revenues.

41 An increase in the percentage change means that the non-resource sectors' share of GDP is increasing and thus, the country is becoming less dependent on natural resources.

To cross-check these results, it was necessary to run an analysis of the degree to which political economy indicators and stabilisation fund characteristics led to fiscal success, as defined by the *success* variable.

First, we ran a simple linear regression using *success* as the dependent variable and the presence of a stabilisation fund as the explanatory variable (panel-corrected standard errors in parenthesis):

success =	2.300***	+ 0.502** stab_fund
	(0.198)	(0.237)
	N = 126	R^2 = .116

This means that, for 126 observations, a country without a stabilisation fund usually scored 2.3 points on the *success* scale, compared to 2.8 points for those with a fund. However, this only explained 11 per cent of the variations in the sample, meaning that the mere existence of a stabilisation fund is no guarantee of *success*.

By using regressions of the different political economy and stabilisation fund indicators, it was possible to identify the determinants of *success* based on the methodology and definitions devised in the previous sections. Model 8 below was the key model combining these variables. It found that *success* could be explained by five variables, with a positive impact from the usage of earmarking, government effectiveness and the polity2 score, which signifies a low degree of discretion. Variables that had a negative impact on *success* were executive recruitment and political competition.

Success[42] =

13.687 + 0.784 earmark	+ 1.056 gov_effe	+ 0.636 polity2	– 1.33 exrec	– 0.712 polcomp	
(2.077)	(0.169)	(0.388)	(0.143)	(0.267)	(0.162)

With regards to stabilisation fund characteristics, the earmarking of resources for specific expenditures was found to be beneficial to fund success. This is an interesting result, as earmarking is a usual trait of Latin American funds, but these have been criticised due to their lack of flexibility and adaptability. However, the regression showed that earmarking can be beneficial, due to its capacity to decrease the amount of resource rents that can be expropriated.

The political economy environment was also crucial for stabilisation fund success. A higher government effectiveness score meant that the civil service was able to remain independent from political pressure. This was important for fund success, as the likelihood of operating norms being changed was reduced. This need for consistent fund rules and low levels of *ad hoc* discretion by the administration was confirmed by the significance of the polity2 variable to *success*.

42 Panel-corrected standard errors reported in parentheses. All variables presented were found to be statistically-significant at a 99 per cent confidence interval (p<.01). There were 57 observations and the R^2 was 0.298.

7 Discussion

Several findings can be drawn from the analysis described in the previous section, not all of which were expected.

7.1 Stabilisation funds and success

First, although there are no *prima facie* economic reasons for setting up a stabilisation fund, we find that the adoption of such a fund is association with improved fiscal performance. In other words, countries with stabilisation funds had lower deficits and debts, leading to higher *success* scores.

Note that nothing is being said here about causality – one could argue that a stabilisation fund does not help improve fiscal outcomes, but rather that countries with better fiscal policies are more likely to set up stabilisation funds as a way through which to signal policy credibility. However, many if not most of the countries in the data sample (e.g. Azerbaijan, Chad, Kazakhstan, Peru and Venezuela) are not exactly known for strong fiscal rectitude, and one could argue that setting up a (captured) stabilisation fund would be a form of attempting to signal credibility while retaining discretion and without having to abide by strong legal or operational constraints.

7.2 Political economy reasons for success

Second, if a stabilisation fund does help a country improve its fiscal *success*, then there are certain existing political economy conditions which increase its effectiveness. Three of the variables were key – government effectiveness, political competition and executive recruitment.

Government effectiveness is a proxy variable for an independent civil service. We expected this to be associated with a higher *success* score, as an independent civil service can help ensure that stabilisation funds function properly and transparently, and the analysis bore this out.

However, political competition and executive recruitment were both found to be associated with an erosion of *success*. These findings are contrary to the views found in the literature, which expects political participation and diversity to lead to more accountability and better fiscal performance. For example, some game theorists believe that closed political systems are more likely to produce kleptocracies and thus lead to the expropriation of stabilisation fund resources.

The analysis found that it was actually lower executive recruitment and political competition scores which increased the level of *success*. Surprisingly, this means that open and regulated selection processes (leading to competitive elections) could be detrimental to stabilisation fund success. The main reason for this is that more participation means more stakeholders and interest groups to please, which poses a challenge to the stability of a fund. A government which has a small majority or is only surviving due to a weak coalition with another party may be faced with a lot of pressure to use its finite pool of resources on political favours.

Furthermore, changes in government can lead to alterations to the rules and operations of the stabilisation fund, or its discontinuation altogether (e.g. post-2002 Venezuela or post-2003 Ecuador).

7.3 Characteristics of a successful stabilisation fund

Finally, there were two endogenous characteristics of stabilisation funds which were found to be important to increase their success scores.

As expected, less discretion over stabilisation fund resources (as proxied using countries' polity2 scores) was found to be positive for strong fiscal performance. A fund with clear rules on outflow of resources and strong institutional accountability means fewer opportunities for the executive or the ruling party to increase spending at their own will (e.g. Venezuela).

A related and interesting result is that the earmarking of fund resources for specific expenditures (e.g. health or regional development) was found to be beneficial for stabilisation fund *success*. Although this reduces the flexibility of the state with regard to how the money is spent, it somehow helps the operation of the fund. This may be because it reduces the incentive for 'capture' of fund resources or because it serves as a further check against the interests of the different political stakeholders.

8 Summary, conclusions and research agenda

Stabilisation funds have generally been effective instruments for resource-dependent countries seeking to stabilise transfers to their budgets and save funds for future generations. They have neither been a panacea, nor a disaster. Although generally thought to increase transparency and accountability, their performance has been mixed. Increased resource revenues lead to increased political pressures for more spending. Whether due to poor design or lack of opposition, some leaders are able to tap into these resources at their discretion or alter the laws governing the operations of the stabilisation fund to do so. These funds have been drawn down to finance larger budget deficits, worsening fiscal positions, or even to increase personal foreign accounts. This signifies that it is crucial to look at political economy indicators of how the fund was created.

To measure the effectiveness of stabilisation funds, it is necessary to look at the fund's impact on three different dimensions. On the revenue side, the fund should create an incentive for government to maintain an active non-resource revenue stream to ensure its long-term budget sustainability. On the expenditure side, a well-functioning stabilisation fund will have established norms to prevent policymakers from usurping its resources to finance large expenditure increases. Finally, a successful fund should have a strong savings component – those assets that are accumulated into the fund should be invested in a diversified portfolio to guarantee that future generations will benefit from the riches generated from the exploitation of non-renewable resources.

This study has looked at historical evidence from the literature and used a new original dataset of fiscal performance for 12 countries that established resource stabilisation funds over the past 16 years, totalling 192 country-year observations. It has defined a stabilisation fund *success* as a six-point additive indicator, while keeping the fund's characteristics and political economy conditions as explanatory variables. It has thus been able to identify determinants of the success of stabilisation funds, some of which are endogenous to the funds, and some which are part of the political environment in which they are created.

In the first statistical exercise, aggregate economic data was analysed for sample countries prior to and after the creation of a stabilisation fund. It was found that, after the creation of the fund, countries experienced an improved fiscal position without seemingly hurting its long-term fiscal sustainability. Although these countries became more reliant on the resource sector, the non-resource fiscal balance remained relatively stable while public debt was decreased.

The second statistical exercise looked at the general importance of stabilisation funds. It found that they have a statistically-significant positive impact on the non-resource balance, on the reduction of government debt and on a reduction of government expenditures, all measured in terms of GDP.

The third statistical exercise identified the political economy variables that are important for the *success* of stabilisation funds. The three most important variables in these models were polity2 (a proxy for discretion in the use of fund resources), rule of law and civil liberties. The last two are indicative of the need for an environment upon which civil society can thrive and hold governments accountable, leading to a more sustainable fiscal policy.

To cross-check these results, an analysis was carried out of the degree to which political economy indicators and stabilisation fund characteristics lead to fiscal success, as defined by the *success* variable. It found that *success* could be explained by five variables, with a positive impact coming from the usage of earmarking, government effectiveness and the polity2 score, which signifies a low degree of discretion. Variables that had a negative impact on *success* were executive recruitment and political competition.

