



Boom–bust cycle, asymmetrical fiscal response and the Dutch disease

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ABSTRACT

This paper investigates the changes in expenditure policy in oil-exporting countries during boom–bust in commodity price cycles, and their implications for real exchange rate movements. To do so, we introduce a Dutch disease model with downward rigidities in government spending to revenue shocks. This model leads to a decoupling between real exchange rate and commodity export price movement during busts. We test our model's theoretical predictions and underlying assumptions using panel data for 32 oil-exporting countries over the period 1992 to 2009. Results are threefold. First, we find that changes in current spending have a stronger impact on real exchange rate compared to capital spending. Second, we find that current spending is downwardly sticky, but increases in boom time, and conversely for capital spending. Third, we find limited evidence that fiscal rules have helped reduce the degree of responsiveness of current spending during booms. In contrast, we find evidence that fiscal rules are associated with a significant reduction in capital expenditure during busts while responsiveness to booms is more muted. This raises concerns on potential adverse consequences of this asymmetry on economic performance in oil-exporting countries.

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1. Introduction

Resource-rich countries often experience large movements in their export receipts as a result of sharp swings in commodity prices. Governments in resource-rich countries are the recipients of income flow resulting from the exploitation of natural resources, and thus play an important role in how the natural resource windfalls are used and distributed.¹ In turn, those decisions may impact the competitiveness of those resource-rich countries. This paper investigates changes in expenditure policy during booms and busts in commodity price cycles and their implications for real effective exchange rate (REER) movements.

More specifically, the present paper documents and explains the limited downward adjustment in REER during commodity price busts. *Figs. 1 and 2* in *Appendix A* show the evolution of the logarithm of the real effective exchange rate and the oil export unit value for, respectively, Nigeria and Venezuela over the period 1992

to 2009. The real exchange appreciates when the oil export unit value increases, as shown in *Figs. 1 and 2*. The latter illustrates a well-documented phenomena often referred to as Dutch disease. In contrast, *Figs. 1 and 2* also show that oil price busts were not accompanied by commensurate decreases in the real exchange rate. The objective of this paper is to study and explain this asymmetry in the impact of oil price on real exchange rates in oil-exporting countries.

This phenomenon is most likely rooted in political pressures that governments in resource-rich countries face. Those pressures are such that it may be far easier to increase public expenditure during commodity price booms than to cut public expenditure during commodity price busts. In other words, bias in the fiscal response to commodity price shocks may explain the tendency for the level of the REER to remain elevated in commodity-rich countries following a decrease in commodity prices. For the most part, commodity-rich countries continued to accumulate debt as public expenditure failed to adjust sufficiently downwards following commodity price decreases, as documented in *Arezki and Bruckner (2010)*.

The implication of this asymmetry for the REER relates to the higher import content of public capital expenditure, and thus the limited impact of such expenditure on exchange rate appreciation relative to current expenditure such as wages, subsidies and services.

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¹ Governments are often involved in the natural resource sector either through taxation, royalties, the sale of licenses to foreign companies, or more directly through government-owned company.

However, the higher domestic content of current spending also means that it is more susceptible to interest group lobbying, and the wage bill and subsidies particularly may be difficult to adjust downward due to the adverse impact this may have on the vulnerable segment of the population. Thus, resource-rich countries going through a commodity price bust may rely more on cuts in capital expenditure than in current expenditure. This results in a lesser adjustment to the real exchange rate than would have been the case under a more symmetric pattern of adjustment in public expenditure. In turn, this may have adverse consequences on non-resource tradable production and on the overall economic performance of resource-rich countries over the medium and long term.

To illustrate that phenomenon more formally, this paper introduces a Dutch disease model with downward stickiness in the public expenditure response to commodity price shocks. This model leads to a decoupling between REER and commodity price movement during busts. We test our model's theoretical predictions and underlying assumptions using panel data for 32 oil-producing countries over the period 1992 to 2009. Results are threefold. First, we find that changes in current spending have a bigger impact on movements in REER compared to capital spending. Second, we find that current spending is downwardly sticky, but increases in boom time and conversely for capital spending. Third, we find limited evidence that fiscal rules have helped reduce the degree of responsiveness of current spending during booms. In contrast, we find evidence that fiscal rules are associated with a significant reduction in capital expenditure during busts while responsiveness to booms is more muted, which raises concerns about potential adverse consequences on economic performance in oil-exporting countries.

