

Empirical Evidence on Natural Resources and Corruption

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This policy brief addresses the relationship between resource wealth and a particular institutional outcome – corruption. We overview some recent empirical evidence on this relationship and outline results of an on-going research project addressing a particular aspect of resource-related political corruption: transformation of resource rents into personal wealth hidden at off-shore deposits. The preliminary results from this project suggest that at least 8 percent of oil and gas rents are converted into personal political rents in countries with poor political institutions.

Natural Resources and Corruption: What Do We Know Empirically

The so called “resource curse”, that is the idea that resource abundance may be detrimental for a country’s growth and institutional development is a reoccurring topic in the development debate (see e.g. a previous FREE policy brief on the topic: “[Are Natural Resources Good or Bad for Development?](#)”). One particular aspect, which lies at the very core of the political-economics explanations of the relationship between resources and development, concerns the relationship between resource wealth and corruption. There are several theories suggesting that in weak institutional environments with poorly protected property rights, political elites may be tempted to use their power to embezzle resource wealth, selling access to exploration and production, etc. In addition, rent-seeking created by resource rents may also spill over to other sectors of economy. Resulting corruption would then adversely impact economic and institutional development, which, in turn, may

further amplify the negative effect of resources.

Despite these theoretical results, the empirical studies on the relationship between natural resources and corruption are relatively few. Some earlier studies have looked at this relationship in a cross-country context. For example, Treisman (2000) documented a positive correlation between the exports of fuels metals and minerals, though this correlation disappears in some subsamples when controlling for economic development and democracy. Similarly, Leite and Weidmann (2002) have related corruption to the exports of fuel, mineral ores, agriculture, and food products. They find that larger exports in fuels and ores are associated with worse corruption scores, while agriculture and food exports are related to less corruption.

While the studies above have indeed established a correlation between resource wealth and corruption, they are not well designed to address the causality of this relation. Not surprisingly, the cross-country approach in the resources-corruption studies suffers from exactly the same issues as in

much of the empirical work on the resource curse in general. Specifically, the cross-country regressions are likely to exhibit omitted variable bias due to unobserved differences in institutions, historical experience, social norms etc. That is, some institutional/historical development of a country could affect both its reliance on resource exports and the prevalence of corruption, and these institutional factors are difficult to control for in cross-country regressions. There is also a potential endogeneity problem: the measure of e.g. volume of resource exports (as well as many alternative measures of resource abundance, such as extraction volumes etc.) may itself be influenced by political corruption and related institutional factors.

Furthermore, the cross-country studies of the relationship between resources and corruption also share some methodological issues with the corruption literature: The measures used for these studies are typically based on expert assessments, and they may well be non-uniform across countries and not particularly precise in measuring corruption. Also, corruption is also a very broad term and corruption at different levels may have varying effects on any particular outcome of interest (see FREE policy brief "[Corruption in Eastern Europe as Depicted by Popular Cross-Country Corruption Indicators](#)" for a more detailed discussion of these problems).

These methodological concerns are approached by the resource-corruption literature in two different ways: by limiting the study to a more narrow within-country context, or, alternatively, by controlling for fixed effects in a cross-country panels.

Within-Country (and "Close Neighbors") Studies

This literature tries to avoid the omitted variable bias by comparing otherwise very similar institutional environments which differ in their resource wealth. Such a relatively narrow perspective would also help to provide

more precise and comparable measures of corruption.

One good example of such an approach is a paper by Vincente (2010) that compares the small island state of San Tome and Principe to the neighboring state of Cape Verde. Both states share similar history and culture (for example, they are both former Portuguese colonies gaining independence in mid-1970s; their nations have common ethnic roots; and, they developed in a similar way after gaining independence). However, in 1997-1999 considerable off-shore oil reserves were discovered in San Tome and Principe. Vincente studies how this discovery affects perceived corruption in the public sector, using the case of (oil-poor) Cape Verde as a control. He finds that the discovery of oil (and expectations of future oil proceeds) have seriously increased corruption, especially in the sectors related to the future possession of political power (such as vote buying, etc.)

Another example is Caselli and Michaels (2013), who study the effects of resource windfalls across coastal municipalities in Brazil, which differ in their oil resources. They show that the oil-rich municipalities are very similar to the oil-poor ones in all characteristics but the possession of oil. This allows them to isolate the causal effect of oil windfall on a number of institutional characteristics, including corruption. Caselli and Michaels show that higher oil rents increase public spending in respective municipalities, but that this increase does not reach ordinary citizens (which suggest corruption and political patronage). They also document a higher number of news stories concerning corruption and the mayor in municipalities with higher levels of oil output.