This led to a number of interesting conclusions.

First, it was found that, although there are weak economic reasons for creating a stabilisation fund, their presence does contribute to *success*, but the impact is small. These funds do help achieve better fiscal outcomes, regardless of how well or poorly designed they were in the first place.

Second, the political context matters and not in the way the literature would have one believe. Although a civil service that is able to remain independent from political pressure contributes to *success*, open and regulated political systems are actually found to be detrimental to it. The first result was expected but the second finding departs from the orthodoxy, which predicted that more political competition would have been linked to *success*.

The main reason for this is that more political participation poses a challenge to the stability of a fund – the need to please more interest groups. A country with a

strong governing party may have less of a need to spread the wealth around, but a government with a small majority or in a coalition will come under pressure to spend resources in return for political capital. Furthermore, a complete change in government could also lead to moving goalposts in how a fund operates or even to its discontinuation.

Why would political stability matter more than the political system? A stronger executive or ruling party could have less incentive to spend fund resources quickly for political or personal gain and can take a more long-term view of the fund, as well as fiddle less with its rules. However, unchecked political strength can eventually lead to higher discretion over resources, which we have also found to be bad.

This is because how a stabilisation fund is set up is also important. We find that discretion to use fund resources is bad for success, as it increases the incentive for the ruling powers to capture these resource rents. As well as transparent mechanisms to prevent discretion, the earmarking of fund resources for specific expenditures is beneficial. Although this practice is criticised on flexibility terms, our findings show that it helps *success* by reducing the incentive for 'capture' of fund resources or serving as a further check against the interests of different stakeholders.

8.1 Future research

There are still many questions that need to be addressed with regards to stabilisation funds. The literature could also be enriched with the presence of more and more complete data, especially for older funds and for 'obscure' ones, such as some of those in the Middle East.

One interesting result from this research that needs to be crosschecked is the detrimental impact of open political systems on stabilisation fund *success*. There is no consensus in the literature, although game theorists suggest that funds are more likely to survive cooption if there is political competition. However, this result may signify that political stability matters more than the political system itself. The contrasting examples of Chile and Venezuela add further colour to this question.

Another area requiring further research is that of the optimal size of stabilisation fund assets. Again, there seems to be no consensus in the literature about the optimal size of a stabilisation fund. It has been argued here that a larger fund is more successful, in that it is better able to perform its stabilising and savings functions. Further research could look at a larger sample of data on fund sizes to try to solve some of the questions posed in the text.

At the case study level, there are a few different areas that could be explored. First, does copying a stabilisation fund model in the context of different institutions work? Timor-Leste has copied the Norwegian model, but it is too early to say how well it will work. Future research could also look at countries that have had multiple attempts at using stabilisation funds. In places like Botswana, Ecuador, Iran or Venezuela, what changed the second time around and what were the outcomes of these changes?

Finally, similar applied research could be carried out to examine the impact of similar fiscal mechanisms on the effectiveness of aid for aid-dependent countries.

8.2 Policy implications

Developing countries which are over-reliant on a single or a few commodities should seek to reduce their exposure to commodity price movements while, at the same time, trying to diversify their export structures. In some cases, countries are able to access international capital markets and reduce their risk through commodity price-linked hedging instruments. Nonetheless, many developing countries are unable to access these instruments (especially during a downturn), which requires them to rely on forms of self-insurance, such as export diversification and the accumulation of reserves, be they through a resource stabilisation fund or not.

Whether a country will be successful with a stabilisation fund depends on many factors. As we have seen, it is important *ex ante* to have an independent civil service and some political stability, regardless of the type of political system which exists in the country. Furthermore, the fund should be set up to restrict the discretionary power of the executive, and where possible, necessary expenditures should be earmarked to prevent capture.

If a country is unable to meet these conditions, it does not mean that the stabilisation fund will not aid fiscal *success*. However, the country will have to do more to ensure that it is on the right track. A good start would be to abide by the principles set forth in the IMF Guide and by the EITI. The structures of stabilisation funds must be clearly defined to allow for transparent functioning and for horizontal and vertical accountability in its operations. Transparency is crucial to the functioning of stabilisation funds, as it decreases the chances of rent-seeking behaviour. Furthermore, a stabilisation fund could be integrated as a virtual fund into the budget, and assurances of its integrity should be included in the design, such as the existence of periodic independent third-party audits.

Transparency and regular audits of stabilisation funds and of the general public sector has the added benefit of providing additional information for credit rating agencies, which may lead to investment rating upgrades for resource-dependent countries. This could allow these countries to eventually receive higher foreign investment, as well as have easier access to international capital markets in more favourable terms. If all goes well, in the long run the stabilisation fund will not be a panacea, but it may even outlive the reasons for which it was established in the first place.

Appendices

A1 List of stabilisation funds[43]

Country	Fund	Year of creation
Kuwait	Kuwait Investment Authority	1953
Kiribati	Revenue Equalization Reserve Fund (RERF)	1956
Botswana	Pula Fund	1966
Nauru	Nauru Phosphate Royalties Trust	1968
Botswana	Revenue Stabilization Fund	1972
Wyoming, USA	Permanent Wyoming Mineral Trust Fund	1974
Papua New Guinea	Mineral Resources Stabilization Fund (MRSF)	1975
Alaska, USA	Alaska Permanent Fund	1976
Alberta, Canada	Alberta Heritage Savings Trust Fund	1976
Kuwait	Future Generation Fund (FGF)	1976
United Arab Emirates	Abu Dhabi Investment Authority	1976
Oman	State General Reserve Fund	1980
Brunei	Brunei Investment Agency	1983
United Arab Emirates	International Petroleum Investment Company	1984
Chile	Social & Economic Stabilization Fund	1985
Norway	The Government Pension Fund of Norway	1990
Colombia	**Fondo de Ahorro y Estabilización Petrolera (FAEP)**	**1995**
Chad	**Fund for Future Generations**	**1998**
Ecuador	**Fondo de Estabilización Petrolera (FEP)**	**1998**
Venezuela	**Fondo de Inversión para la Estabilización Macroeconómica-FIEM**	**1998**
Azerbaijan	**State Oil Fund**	**1999**
Iran	**Foreign Exchange Reserve Fund**	**1999**
Peru	**Fondo de Estabilización Fiscal (FEF)**	**1999**
Trinidad & Tobago	**Interim Revenue Stabilization Fund (IRSF)**	**1999**
Iran	**Oil Stabilization Fund**	**1999**
Kazakhstan	**Kazakhstan National Fund**	**2000**
Algeria	**Revenue Regulation Fund**	**2000**
Ecuador	**Fondo de Estabilización Social y Productiva y Reducción del Endeudamiento Público (FEIREP)**	**2002**
United Arab Emirates	Mubadala Development Company	2002
Russia	**Stabilization Fund of the Russian Federation**	**2004**
Nigeria	**Excess crude account**	**2004**
Venezuela	**Fondo de Estabilización Macroeconómica (FEM)**	**2004**
Qatar	Qatar Investment Authority	2005
Timor-Leste	Timor-Leste Petroleum Fund (TLPF)	2005
United Arab Emirates	Ras Al Khaimah Investment Authority	2005
Bahrain	Mumtalakat Holding Company	2006
Libya	Libyan Investment Authority	2006
Mauritania	National Fund for Hydrocarbon Reserves	2006
Oman	Oman Investment Fund	2006
United Arab Emirates	Dubai World	2006
United Arab Emirates	Investment Corporation of Dubai	2006
São Tomé & Príncipe	National Oil Account & Permanent Fund	2006–7
Trinidad & Tobago	Heritage and Stabilization Fund (HSF)	2007
United Arab Emirates	Emirates Investment Authority	2007

43 In bold, those countries which formed part of the quantitative exercise in this paper. Mexico, Saudi Arabia and Turkmenistan are also known to operate or have operated these funds, but no data is available. There are also plans for funds to be set up in Equatorial Guinea, Iraq and Sudan.