This paper is related to the literature on the Dutch disease. The theoretical literature on the Dutch disease has mainly focused on the implications of resource booms on the REER, as opposed to the implications of resource busts that we explore in this paper.² The most basic static Dutch disease models distinguish two effects namely the “spending effect” and “relocation effect”. First, the spending effect relates to higher domestic natural resource rents as a result of the boom leading to increased expenditure on both tradable and non-tradable goods. In a small open economy, the price of tradable goods is determined by international market conditions and so does not rise despite the increased domestic spending; in contrast, the price of non-tradable goods is set in the domestic market, and thus does rise. The higher relative price of non-tradable goods makes domestic production of tradable goods less attractive, and so their output declines. A second effect emerges if, in addition, the booming sector shares domestic factors of production with other sectors, so that its expansion tends to bid up the prices of these factors. The resulting resource movement effect reinforces the pressures on the REER to appreciate (i.e., a rise in the relative price of non-tradable goods and services) and on the tradable goods sector to shrink, a result commonly termed Dutch disease.

The empirical evidence for the Dutch disease is rather mixed and mostly based on country case studies. Cross-country studies which found mixed evidence of the Dutch disease include Gelb et al. (1988), and Spatafora and Warner (1999). These studies find no evidence of Dutch disease in the manufacturing sector using various samples of oil-exporting countries. In contrast, Ismail (2010a) finds evidence of Dutch disease using industry sector data for oil-exporting countries, but with a relatively slow path of industrial adjustment to oil shocks.³ Moreover, Ismail (2010b) finds no evidence that the slow response

may be explained by capital adjustment costs. This paper examines the consequences of another rigidity, that is stickiness in public expenditure response to revenue shock.

This paper is also related to the literature on the political economy of fiscal policy. Most noticeably, Alesina and Perrotti (1994) provide a survey of the literature on politico-institutional determinants of the government budget.⁴ They show evidence that the accumulation of large budget deficit in OECD during the 1980s and 1990s cannot be explained by standard models such as the ‘tax smoothing’ model. However, Alesina and Perrotti (1994) show that political economy models are better suited in explaining such developments. They thus argue that the design of fiscal institutions should account for those politico-institutional factors. More specifically, asymmetries in fiscal response to cyclical effects is examined in some work related to the deficit ceiling under the Stability and Growth Pact adopted by European Union member countries. Balassone and Francese (2004) finds in a sample of OECD countries that budgetary balances were deteriorating in contraction and not improving in expansion. Melitz (1997) finds evidence in a sample of OECD countries that automatic stabilizers are weak relative to discretionary fiscal policy and finds periods of expansion to be accompanied by increased government expenditure.

The focus of this paper is exclusively on oil-exporting countries. Oil-exporting countries face large shocks due to the significance of oil export receipts relative to the size of these economies. As a result, oil-exporting countries may face greater challenges than other countries when adjusting to these fluctuations, given the stickiness in public expenditure. Also, focusing on oil-rich countries rather than all resource-rich countries ensures the relative homogeneity in the effects of boom-bust commodity price cycles on the REER and the expenditure composition. Indeed, a recent literature has shown the importance of not pooling commodities when analyzing the effects of resource rents on economic growth, as documented in Isham et al. (2005).

The remainder of the paper is organized as follows. Section 2 presents the theoretical model of Dutch disease with stickiness in government expenditure; Section 3 explains our estimation strategy and main empirical results; and Section 5 concludes.

2. Theoretical model

In order to illustrate the impact of asymmetrical fiscal responses to external shocks on the REER, we build a Dutch disease model with stickiness in government non-tradable spending. This translates into stronger persistence in current expenditure than in capital expenditure assuming current spending is associated with more intensive consumption of non-tradables. This stickiness may be explained by the difficulty to conduct fiscal adjustment from a political standpoint, especially in the case of current expenditure cuts. Moreover, downward fiscal adjustment may be more difficult due to the presence of various groups that exert political pressures on the government, or where rent-seeking behavior is widespread. Downward fiscal adjustment may be a source of concern because of potential consequences on the vulnerable segment of the population, especially where social safety nets are lacking. Thus, our model includes two asymmetries; one asymmetry is between capital expenditure and harder-to-cut current spending in response to revenue shocks, and the other asymmetry is between the upward and downward flexibility of current spending. We model this rigidity in government's fiscal response using quadratic costs of adjustment.⁵

² See Corden and Neary (1982), Corden (1984), van Wijnbergen (1984) for early contributions.

³ Rajan and Subramanian (2005) found some evidence that development aid causes real appreciation and a relative shrinkage of the labor-intensive tradable sector in aid-receiving countries.

⁴ See Eslava (2006) for a survey of the more recent work on the political economy of fiscal policy.

⁵ Engel and Valdés (2000) also uses quadratic costs of adjustment to model fiscal policy frictions.

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