

Brazil has recently discovered huge new oilfields off its coast – but will these natural resources be a blessing or a curse? **Francesco Caselli** and **Guy Michaels** investigate whether it has been the Brazilian people or their locally elected representatives who have benefited most from past oil windfalls.

A resource curse?

The impact of oil windfalls on living standards in Brazil

When a country or a community discovers oil in their subsoil or off their coast, should they rejoice or mourn? Should citizens be thrilled or worried when their governments receive fiscal windfalls? It might seem that the answers to these questions are obvious: how could finding an abundance of natural resources or stumbling on greater resources for the government to spend in the community be anything other than wonderful news?

Yet economists are increasingly sceptical and many of them openly entertain the seemingly paradoxical notion that resources and windfalls may actually be bad news. In fact, some go so far as to speak of the 'curse of natural resources'.

Before dismissing this as yet another instance of the economics profession's disconnection from the real world, consider the following list: Angola, Congo, Nigeria, Venezuela and the Middle East. What these places have in common is an abundance of natural resources coupled with varying degrees of abject poverty, state failure and civil war, rampant corruption and political repression.

Think also of the many anecdotes linking foreign aid to dependency and

corruption. It is true that a few countries seem to have managed their natural resources fairly well – Norway is the oft-cited example. But overall the general impression is certainly not one of resources being an undisputed blessing.

The problem with drawing conclusions from comparisons of resource-rich countries with resource-poor countries is that many other differences can give the appearance of a causal relation where in fact there is none. So while it is true that

the Middle East grows (typically) slowly and has lots of oil, the region also differs from the rest of the world in a myriad other social, cultural and institutional dimensions. We cannot be certain that oil – as opposed to one or more of these other characteristics – is the main cause of low growth.

Another problem with cross-country comparisons is that resource abundance tends to be measured by flows of natural-resource exports (often as a share of GDP or total exports). But perhaps poor countries are dependent on resource exports because they are poor rather than being poor because they are dependent on resource exports.

Our research attempts to bypass these difficulties in interpreting cross-country comparisons by looking at Brazilian municipalities, which are administrative units similar in size to the UK's counties. Oil endowments, and hence oil production, vary widely across municipalities, and we show that oil output is not correlated (conditional on a few geographical controls) with other municipal characteristics.

In other words, oil-rich municipalities differ from oil-poor municipalities only because the former have oil and the latter do not. This makes it possible to ask

Brazilian oil windfalls translate into little improvement in public goods provision or people's living standards



Municipal revenues from oil are being spent – but local communities are not seeing the benefits

whether oil has positive or negative effects on other market activities. Furthermore, oil-producing municipalities are entitled to royalties, so we can investigate the consequences of an oil-related revenue windfall for the local government.

We begin by investigating the effects of oil on other market activities, and find that these are small. In particular, if a Brazilian municipality generates one unit of the national currency (the real) of extra value added from oil, this translates into roughly one real of extra aggregate GDP. This indicates that, to a first approximation, oil production has no effects, either negative or positive, on non-oil activities.

We do find some small changes in the composition of non-oil GDP when the oil

is located onshore: the manufacturing sector shrinks and the service sector expands. (These effects are probably due to an expansion of services to oil operations and oil workers.) But offshore oil has little impact on non-oil GDP or on its composition.