A2 Variable codebook and summary statistics

Variable	Definition	Source	Obs	Mean	S.D.	Min	Max
stab_fund	Existence of stabilisation fund	Several	180	0.5	0.5	0	1
gdp_nc	GDP, current prices, national currency (billions)	IMF	170	73,920	219,173	0	1,701,215
gdp_usd	GDP, current prices, US dollars (billions)	IMF	172	78	123	0	979
gdp_res	Resource GDP, national currency (billions)	IMF	110	9,952	30,715	0	185,432
gdp_res_pct	Resource GDP, share of total GDP	IMF	110	22.8	14.0	0.0	54.3
gdp_nonres_pct	Non-resource GDP, share of total GDP	IMF	110	77.2	14.0	45.7	100.0
gdp_nonres_pc_ch	Non-resource GDP, yearly change in share of GDP	IMF	99	-1.3	5.7	-27.2	18.6
ex_rate	Exchange rate, national currency per US dollar	IMF	169	1,030	1,910	0	9,677
exports	Total exports, f.o.b., US dollars (billions)	IMF	151	20	33	0	244
exp_res	Resource exports, US dollars (billions)	IMF	137	13	20	0	149
exp_nonres	Non-resource exports, US dollars (billions)	IMF	137	7	15	0	95
exp_res_pct	Resource exports, share of total exports	IMF	137	61.1	30.0	0.0	98.7
exp_nonres_pct	Non-resource exports, share of total exports	IMF	137	38.9	30.0	1.3	100.0
exp_nonres_pc_ch	Non-resource exports, yearly change in share of exports	IMF	125	-2.0	6.8	-42.9	9.0
rev	Government revenue, national currency (billions)	IMF	146	19,764	61,411	0	503,765
rev_res	Govt resource revenue, national currency (billions)	IMF	130	11,554	44,562	0	361,866
rev_nonres	Govt non-resource revenue, national currency (billions)	IMF	130	10,627	23,264	1	141,899
exp	Govt expenditure, national currency (billions)	IMF	146	19,776	58,592	0	484,332
bal	Govt balance, national currency (billions)	IMF	146	-11	5,645	-16,595	50,096
bal_nonres	Govt non-resource balance, national currency (billions)	IMF	130	-11,564	41,187	-342,433	811
debt	Public debt, national currency (billions)	IMF	138	17,825	39,358	0	219,332
rev_pct	Govt revenue, share of GDP	IMF	148	26.1	7.6	11.5	43.4
rev_res_pct	Govt resource revenue, share of GDP	IMF	130	9.9	9.4	0.3	37.1
rev_nonres_pct	Govt non-resource revenue, share of GDP	IMF	130	16.5	7.9	4.2	38.0
rev_nonres_pc_ch	Govt non-resource revenue, yearly change in GDP share	IMF	118	0.0	2.1	-6.9	8.9
exp_pct	Govt expenditure, share of GDP	IMF	148	27.4	7.3	13.0	55.9
bal_pct	Govt balance, share of GDP	IMF	146	-1.2	4.6	-15.3	13.7
bal_pc_ch	Govt balance, yearly change in share of GDP	IMF	134	0.6	3.9	-10.9	14.1
bal_nonres_pct	Govt non-resource balance, share of GDP	IMF	130	-10.7	8.2	-37.9	3.8
bal_nonres_pc_ch	Govt non-resource balance, yearly change in GDP share	IMF	118	0.0	3.6	-19.5	11.1
debt_pct	Public debt, share of GDP	IMF	138	42.0	25.5	3.0	135.6
debt_pc_ch	Public debt, yearly change in share of GDP	IMF	126	-2.6	9.5	-38.3	37.3
sf_purp_stab	Stabilisation fund purpose: stabilisation	several	180	0.5	0.5	0	1
sf_purp_sav	Stabilisation fund purpose: savings	several	180	0.3	0.5	0	1
sf_budget	Stabilisation fund: incorporation into budget	several	180	0.1	0.3	0	1
sf_earmark	Stabilisation fund: earmarking of resources	several	180	0.3	0.6	0	2
sf_size	Stabilisation fund assets, US dollars (billions)	several	154	1.4	3.8	0.0	32.0
sf_size_GDP	Stabilisation fund assets, share of GDP	several	152	2.4	5.2	0.0	33.8
bal_nn	Non-negative fiscal balance	calculated	146	0.4	0.5	0	1
bal_impr	Annual improvement of fiscal balance	calculated	134	0.6	0.5	0	1
bal_nr_nn	Non-negative non-resource balance	calculated	130	0.0	0.2	0	1
bal_nr_impr	Annual improvement of non-resource balance	calculated	118	0.6	0.5	0	1
rev_nr_incr	Annual improvement of non-resource revenues	calculated	118	0.5	0.5	0	1
debt_decr	Annual reduction of public debt	calculated	126	0.7	0.5	0	1
sf_size_incr	Annual increase of stabilisation fund assets	calculated	137	0.3	0.4	0	1
success	Annual *success* of stabilisation fund	calculated	125	2.9	1.4	0	6
pol_rights	Political rights	Freedom House	180	4	2	1	7
civ_libs	Civil liberties	Freedom House	180	4	1	1	7
freedom	Freedom status	Freedom House	180	2	1	1	3
heritage	Index of economic freedom	Heritage Foundation	136	53	10	27	72

Variable	Definition	Source	Obs	Mean	S.D.	Min	Max
democ	Democracy	Polity IV	156	4	3	0	10
autoc	Autocracy	Polity IV	156	2	3	0	7
polity2	Polity (democ - autoc)	Polity IV	156	2	6	-7	10
xrreg	Regulation of chief executive recruitment	Polity IV	156	2	1	1	3
xrcomp	Competitiveness of chief executive recruitment	Polity IV	156	2	1	0	3
xropen	Openness of chief executive recruitment	Polity IV	156	3	1	0	4
xconst	Executive constraints	Polity IV	156	4	2	1	7
parreg	Regulation of participation	Polity IV	156	3	1	2	5
parcomp	Competitiveness of participation	Polity IV	156	3	1	0	5
exrec	Executive recruitment (xrreg + xrcomp + xropen)	Polity IV	156	6	2	3	8
polcomp	Political competition (parreg + parcomp)	Polity IV	156	6	3	1	10
hdi	Human development index	UNDP	27	0.67	0.15	0.34	0.81
bur_qual	Bureaucratic quality	PRS	91	1.9	0.6	0.0	3.0
gov_effe	Government effectiveness	World Bank	70	-0.5	0.5	-1.4	0.6
rul_law	Rule of law	World Bank	70	-0.7	0.4	-1.6	0.4
corrupt2	Control of corruption	World Bank	69	-0.8	0.3	-1.4	-0.1

A3 Political indicators

The ICRG indicator on bureaucratic quality (bur_qual), available for a large set of countries and stretching back to 1980, rates countries from 0 to 4, with a higher score given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services, are somewhat autonomous from political pressure and tend to have an established mechanism for recruitment and training. In this analysis, it is used as a proxy for the quality of the institutions responsible for the operations of a stabilisation fund.

To gauge the process through which the executive comes to power, the Polity IV executive recruitment variable (exrec) is used. This concept variable combines three other indicators, which measure the regulation (xrreg), competitiveness (xrcomp) and openness (xropen) of the recruitment process. Regulation, or the mode through which power is transferred, can be unregulated (1), designational/ transitional (2), or regulated (3). Competitiveness in the power transfer process is either selection (1), dual/transitional (2), or through election (3). Recruitment of the chief executive is 'open' (4) when anyone in the politically-active population can attain the position, but can be dual executive-election (3), dual executive-designation (2), or closed (1). This variable is important to test the ability of other interest groups to accede to power through institutional mechanisms.

Polity IV data is also provided on constraints on the executive (xconst), as a measure of the executive's influence and discretion in the decision-making process: unlimited authority (1), intermediate category (2), slight to moderate limitations (3), intermediate category (4), substantial limitations (5), intermediate category (6) and executive parity or subordination (7). These variables are important for studying stabilisation funds, as they serve as proxies to gauge the discretion level of which the executive disposes (see Marshall and Jaggers 2005).