An additional relevant and interesting study is the paper by Brollo et.al. (2013). They use very detailed corruption data from the series of audits in Brazilian municipalities to address the effect of budgetary transfers on local corruption. They argue that the size of the transfer is exogenous to the municipal political characteristics, so the variation in the transfer

rate can be used for identification of the effect of the transfer windfall (similar to a resource windfall). Again, they find that an increase in federal transfers leads to more corruption, and, in relative terms, even more so for severe corruption episodes.

Fixed Effects in Cross-Country Panels

Another approach to establish the direction of causality in the relationship between resources and corruption is based on multi-country analysis. In order to avoid the omitted variable bias, these studies turn to panel-data fixed-effects estimation methods. These methods allow linking within-country variation in resource rents to within-country variation in corruption, thereby helping to control for country-specific (or, in some specifications, region-specific) factors in the regressions. The same technique helps to deal with the heterogeneity of corruption assessments across countries.

Among these studies one can mention Bhattacharyya and Hodler (2010), Aslaksen (2011) and Arezki and Brüchner (2011). Bhattacharyya and Hodler (2010) perform the analysis for a large panel of countries and show that the relationship between the resource wealth and corruption depends on the quality of institutions: resources increase corruption only in less democratic states. Aslaksen (2011), using a comparably large dataset, finds that the effect of resource wealth on corruption is non-uniform across different resource types, and so it is conditioning on institutional performance. In particular, an improvement in democracy score lowers the negative effect of mineral wealth on corruption, but not the effect of oil on corruption. Arezki and Brüchner (2011) concentrate on the effect of oil wealth and study a smaller sample of mostly non-democratic oil producers. They show that an increase in oil rents significantly increases corruption, and that the effect is mostly driven by countries with high state participation in oil production. Conversely, the effect is absent for

the countries where the oil industry is mostly private. These findings suggest that political corruption constitutes a large share of resource-associated corruption.

Political Corruption: Petro Rents and Hidden Wealth

An ongoing study by Andersen, Johannesen, Lassen and Paltseva (2013) takes a closer look at the resource-related political corruption. We address a particular aspect of corruption – the transformation of the resource rents into hidden personal wealth. There is ample anecdotal evidence on political elites appropriating rents from natural resources, in particular in the oil and gas sector, and diverting them abroad. For example, a 2011 report by the Financial Action Task Force lists 32 case studies of grand corruption, of which 27 involved foreign bank accounts. However, there has been little, if any, systematic research on this issue. The aim of our study is to provide the first large-scale cross-country study of the relationship between oil and gas rents and financial flows from resource extracting countries to banks in a wide range of international locations.

Our key innovation in this project is the use of deposit data from the Bank of International Settlements (BIS). There are just above 40 countries reporting to BIS, including both major tax heavens (such as Switzerland, Bahamas or Cayman Islands) and other financial centers (e.g. US, UK or Germany). Each of the reporting countries submits information about the total bank deposits in their country, owned by residents of effectively all of the world's countries. That is, we can see the amount of deposits held by the residents of Sweden in Switzerland, or by the residents of Russia in the Bahamas. We use this data to construct the annual country-level values of deposits held in off-shore and on-shore jurisdictions for a wide panel of the world's countries for the period 1977-2008. One important feature of this data is that, unlike the corruption indexes, it is perfectly

comparable across jurisdictions, in particular, because the data providers do not have any incentives to manipulate the data.

Equipped with these novel measures, we study how oil and gas rents relate to the foreign deposits held in tax havens. Both theoretical and empirical literature suggests that this relation is likely to be affected by the political regime. Indeed, we find that the rents from oil and gas significantly increase tax haven deposits by autocratic regimes, while the effect is not present in intermediate or democratic regimes.

Figure 1. Size of the Effect of Petro Rents on Tax Haven Deposits in Different Regimes



Note: Bars indicate 95 percent confidence intervals. Thereby, only in autocracies the effect is significantly different from zero.

Our results also suggest that this relationship is affected by political shocks. More specifically, we find that the increases in tax haven deposits are indicative of future elections or domestic conflict. Again, the effect is only observed in autocratic regimes. Moreover, this effect is more pronounced in oil-rich states than in oil-poor states.

The findings outlined above suggest that the windfall gains from the oil and gas sector are (partly) captured by the ruling elites and

hidden in tax havens. While our data does not allow for a direct test of this statement, we argue that alternative interpretations of our findings, such as tax avoidance by multinational firms, etc., are less plausible. All in all, our results suggest that at least 6-10 percent of oil and gas rents are converted into personal political rents in countries with poor political institutions.

To sum up, our usage of new data on foreign bank deposits allows us to study the transformation of oil and gas rents into personal hidden wealth. Our findings are consistent with the story of resource-related political corruption in weak institutional environments, where ruling elites appropriate oil and gas rents for personal gain.

Related Literature

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