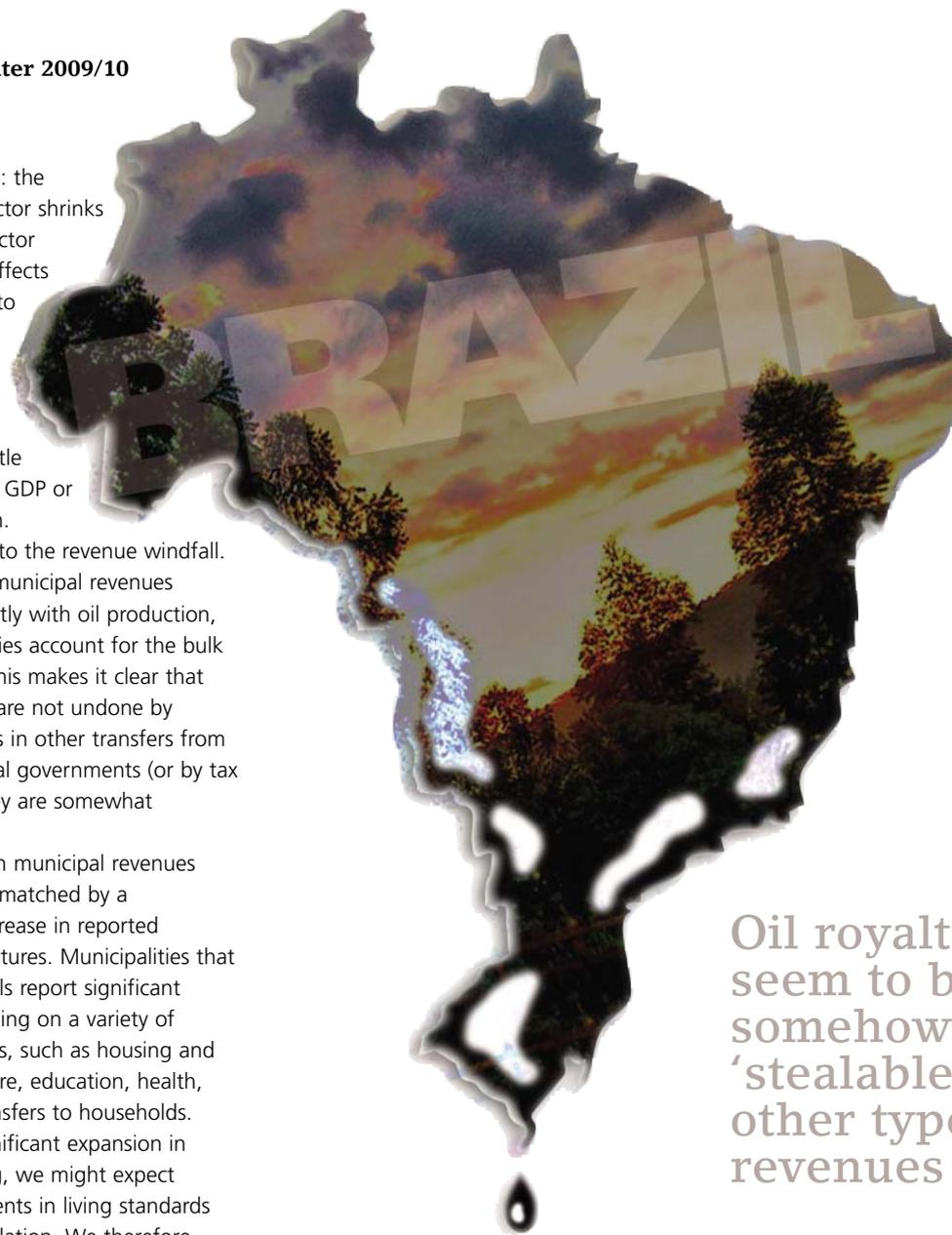
We turn next to the revenue windfall. We confirm that municipal revenues increase significantly with oil production, and that oil royalties account for the bulk of this increase. This makes it clear that royalty payments are not undone by offsetting changes in other transfers from the state or federal governments (or by tax cuts) – in fact, they are somewhat reinforced.

The increase in municipal revenues arising from oil is matched by a corresponding increase in reported municipal expenditures. Municipalities that receive oil windfalls report significant increases in spending on a variety of goods and services, such as housing and urban infrastructure, education, health, transport and transfers to households.

Given the significant expansion in reported spending, we might expect sizable improvements in living standards for the local population. We therefore look at measures of housing quality and quantity, the supply of educational and health inputs, road infrastructure and welfare receipts.