To assess the extent to which the political system enables non-elites to influence political elites in regular ways, the Polity IV political competition variable (polcomp) was applied. This indicator is a combination of two other indicators, parcomp and parreg. The competitiveness of participation variable (parcomp) reports the degree of citizens' participation in political activities: competitive (5), transitional (4), factional (3), suppressed (2), repressed (1), or not applicable (0). The regulation of participation variable (parreg) looks at the extent to which the expression of political preferences are regulated: regulated (5), restricted (4), sectarian (3), multiple identity (2), or unregulated (1).

To describe the general political environment, the polity2 variable is used. This is a Polity IV variable calculated by subtracting a country's autocracy score from its democracy score, both of which are in additive scales from 0-10.[44] The autocracy variable is created by a combination of other variables mentioned above – competitiveness and openness of executive recruitment, constraints on the chief executive and regulation and competitiveness of participation. Conceptually,

44 Thus, the polity2 scale runs from -20 to 20.

democracy is conceived as a combination of institutions and procedures through which citizens can express their preferences, institutionalised constraints on executive power and the guarantee of civil liberties to all citizens. It is expected that countries which have higher polity2 scores will see less discretionary withdrawals from stabilisation funds and thus have a higher success score with them, as the institutional level of accountability mechanisms is higher (see Marshall and Jaggers 2005).

As an alternative to these Polity IV variables, the Freedom House 'Freedom in the World' country ratings are also used. These indicators are political rights (pol_rights), civil liberties (civ_libs) and freedom status (freedom). Political rights and civil liberties are measured on a one-to-seven scale, with one representing the highest degree of freedom and seven the lowest. The combination of these two scores determines a country's status as free, partly free or not free.[45] As with the polity2 variable, it is expected that freer countries have the pre-conditions for better-functioning stabilisation funds (see Freedom House 2007). This is also true for Transparency International's (2008) Corruption Perceptions Index.

Another indicator used is The Heritage Foundation's Index of Economic Freedom, which aggregates ten different freedoms in every country, from 1995–2007, giving countries a score from 0 (least free) to 100 (freest).[46] The most applicable subcomponents to this study are fiscal freedom (especially taxation policy), freedom from government (government spending in GDP) and freedom from corruption. This aggregate score provides another variable which can be used as a proxy for the general institutional conditions of a country (see Kane, Holmes and O'Grady 2007).

Other relevant indicators are collected to measure the capacity of the state to promote sustained cooperation over time, enforce contracts and produce efficient outcomes. The composite indicator on control of corruption in the WBGI (corrupt2) is included. This database also includes a measure of government effectiveness (gov_effe), which focuses on the civil service's ability to remain independent from political pressure and formulate, implement and sustain quality public policy. Finally, the presence of the rule of law (rul_law) is measured, which is generally described as the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police and the courts, as well as the likelihood of crime and violence (see World Bank 2006).

45 Until 2003, countries whose combined average ratings for political rights and civil liberties fell between 1.0 and 2.5 were designated free; between 3.0 and 5.5 partly free; and between 5.5 and 7.0 not free. From 2003, countries whose combined average ratings fall between 3.0 and 5.0 are partly free and those between 5.5 and 7.0 are not free.

46 The ten freedoms are business freedom, trade freedom, fiscal freedom, freedom from government, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption and labour freedom.

A4 Determinants of fiscal performance

Model:	1	2	3
DV:	bal_nonres_pct	debt_pct	exp_pct
	coeff.	coeff.	coeff.
	(P.C.S.E.)	(P.C.S.E.)	(P.C.S.E.)
Stabilisation Fund	6.413**	-12.158***	-2.638***
	(2.745)	(4.597)	(0.904)
Polity 2	-5.182***		2.802***
	(1.069)		(0.779)
Executive Recruitment	11.636***		-5.728***
	(2.101)		(1.707)
Political Competition	2.872***	4.049***	-1.508**
	(0.713)	(1.392)	(0.656)
Bureaucratic Quality	4.848***		-3.058***
	(0.906)		(0.947)
Government Effectiveness	-9.026***	-20.703***	8.396***
	(3.094)	(4.032)	(2.317)
Rule of Law	13.644***		-10.773***
	(5.031)		(3.269)
Civil Liberties		-9.034***	
		(2.356)	
intercept	-93.665***	71.734***	67.343***
	(11.467)	(18.729)	(11.993)
N	47	57	50
R^2	.634	.439	.444

Panel-corrected standard errors reported in parentheses.

Significance indicated as follows: ***p<.01, **p<.05, *p<.1

A5 Determinants of fiscal performance with stabilisation funds

Model:	4	5	6	7
DV:	gdp_nonres_pct_ch	bal_pct_ch	bal_nonres_pct_ch	debt_pct_ch
	coeff.	coeff.	coeff.	coeff.
	(P.C.S.E.)	(P.C.S.E.)	(P.C.S.E.)	(P.C.S.E.)
Polity	-0.708**	1.248***		-3.275***
2	(0.307)	(0.339)		(0.304)
Executive		-3.047-**		9.754***
Recruitment		(1.066)		(0.796)
Bureaucratic		-3.323***		6.740***
Quality		(0.610)		(1.311)
Government		4.021***		-5.448***
Effectiveness		(0.736)		(1.495)
Rule of		-5.881***	-3.326***	8.175***
Law		(1.277)	(1.069)	(2.348)
Economic		0.834**		-2.557***
Freedom		(0.341)		(0.374)
Control of	15.321***			-6.181***
Corruption	(5.152)			(2.022)
Civil	-3.086*		-0.897***	4.628***
Liberties	(1.673)		(0.265)	(0.695)
intercept	22.544**	18.973***	1.598	-80.899***
	(10.802)	(5.405)	(1.158)	(8.905)
N	29	36	46	36
R^2	.282	.280	.250	.524

Panel-corrected standard errors reported in parentheses.
Significance indicated as follows: ***p<.01, **p<.05, *p<.1

References

Acemoglu, D.; Johnson, S. and Robinson, J. (2004) 'Institutions as the Fundamental Cause of Long-Run Growth', in P. Aghion and S. Durlauf, *Handbook of Economic Growth,* Amsterdam: North-Holland

—— (2003) 'An African Success Story: Botswana', in D. Rodrik (ed.), *In Search of Prosperity: Analytic Narratives on Economic Growth,* Princeton: Princeton University Press: 80–119

Ahmad, E. and Mottu, E. (2002) *Oil Revenue Assignments: Country Experiences and Issues,* IMF Working Paper WP/02/203, Washington DC: International Monetary Fund

Alesina, A. (1988) 'Credibility and Policy Convergence in a Two-Party System with Rational Voters', *The American Economic Review* 78.4: 796–805

Ali Alayli, M. (2005) *Resource Rich Countries and Weak Institutions: The Resource Curse Effect,* Berkeley, CA: University of California, Berkeley

Alier, M. (2007) 'Measuring Budget Rigidities in Latin America', draft

Alier, M. and Kaufman, M. (1999) *Nonrenewable Resources: A Case for Persistent Surpluses,* IMF Working Paper WP/99/44, Washington DC: International Monetary Fund

Amuzegar, J. (2005) 'Iran's Oil Stabilization Fund: A Misnomer', *Middle East Economic Survey* 48.47 November, Beirut: Middle East Petroleum and Economic Publications

Appelbaum, E. and Katz, E. (1987) 'Seeking Rents by Setting Rents: The Political Economy of Rent Seeking', *The Economic Journal* 97.387 September: 685–99

Arrau, P. (1990) *Intertemporal Substitution in a Monetary Framework: Evidence from Chile and Mexico,* World Bank Working Paper WPS 0549, Washington DC: World Bank

Arrau, P. and Claessens, S. (1992) *Commodity Stabilization Funds,* World Bank Policy Research Working Paper WPS 835, Washington DC: World Bank

Atkinson, G. and Hamilton, K. (2003) 'Savings, Growth and the Resource Curse Hypothesis', *World Development* 31.11: 1793–807

Auty, R. (2001) *Resource Abundance and Economic Development,* New York: World Institute for Development Economics Research, United Nations University and Oxford University Press

—— (1997) 'Natural Resources, the State and Development Strategy', *Journal of International Development* 9: 651–63

