Arndt-Corden Department of Economics
Crawford School of Public Policy
ANU College of Asia and the Pacific

Australian National University

Some Reflections on Indonesia and the Resource Curse

Hal Hill

and

Donny Pasaribu

Arndt-Corden Department of Economics
Crawford School of Public Policy
Australian National University,
Canberra

Hal.hill@anu.edu.au

donny.hpp@gmail.com

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Some Reflections on Indonesia and the Resource Curse*

Hal Hill and Donny Pasaribu

Abstract

Natural resources – blessing or curse? Indonesia provides an excellent case study for an examination of this question. It is a major commodity exporter; the fourth most populous country in the world; and the world's largest archipelagic state with huge mineral, forest and maritime resources. Indonesia also has three distinctive features that are particularly relevant for such a study. First, with the exception of the Asian financial and pandemic crises it has had at least moderately strong economic performance for the past half century. This distinguishes it from the majority of resource-rich developing countries, and therefore there are lessons to be learnt from its management of these boom and bust episodes, particularly the latter. Second, Indonesia has experienced two rather different resource booms: the first based mainly on oil and gas in the 1970s and the second based primarily on coal, palm oil and gas over the years 2005-11. The economic, social and environmental impacts of these two booms have differed significantly. Third, the country experienced major regime change in 1998-99, from the centralized, authoritarian Soeharto regime 1966-98, which presided over the first boom, to the subsequent democratic, decentralized regime during the second boom. The very different political and institutional arrangements had important implications for the management of the boom and its distributional impacts. We examine these issues in comparative context, employing as reference points two very large natural resource exporters, Brazil and Nigeria, and Malaysia, a smaller, more dynamic East Asian comparator.

Key words: Indonesia, resource curse, natural resources, political economy

JEL codes: Q33, O11, N15, N55

* We thank participants at a seminar at the Australian National University for helpful comments and suggestions.

Some Reflections on Indonesia and the Resource Curse

1. Introduction

A central puzzle in development economics is what has come to be known as the 'resource curse', the paradox that natural resource abundance appears to be causally associated with poorer economic performance, at least among developing countries. A subset of this analysis refers to the 'Dutch Disease', with similarly negative connotations. In their influential paper Sachs and Warner (2001, and an earlier version circulated as a 1995 NBER paper) establish the proposition empirically, and also provide an analytical framework for understanding the negative correlation between resource abundance and economic performance. Following their empirical approach, Figure 1 shows the relationship between the exports of natural resources as a percentage of GDP in 1970 and real per capita GDP growth 1970-89 for 88 developing countries. That is, to motivate the study of the relationship, natural resource abundance is defined for a given 'base year' and compared with subsequent growth outcomes. The data are for all countries that report at least some natural resource exports. The slope of the regression line is -0.0364, that is, a weakly negative relationship.