The results paint a complex picture, with no apparent changes in some areas, small improvements in others and a small worsening in yet others. On balance, however, the data appear to suggest that the actual flow of goods, services and transfers to the population is not quite commensurate with the reported spending increases stemming from the windfall. This shortfall we dub 'missing money'.

To confirm that the windfall does not trickle down to the population through other channels, we look at household income and find only minimal improvements. We also show that oil-rich municipalities did not experience a differential increase in population. This implies that our results are not driven by a dilution of the benefits of oil abundance. Furthermore, the fact that people do not



Oil royalties seem to be somehow more 'stealable' than other types of revenues

flock to oil-rich communities reinforces our message that oil abundance has not been viewed as particularly beneficial.

Our finding that oil windfalls translate into little improvement in the provision of public goods or the population's living standards raises a key question: where are the oil revenues going? As a way of addressing this question, we put together a few pieces of tentative evidence:

- First, we find that oil revenues increase the size of municipal workers' houses (but not the size of other residents' houses).
- Second, Brazil's news agency is more likely to carry news items mentioning the mayor and alleged embezzlement, fraud or corruption in municipalities with very high levels of oil output (on an absolute, though not per capita, basis).

- Third, federal police operations are more likely to occur in municipalities with very high levels of oil output (again in absolute terms).
- And finally, we document anecdotal evidence of alleged scandals involving mayors in several of the largest oil-producing municipalities, some of which also involve large sums of money.

How could senior municipal workers have thought that they could 'get away' with large-scale alleged theft in a country where local elections are held regularly? As a partial answer, we note that a survey in the largest oil-producing municipality found considerable ignorance among residents about the scale of the municipal oil windfall.

How much can we generalise from our findings to other settings?

We acknowledge that what might be true for Brazil need not apply to other countries. More importantly, there are a number of prominent explanations for the 'resource curse' that might only operate at the national level.

For example, some argue that resource abundance leads to an overvalued nominal exchange rate, with deleterious consequences for competitiveness. Naturally, this cannot show up across municipalities, which do not print their own currencies. Similarly, our analysis cannot test the hypothesis that resource abundance is a cause of political violence and civil war.

But our results do lend some credence to the view that oil royalties are somehow more 'stealable' than other types of revenues. When we look at the usage and effects of municipal revenues coming from other sources, we find significant differences relative to revenue coming from oil, and the puzzle of 'missing money' is less severe.

This may be because citizens themselves are more tolerant of embezzlement when the money does not come from tax revenues. Or it may be because they have less accurate information on the amounts flowing to the government in the form of oil royalties. We cannot explore these possibilities with our data.

But our findings do suggest that it may be somewhat unwise to channel

revenues from oil operations directly to local governments, at least if the officials are not properly monitored and accountable. For Brazil, this may be an especially important consideration as the system of property rights and royalties will probably be overhauled in response to the recent discovery of huge new offshore oilfields.

Indeed, the issue is clearly of political relevance, with several major federal legislative proposals to reform the royalty system currently pending. Interestingly, most proposals tend to reduce both the share of royalties going to local governments and the discretion that these governments have in using the revenues. In the summer of 2009, the federal government issued its own proposals for the property rights regime of the newly discovered 'pre-salt' giant oilfields.

More generally, our results may inform the debate about increasing transparency requirements both in poor, resource-abundant countries and in countries that receive aid. In particular, it is increasingly common for conditionality-based programmes to feature stringent reporting requirements from multinational oil companies and recipient governments.

Our results suggest that accounting transparency per se may be insufficient. Reporting schemes should document the actual effective disbursement of sums, and not merely their recording on balance sheets.

This article summarises 'Do Oil Windfalls Improve Living Standards? Evidence from Brazil' by Francesco Caselli and Guy Michaels, CEP Discussion Paper No. 960 (<http://cep.lse.ac.uk/pubs/download/dp0960.pdf>).

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