—— (1993) *Sustaining Development in Mineral Economies: The Resource Curse Thesis,* London and New York: Routledge

Barnes, P. (1995) *Indonesia: The Political Economy of Energy,* Oxford: Oxford University Press

Barnett, S. and Ossowski, R. (2002) *Operational Aspects of Fiscal Policy in Oil Producing Countries,* IMF Working Paper WP/02/177, Washington DC: International Monetary Fund

Barro, R. (1973) 'The Control of Politicians: An Economic Model', *Public Choice* 14: 19–42

Baunsgaard, T. (2001) *A Primer on Mineral Taxation,* IMF Working Paper WP/01/139, Washington DC: International Monetary Fund

Beblawi, H. and Luciani, G. (eds) (1987) 'The Rentier State', Vol 2, *Nation, State and Integration in the Arab World,* London: Croom Helm

Beck, T.; Clarke, G.; Groff, A.; Keefer, P. and Walsh, P. (2000) *New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions,* World Bank Working Paper WPS 2283, Washington DC: World Bank

Bevan, D.; Collier, P. and Gunning, J.W. (1992) *Nigeria, Policy Responses to Shocks, 1970–90,* San Francisco: ICS Press

Billmeier, A.; Dunn, J. and van Selm, B. (2004) *In the Pipeline: Georgia's Oil and Gas Transit Revenues,* IMF Working Paper WP/04/209, Washington DC: International Monetary Fund

Boschini, A.D.; Pettersson, J. and Roine, J. (2004) *Resource Curse or Not: A Question of Appropriability,* Stockholm University Working Paper in Economics 2003.12, Stockholm: Stockholm University

Chakraborty, S. and Dabla-Norris, E. (2005) *Rent Seeking*, IMF Working Paper WP/05/43, Washington DC: World Bank

Chalk, N. (1998) *Fiscal Sustainability with Non-renewable Resources,* IMF Working Paper WP/98/26, Washington DC: International Monetary Fund

Chalk, N. and Hemming, R. (2000) *Assessing Fiscal Sustainability in Theory and Practice,* IMF Working Paper WP/00/81, Washington DC: International Monetary Fund

Christian Aid (2003) *Fuelling Poverty: Oil, War, and Corruption,* Christian Aid Report, May, London

Claessens, S. and Duncan, R.C. (eds) (1993) *Managing Commodity Price Risk in Developing Countries,* Baltimore: The Johns Hopkins University Press (for the World Bank)

Clark, A.L. (2001) 'Resource Rent Extraction, Application, Consumption, Investment and Sustainability of Resource-Based Development in Resource-Rich Island Economies', paper presented at the Regional Workshop on the Constrains, Challenges and Prospects for the Commodity-Based Development and Diversification in the Pacific Island Economies, Tanoa International Hotel, Nadi, Fiji, 18–20 August

Clark, J. (1997) 'Petro-Politics in Congo', *Journal of Democracy* 8.3: 62–76

Clemons, S. (2003) 'Sharing, Alaska-Style', *New York Times*, 9 April

Cotton, J. (2005) 'East Timor in 2004: It is all About Oil', *Asian Survey* 45.1: 186–90

Crain, M. and Devlin, J. (2002) 'Nonrenewable Resource Funds: A Red Herring for Fiscal Stability?', World Bank Working Paper, draft

Cueva, S. (2007) 'Ecuador: Fiscal Stabilization Funds and Prospects', draft

Daniel, J. (2001) *Hedging Government Oil Price Risk,* IMF Working Paper WP/01/185, Washington DC: International Monetary Fund

Danninger, S.; Le Borgne, E.; Wakemann-Linn, J.; Hobdari, N.; Aturupane, C. and Gvenetadze, K. (2004) *Managing Oil Wealth: The Case of Azerbaijan,* Washington DC: International Monetary Fund

Davis, B. (2007) 'Can Copper-Rich Chile Avoid Surplus-Cash Pitfalls?' *The Wall Street Journal,* 14 May, http://online.wsj.com/public/article/SB117909372050801357-9CN_zEDzfJJ38kBXQa0viF2VBm8_20070520.html?mod=regionallinks (accessed 10 May 2007)

Davis, G.A. (1995) 'Learning to Love the Dutch Disease: Evidence from the Mineral Economies', *World Development* 23.10

Davis, J.; Ossowski, R. and Fedelino, O. (eds) (2003) *Fiscal Policy Formulation and Implementation in Oil-Producing Countries,* Washington DC: International Monetary Fund

Davis, J.; Ossowski, R.; Daniel, J. and Barnett, S. (2001a) 'Oil Funds: Problems Posing as Solutions?', *Finance and Development* 38.4

—— (2001b) *Stabilization and Savings Funds for Non-Renewable Resources,* IMF Occasional Paper 205, Washington DC: International Monetary Fund

Deaton, A. (1991) 'Saving and Liquidity Constraints', *Econometrica* 59.5 September: 1221–48

—— (1990) 'Saving in Developing Countries: Theory and Review', Supplement, *The World Bank Economic Review* (Proceedings of the World Bank Annual Conference on Development Economics 1989), Vol 4: 61–96

Democratic Republic of Timor Leste (2005) *Petroleum Fund Draft Act,* Ministry of Planning and Finance, www.mopf.gov.tp/tax_policy.htm (accessed 30 March 2005)

Devlin, J. and Lewin, M. (2004) 'Managing Oil Booms and Busts in Developing Countries', in J. Aizenman and B. Pinto (eds), *Managing Volatility and Crises: A Practitioner's Guide,* Cambridge: Cambridge University Press

Dietz, S.; Neumayer, E. and de Soysa, I. (2007) 'Corruption, the Resource Curse and Genuine Saving', *Environment and Development Economics* 12.01 January: 33–53

Drysdale, J. (2004) 'Avoiding the Resource Curse: Challenges to Sustaining Development in Timor-Leste', PhD Thesis Proposal, Centre for Resource and Environmental Studies, Australian National University

Eifert, B.; Gelb, A. and Tallroth, N.B. (2002) *The Political Economy of Fiscal Policy and Economic Management in Oil Exporting Countries,* World Bank Policy Research Paper WPS 2899, Washington DC: World Bank

Engel, E. and Meller, P. (eds) (1993) *External Shocks and Stabilization Mechanisms,* Washington DC: Inter-American Development Bank

Engel, E. and Valdés, R. (2000) *Optimal Fiscal Strategy for Mineral Exporting Countries,* IMF Working Paper WP/00/118, Washington DC: International Monetary Fund

Englebert, P. and Ron, J. (2004) 'Primary Commodities and War: Congo-Brazzaville's Ambivalent Resource Curse', *Comparative Politics* 37.1: 61–81

ESMAP (2005) *Comparative Study on the Distribution of Oil Rents in Bolivia, Colombia, Ecuador and Peru,* ESMAP Report August, Washington DC: International Bank for Reconstruction and Development (World Bank)

—— (2002) *Population, Energy and Environment Program (PEA): Comparative Analysis on the Distribution of Oil Rents,* IBRD Technical Paper 20, Washington DC: International Bank for Reconstruction and Development (World Bank)

Everhart, S. and Duval-Hernandez, R. (2001) *Management of Oil Windfalls in Mexico: Historical Experience and Policy Options for the Future,* World Bank Policy Research Working Paper WPS 2592, Washington DC: World Bank

Fasano-Filho, U. (2000) *Review of the Experience with Mineral Stabilization and Savings Funds in Selected Countries,* IMF Working Paper WP/00/112, Washington DC: International Monetary Fund

Fischer, C. (2007) *International Experience with Benefit-Sharing Instruments for Extractive Resources,* World Bank Resources for the Future

Fosu, A.K. (1996) 'Primary Exports and Economic Growth in Developing Countries', *World Economy* 19

Freedom House (2007) *Freedom in the World Country Ratings, 1972–2007,* Washington DC

Friends of the Earth (2002) 'Oil Funds: Answer to the Paradox of Plenty?', *Friends of the Earth Policy Brief,* November

García Osío, G.; Rodríguez Balza, R.; Marcano, L.; Penfold, R. and Sánchez, G. (1997) 'La Sostenibilidad de la Política Fiscal en Venezuela', *Revista del Banco Central de Venezuela* 11.2: 11–103