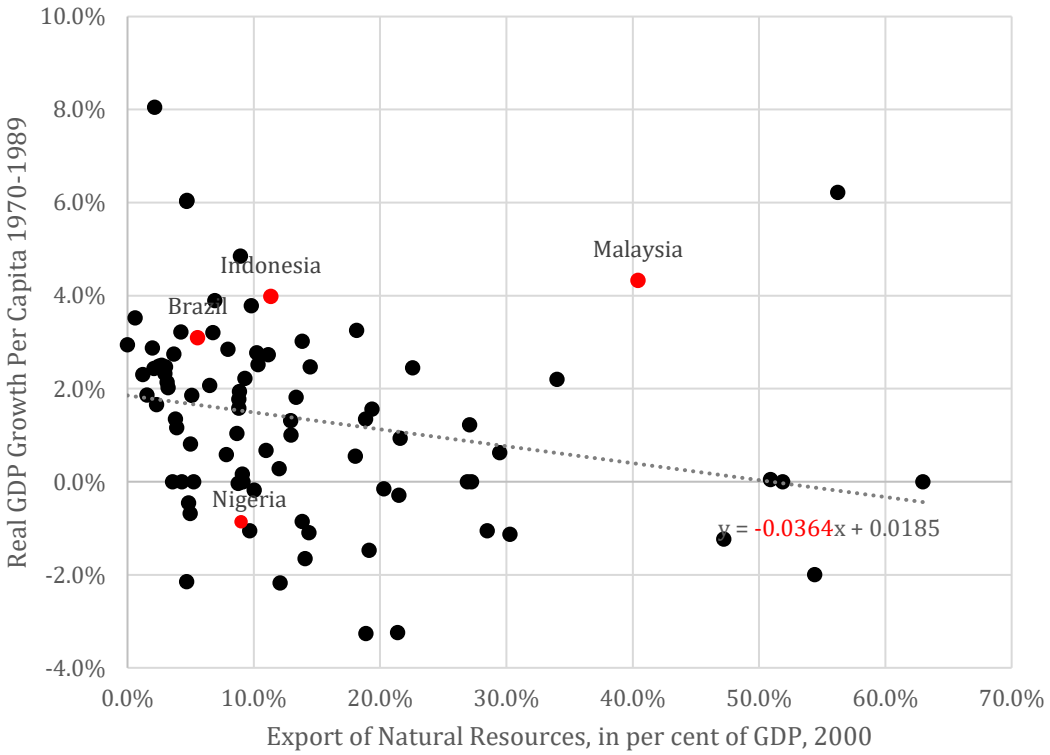


Figure 1 Export of Natural Resources and Real GDP Growth (1970 to 1989)

Notes: only countries with natural resource exports >0% of GDP are included. The slope for the whole sample is -0.0364. Source**:** Authors' calculation based on UN Comtrade (UN, 2021) and World Development Indicator (2021).

However there are exceptions to this generalization. Sachs and Warner draw attention to such two countries – Malaysia and Mauritius.[1] Notice from Figure 1 that Indonesia is also an exception, with a similar growth rate. This in fact motivates our paper, to examine and explain how and why Indonesia largely avoided the resource curse.[2]

Extending this analysis, since the nature and size of resource booms vary over time and across countries, Figure 2 shows the relationship for 151 countries for the period 2000-19, a similar but larger set of countries, allowing also for the existence of some new states, notably in Central Asia. As for Figure 1, the base year, 2000, was similarly a period when commodity prices were relatively subdued. For the second period the slope of the line is very slightly positive (0.0085). However, if three extreme outliers – Turkmenistan, Tajikistan and Papua New Guinea – are removed, there is again a negative relationship, with a slightly steeper slope, -0.0124.[3]