Gary, I. and Karl, T.L. (2003) *Bottom of the Barrel: Africa's Oil Boom* and the Poor, Catholic Relief Services, June

Gelb, A. and associates (1988) *Oil Windfalls: Blessing or Curse?,* New York: Oxford University Press

Global Witness (1999) 'A Crude Awakening: The Role of the Oil and Banking Industries in Angola's Civil War and the Plundering of State Assets', *Global Witness Report* December, London and Washington DC

Glyfalson, T.; Herbertsson, T.T. and Zoega, G. (1999) 'A Mixed Blessing: Natural Resources and Economic Growth', *Macroeconomic Dynamics* 3 June: 204–25

Gwen, B.; Isham, J.; Pritchett, L. and Woolcock, M. (2004) *The Varieties of Resource Experience: How Natural Resource Export Structures Affect the Political Economy of Economic Growth,* Middlebury College Economics Discussion Paper 03-08R, Middlebury VT

Hannesson, R. (2001) *Investing for Sustainability: The Management of Mineral Wealth,* Boston: Kluwer Academic Press

Harford, T. and Klein, M. (2005) 'Aid and the Resource Curse', *World Bank Public Policy for the Private Sector* 291, Washington DC: World Bank

Hausmann, R. and Rigobon, R. (2003) 'An Alternative Explanation of the Resource Curse', in J. Davis, R. Ossowski and A. Fedelino (eds), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries,* Washington DC: International Monetary Fund

Hausmann, R.; Powell, A. and Rigobon, R. (1993) 'An Optimal Spending Rule Facing Mineral Income Uncertainty (Venezuela)', in E. Engel and P. Meller (eds), *External Shocks and Stabilization Mechanisms,* Washington DC: Inter-American Development Bank

Heilbrunn, J. (2002) 'Governance and Oil Funds', mimeo, Washington DC: World Bank

Hill, C. (1991) 'Managing Commodity Booms in Botswana', *World Development* 19.9: 1185–96

Hirschman, A.O. (1958) *The Strategy of Economic Development,* New Haven: Yale University Press

Hohe, T. (2002) 'The Clash of Paradigms: International Administration and Local Political Legitimacy in East Timor', *Contemporary Southeast Asia* 24.3: 569–89

Humphreys, M. (2005) 'Natural Resources Conflict and Conflict Resolution: Uncovering the Mechanisms', *Journal of Conflict Resolution* 49.4 August: 508–37

Humphreys, M. and Sandbu, M.E. (2007) Chapter 8, 'The Political Economy of Natural Resource Funds', in M. Humphreys, J.D. Sachs and J.E. Stiglitz (eds), *Escaping the Resource Curse,* New York: Columbia University Press

IMF (2007a) *Algeria: Statistical Appendix,* IMF Staff Country Report 07/95, Washington DC: International Monetary Fund

—— (2007b) *Chad: Selected Issues and Statistical Appendix,* IMF Staff Country Report 07/28

—— (2007c) *Islamic Republic of Iran: Statistical Appendix,* IMF Staff Country Report 07/101

—— (2007d) *Nigeria: Third Review Under the Policy Support Instrument-Staff Report; Staff Statement; Press Release on the Executive Board Discussion; and Statement by the Executive Director for Nigeria,* IMF Staff Country Report 07/263

—— (2007e) *Peru: First Review Under the Stand-By Arrangement-Staff Report; Staff Statement Press Release on the Executive Board Discussion; and Statement by the Executive Director for Peru,* IMF Staff Country Report 07/241

—— (2007f) *Peru: Fourth and Fifth Reviews Under the Stand-By Arrangement and Request for Waiver of Applicability – 2006 Staff Report; Staff Supplement; and Press Release on the Executive Discussion Consideration,* IMF Staff Country Report, 07/114

—— (2007g) *Republic of Azerbaijan: 2007 Article IV Consultation – Staff Report; Public Information Notice on the Executive Board Decision; and Statement by the Executive Director for the Republic of Azerbaijan,* IMF Staff Country Report 07/191

—— (2007h) *Trinidad and Tobago: Statistical Appendix,* IMF Staff Country Report 07/9

—— (2006a) *Algeria: Statistical Appendix,* IMF Staff Country Report 06/102

—— (2006b) *Colombia: 2006 Article IV Consultation and the Third and Final Review Under Stand-by Arrangement – Staff Report; Public Information Notice and Press Release on the Executive Board Discussion; and Statement by the Executive Director for Colombia,* IMF Staff Country Report 06/408

—— (2006c) *Colombia: Second Review Under the Stand-by Arrangement and Request for Rephasing of Purchases – Staff Report; Staff Supplement; and Press Release on the Executive Board Consideration,* IMF Staff Country Report 06/234

—— (2006d) *Ecuador: 2005 Article IV Consultation – Staff Report; Staff Statement; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for Ecuador,* IMF Staff Country Report 06/98

—— (2006e) *Russian Federation: Statistical Appendix,* IMF Staff Country Report 06/431

—— (2005a) *Algeria: Selected Issues,* IMF Staff Country Report 05/52

—— (2005b) *Algeria: Statistical Appendix,* IMF Staff Country Report 05/51

—— (2005c) *Azerbaijan Republic: Statistical Appendix,* IMF Staff Country Report 05/18

—— (2005d) *Guide on Resource Revenue Transparency,* www.imf.org/external/pubs/ft/grrt/eng/060705.htm (accessed 2 July 2007)

—— (2005e) *Republic of Azerbaijan: Fifth Review Under the Poverty Reduction and Growth Facility and Request for Waiver of Performance Criteria – Staff Report; Press Release on the Executive Board Discussion; and Statement by the Executive Director for the Republic of Azerbaijan,* IMF Staff Country Report 05/260

—— (2005f) *Republic of Kazakhstan: Statistical Appendix,* IMF Staff Country Report 05/239

—— (2004a) *Algeria: Selected Issues and Statistical Appendix,* IMF Staff Country Report 04/31

—— (2004b) *Chad: Statistical Appendix,* IMF Staff Country Report 04/115

—— (2004c) *Islamic Republic of Iran: Selected Issues,* IMF Staff Country Report 04/308

—— (2004d) *Islamic Republic of Iran: Statistical Appendix,* IMF Staff Country Report 04/307

—— (2004e) *Nigeria: Selected Issues and Statistical Appendix,* IMF Staff Country Report 04/242

—— (2004f) *Republic of Kazakhstan: Selected Issues,* IMF Staff Country Report 04/362

—— (2003a) *Algeria: Selected Issues and Statistical Appendix,* IMF Staff Country Report 03/69

—— (2003b) *Azerbaijan Republic: Selected Issues and Statistical Appendix,* IMF Staff Country Report 03/130

—— (2003c) *Colombia: First Review Under the Stand-By Arrangement – Staff Report; Press Release on the Executive Board Discussion; and Statement by the Executive Director for Colombia,* IMF Staff Country Report 03/181

—— (2003d) *Ecuador: Selected Issues and Statistical Appendix,* IMF Staff Country Report 03/01

—— (2003e) *Peru: Statistical Appendix,* IMF Staff Country Report 03/73

—— (2003f) *Republic of Kazakhstan: Selected Issues and Statistical Appendix,* IMF Staff Country Report 03/211

—— (2003g) *Russian Federation: Statistical Appendix,* IMF Staff Country Report 03/145

—— (2003h) *Trinidad and Tobago: Selected Issues and Statistical Appendix,* IMF Staff Country Report 03/233

—— (2002a) *Azerbaijan Republic: Selected Issues and Statistical Appendix,* IMF Staff Country Report 02/41

—— (2002b) *Chad: 2001 Article IV Consultation, Third Review Under the Second Annual Program Under the Three-Year Arrangement Under the Poverty Reduction and Growth Facility and Requests for Augmentation of Access and for Waiver of Performance Criteria – Staff Report; Public Information Notice on the Executive Board Decision; and Statement by the Executive Director for Chad,* IMF Staff Country Report 02/29

—— (2002c) *Chad: Statistical Appendix,* IMF Staff Country Report 02/28

—— (2002d) *Islamic Republic of Iran: Selected Issues and Statistical Appendix,* IMF Staff Country Report 02/212

—— (2002e) *Republic of Kazakhstan: Selected Issues and Statistical Appendix,* IMF Staff Country Report 02/64

—— (2001a) *Algeria: Statistical Appendix,* IMF Staff Country Report 01/163

—— (2001b) *Republic of Kazakhstan: Selected Issues and Statistical Appendix,* IMF Staff Country Report 01/20

—— (2000a) *Azerbaijan Republic: Recent Economic Developments and Selected Issues,* IMF Staff Country Report 00/121

—— (2000b) *Colombia: Statistical Appendix,* IMF Staff Country Report 00/12

—— (2000c) *Ecuador: Selected Issues and Statistical Annex,* IMF Staff Country Report 00/125

—— (2000d) *Nigeria: Statistical Appendix,* IMF Staff Country Report 00/6

—— (2000e) *Republic of Kazakhstan: Selected Issues and Statistical Appendix,* IMF Staff Country Report 00/29

—— (1999a) *Chad: Recent Economic Developments,* IMF Staff Country Report 99/45

—— (1999b) *Colombia: Selected Issues and Statistical Appendix,* IMF Staff Country Report 99/6

—— (1999c) *Islamic Republic of Iran: Statistical Appendix,* IMF Staff Country Report 99/37

—— (1999d) *Peru: Statistical Annex,* IMF Staff Country Report 99/75

—— (1999e) *Venezuela: Statistical Appendix,* IMF Staff Country Report 99/111

—— (1998a) *Algeria: Selected Issues and Statistical Appendix,* IMF Staff Country Report 98/87

—— (1998b) *Azerbaijan Republic: Recent Economic Developments,* IMF Staff Country Report 98/83

—— (1998c) *Islamic Republic of Iran: Recent Economic Developments,* IMF Staff Country Report 98/27

—— (1998d) *Nigeria: Selected Issues and Statistical Appendix,* IMF Staff Country Report 98/78

—— (1998e) *Republic of Kazakhstan: Recent Economic Developments,* IMF Staff Country Report 98/84

—— (1998f) *Trinidad and Tobago: Statistical Appendix,* IMF Staff Country Report 98/80

—— (1998g) *Venezuela: Recent Economic Developments,* IMF Staff Country Report 98/117

Isham, J.; Woolcock, M.; Pritchett, L.H. and Busby, G. (2007) 'The Varieties of the Resource Experience: Natural Resource Export Structures and the Political Economy of Economic Growth', *World Bank Economic Review*

Ize, A. (1996) *Capital Inflows in the Baltic Countries, Russia and Other Countries of the Former Soviet Union: Monetary and Prudential Issues,* IMF Working Paper WP/96/22, Washington DC: International Monetary Fund

Jiménez, J.P. and Tromben, V. (2006) 'Política Fiscal y Bonanza: Impacto del Aumento de los Precios de los Productos no Renovables en América Latina y el Caribe', *Revista de la CEPAL* 90: 61–86

Jones Luong, P. and Weinthal, E. (2001) 'Prelude to the Resource Curse: Explaining Oil and Gas Development Strategies in the Soviet Successor States and Beyond', *Comparative Political Studies* 34.4: 367–99

Kalyuzhnova, Y. and Kaser, M. (2005) *Prudential Management of Hydrocarbon Revenues in Resourch-Rich Economies,* United Nations Economic Commission for Europe Discussion Paper 5, New York

Kane, T.; Holmes, K.R. and O'Grady, M.A. (2007) *2007 Index of Economic Freedom,* Washington DC and New York: The Heritage Foundation and *The Wall Street Journal*

Karl, T.L. (1997) *The Paradox of Plenty: Oil Booms and Petro-States,* Berkeley: University of California Press

Katz, M.; Bartsch, U.; Malothra, H. and Cuc, M. (2004) *Lifting the Oil Curse: Improving Petroleum Revenue Management in Sub-Saharan Africa,* Washington DC: International Monetary Fund

Kopits, G. (2004) *Rules-Based Fiscal Policy in Emerging Markets: Background, Analysis and Prospects,* New York: Palgrave Macmillan

Krueger, A.O. (1974) 'The Political Economy of the Rent-Seeking Society', *The American Economic Review* 64.3 June: 291–303

Kydland, F. and Prescott, E. (1977) 'Rules Rather than Discretion: The Inconsistency of Optimal Plans', *Journal of Political Economy* 85: 473–90

Lane, P. and Tornell, A. (1999) 'Voracity and Growth', *American Economic Review* 89.1: 22–46

Lange, G. and Wright, M. (2004) 'Sustainable Development in Mineral Economies: The Example of Botswana', *Environment and Development Economics* 9: 485–505

Leite, C. and Weidmann, J. (1999) *Does Mother Nature Corrupt? Natural Resources, Corruption and Economic Growth,* IMF Working Paper WP/99/85, Washington DC: International Monetary Fund

Leith, J.C.; Sackey, J. and Bruns, D. (1999) *Botswana: A Case Study of Economic Policy Prudence and Growth,* World Bank Working Paper 20004, Washington DC: World Bank

Liuksila, C.; García, A. and Bassett, S. (1994) *Fiscal Policy Sustainability in Oil-Producing Countries,* IMF Working Paper WP/94/137, Washington DC: International Monetary Fund

Manzano, O. and Rigobon, R. (2001) *Resource Curse or Debt Overhang,* NBER Working Paper 8390, New York: National Bureau of Economic Research

Marshall, M.G. and Jaggers, K. (2005) *Political Regime Characteristics and Transitions, 1800–2004: Dataset Users' Manual,* Arlington, VA: Polity IV Project

Mathrani, S. (2003) *Evaluation of the World Bank Group's Activities in the Extractive Industries, Background Paper, Papua New Guinea Country Case Study,* World Bank Operations Evaluation Department Document 29454, Washington DC: World Bank

Mehlum, H., Moene, K. and Torvik, R. (2006) 'Curses by Resources or Institutions?', *The World Economy:* 1117–31

—— (2002) *Institutions and the Resource Curse,* University of Oslo Department of Economics 29

Mejía Acosta, A. and de Renzio, P. (2007) *Aid, Resource Rents and the Politics of the Budget Process: A Literature and Data Review Prepared for the Department for International Development,* Brighton: IDS

Mejía Acosta, A.; Albornoz, V. and Araujo, M.C. (2006) *The Political Economy of the Budget Process: The Case of Ecuador,* IDB Economic and Sector Study Series RE3-06-009, Washington DC: Inter-American Development Bank

Mihaljek, D. (2005) *Local Complications of Global Economic Integration: Privatisation Receipts and Volatile Export Earnings,* BIS Papers 23 May: 81–90

Ministerio de Hacienda (Gobierno de Chile) (2005) *Medidas del Gobierno para la Estabilización de Precios de los Combustibles,* 5 September, www.hacienda.gov.cl/prensa.php?opc=showContenido&id=10958&nav_id=184&contar=1&tema_id=&code=saZPkUh79zS82 (accessed 19 August 2007)

Moore, M. (2005) 'Rich World, Poor World', *Boston Review* 30.1

—— (2004) 'Revenues, State Formation and the Quality of Governance in Developing Countries', *International Political Science Review* 25.3: 297–319

Myers, R. and Thompson, S. (1993) 'Managing Mineral Import Price Risk in Costa Rica: Strategies and Benefits', in S. Claessens and R. Duncan (eds), *Managing Commodity Price Risk in Developing Countries,* Baltimore: The Johns Hopkins University Press (for the World Bank)

Norges Bank (2007) *The Government Pension Fund – Global,* www.norges-bank.no/Pages/Article____41137.aspx (accessed 15 August 2007)

OPEC (2006–1999) *Annual Statistical Bulletins 2006–1999,* Vienna

Palley, T.I. (2003) 'Combating the Natural Resource Curse with Citizen Revenue Distribution Funds: Oil and the Case of Iraq', *Foreign Policy In Focus Special Report,* December

Persson, T. and Tabellini, G. (2005) *The Economic Effects of Constitutions,* Cambridge, Mass. and London, England: The MIT Press

—— (2002) *Political Economics: Explaining Economic Policy,* Cambridge, Mass. and London, England: The MIT Press

Petersen, C.E. and Budina, N. (2002) *Governance Framework of Oil Funds: The Case of Azerbaijan and Kazakhstan,* Columbia Earth Institute Working Paper, New York

Pinto, B. (1987) 'Nigeria During and After the Oil Boom: A Policy Comparison with Indonesia', *World Bank Economic Review* 1.3: 419–45

Prebisch, R. (1950) *The Economic Development of Latin America and Its Principal Problems,* Lake Success, NY: United Nations

Purfield, C. (2005) *Managing Revenue Volatility in a Small Island Economy: The Case of Kiribati,* IMF Working Paper WP/05/154, Washington DC: International Monetary Fund

Ramey, G. and Ramey, V.A. (1994) *Cross-Country Evidence on the Link between Volatility and Growth,* NBER Working Paper Series, December: 4959

Republica Democratica de Timor-Leste (2004) *Establishing a Petroleum Fund for Timor-Leste,* Ministry of Planning and Finance Public Consultation Discussion Paper, Dili

Rigobon, R. (2006) 'Ecuador's Stabilization Policy', mimeo

—— (2001) *Un Fondo de Estabilización para Venezuela: Una Discusión, Opinion y Analisis,* Analitica Consulting

Robinson, J.A.; Torvik, R. and Verdier, T. (2005) 'Political Foundations of the Resource Curse', *Journal of Development Economics*

Rodrik, D.; Subramanian, A. and Trebbi, F. (2002) *Institutions Rule: The Primacy of Institutions over Integration and Geography in Development,* NBER Working Paper 9305, New York: National Bureau of Economic Research

Rosenberg, C.B. and Saavalainen, T.O. (1998) *How to Deal with Azerbaijan's Oil Boom? Policy Strategies in a Resource-Rich Transition Economy,* IMF Working Paper WP/98/6, Washington DC: International Monetary Fund

Ross, M. (2001) *Extractive Sectors and the Poor,* Oxfam America Report, October

—— (2000) *Does Resource Wealth Cause Authoritarian Rule?,* Washington DC: World Bank

—— (1999) 'The Political Economy of the Resource Curse', *World Politics* 51.2: 297–322

Rosser, A. (2004) *Why did Indonesia Overcome the Resource Curse?,* IDStudies Working Paper 222, Brighton: IDS

Sachs, J.D. and Warner, A.M. (2001) 'The Curse of Natural Resources', *European Economic Review* 45: 827–38

—— (1999) 'The Big Push, Natural Resource Booms and Growth', *Journal of Development Economics* 59: 43–76

—— (1995) *Natural Resource Abundance and Economic Growth,* HIID Development Discussion Paper 517a, Cambridge MA: Harvard Institute for International Development

Sala-i-Martin, X. and Subramanian, A. (2003) *Addressing the Natural Resource Curse: An Illustration from Nigeria,* NBER Working Paper 9804, New York: National Bureau of Economic Research

Salant, S.W. (1995) 'The Economics of Natural Resource Extraction: A Primer for Development Economists', *The World Bank Research Observer* 10.1 February: 93–111

Saldanha, J.M.S. (1994) *The Political Economy of East Timor Development,* Jakarta: Pustaka Sinar Harapan

Sandbu, M.E. (2005) *Natural Wealth Accounts: A Proposal for Alleviating the Natural Resource Curse,* Philadelphia: The Wharton School of Business

—— (2004) *Taxable Resource Revenue Distributions: A Proposal for Alleviating the Natural Resource Curse,* New York: Center on Globalization and Sustainable Development, Columbia University Earth Institute

Sapsford, D. and Balasubramanyam, V.N. (1994) 'The Long-Run Behavior of the Relative Price of Primary Commodities', *World Development* 22.11

Sarraf, M. and Jiwanji, M. (2001) *Beating the Resource Curse: The Case of Botswana,* World Bank Environment Department Papers 83, Report 24753, Washington DC: World Bank

Schick, A. (1998) 'Why Most Developing Countries Should Not Try New Zealand Reforms', *World Bank Research Observer* 13.1: 123–31

Shafer, D.M. (1994) *Winners and Losers: How Sectors Shape the Developmental Prospects of States,* Ithaca, NY: Cornell University Press

Sherlock, S. (1996) 'Political Economy of the East Timor Conflict', *Asian Survey* 36.9: 835–51

Skancke, M. (2002) 'Fiscal Policy and Petroleum Fund Management in Norway', paper presented at the IMF Conference on Fiscal Policy Formulation and Implementation in Mineral-Producing Countries, Washington DC, 5–6 June

Solow, R.M. (1986) 'On the Intergenerational Allocation of Natural Resources', *Scandinavian Journal of Economics* 88.1: 141–9

Sovereign Wealth Fund Institute (2008) www.swfinstitute.org

Statistics Norway (2007) *Population-Statistics by Subject 02,* www.ssb.no/english/subjects/02/ (accessed 20 August 2007)

Stephan, E. (2003) *Leaky Pipeline: Addressing Incomplete Oil Revenues Strategies in Azerbaijan and Kazakhstan*

Stevens, P.J. (2006) '"Resource Curse" and How to Avoid it', *Journal of Energy and Development* 31.1: 1–20

Tersman, G. (1991) *Oil. National Wealth and Current and Future Consumption Possibilities,* IMF Working Paper WP/91/60, Washington DC: International Monetary Fund

The Economist (2008) 'A Funny Way to Beat Inflation', 19 Jun

—— (2007a) 'Governments Go Shopping', 28 July

—— (2007b) 'Keep Your T-bonds, We'll Take the Bank', 28 July

—— (2007c) 'The World's Most Expensive Club', 24 May

—— (2005) 'The Paradox of Plenty – the Curse of Oil', 24 December

Tinker-Salas, M. (2005) 'Fueling Concern: The Role of Oil in Venezuela', *Harvard International Review:* Energy 26.4 Winter

Transparency International (2008) *TI Corruption Perceptions Index,* www.transparency.org/policy_research/surveys_indices/cpi (accessed 20 May 2008)

Truman, E.M. (2007) *Sovereign Wealth Funds: The Need for Greater Transparency and Accountability,* Peterson Institute for International Economics Policy Brief PB07-6, 1-9, Washington DC

Tsalik, S. (2003) *Caspian Oil Windfalls: Who Will Benefit?,* New York: Open Society Institute

Usui, N. (1997) 'Dutch Disease and Policy Adjustments to the Oil Boom: A Comparative Study of Indonesia and Mexico', *Resources Policy* 23.4: 151–62

van den Noord, P. (2000) *The Tax System in Norway: Past Reforms and Future Challenges,* OECD Economics Department Working Paper 244, Paris

Varangis, P. and Larson, D. (1996) *Dealing with Commodity Price Uncertainty,* World Bank Policy Research Working Paper 1667

Warrack, A.A. and Keddie, R.R. (2002) 'Natural Resource Trust Funds: A Comparison of Alberta and Alaska Resource Funds', *University of Alberta Western Centre for Economic Research Bulletin* 72, September

Williams, E.W. (2007) 'The Heritage and Stabilization Fund of Trinidad and Tobago', address given at the Heritage and Stabilization Fund Forum, Port-of-Spain, 2 May

World Bank (2006) *World Bank Governance Indicators,* Washington DC: World Bank

World Bank (2005) *Chad Oil Revenues: Watching How the Money Is Spent,* 6 June, Washington DC: World Bank, http://go.worldbank.org/PHUUTAMAT0 (accessed 18 August 2005)

—— (1999) *Commodity Risk Management in Developing Countries: Proposal for a Market-based Approach,* International Task Force on Commodity Risk Management in Developing Countries

—— (1994) *Nigeria Macroeconomic Risk Management: Issues and Options,* World Bank Report 11983-UNI, August, Washington DC: World Bank

Zissis, C. (2007) *Chad's Oil Troubles,* Council on Foreign Relations, 27 April, www.cfr.org/region/167/chad.html (22 July 2007)