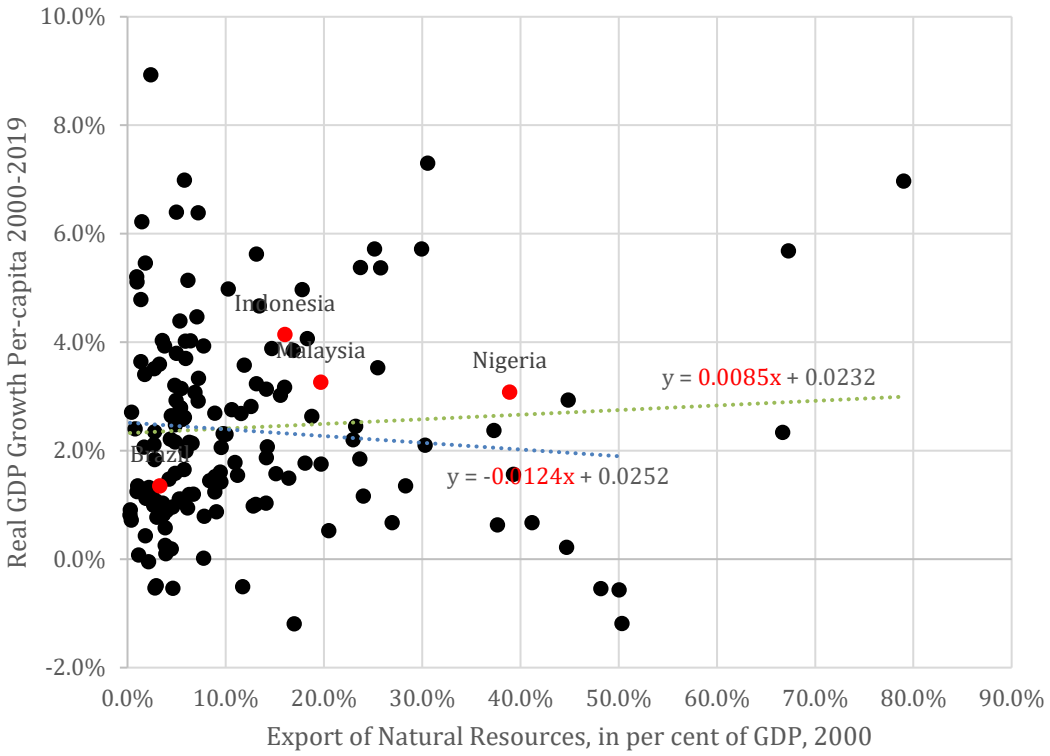


Figure 2 Export of Natural Resources and Real GDP Growth (2000 to 2019)

Notes: only countries with natural resource exports >0% of GDP are included. The slope for the whole sample is 0.0085, and the slope excluding the outliers (Turkmenistan, Tajikistan, and PNG) is -0.0124. Source**:** Authors' calculation based on UN Comtrade (2021) and World Development Indicator (2021).

[1] They also note a third country, Iceland. However for the purposes of this paper we focus mainly on developing countries.

[2] The other three developing economy exceptions are the two special cases of Asian city states and the one high-growth African economy, Botswana, noting also that 'developing' applies in the past tense to the city states.

[3] In passing, these results do indicate the sensitivity of the calculations to the treatment of extreme outliers.

The major conclusion is again that Indonesia is a moderately resource-rich economy with above average economic performance. Relative to GDP, natural resource exports in 2000 were in the 10-20% range, similar to neighbouring Malaysia and Thailand, higher than Brazil but considerably lower than Nigeria and the Middle Eastern petro states. Indonesia's economic growth over the period was relatively strong, slightly above 4% per annum, and higher than the developing country average. This reinforces our working hypothesis, that Indonesia appears to have managed its resource abundance relatively well.

Three additional points need to be emphasized at the outset. First, as much as possible the analysis needs to be comparative. In particular, as reference points we select three additional resource-rich, middle-income, populous (at least in two cases), tropical developing countries which share some common features with Indonesia: Nigeria, which in some respects is the closest comparator country to Indonesia, at least during the initial stages of the resource boom; Brazil, the largest resource-rich Latin American economy; and Malaysia, the other sizeable resource-rich East Asian economy. Second, Indonesia has actually had two resource booms in the last 50 years – an oil and gas boom of the 1970s, when the country was under centralized, authoritarian government, and the proceeds of the boom accrued mainly to the central government; and a more recent boom, approximately 2004-11, when Indonesia had democratic and decentralized governance, and the booms were principally in coal, palm oil, and gas. We briefly draw out the implications of these two very different episodes.[4]

The third point to emphasize is that resource abundance by its very nature involves both booms, during periods of high prices and sudden resource discoveries, and 'busts', when prices fall or resources deplete. In fact, it is the bust episodes that require the most careful examination. High economic growth in boom periods is easily achieved, often further facilitated by capital inflow surges that accompany the booms. It is the bust periods that test the quality of economic management – how efficiently the proceeds of the boom (and the additional borrowed funds) were invested, and how effective is the macroeconomic adjustment to the downturn. As Garnaut (2015, p.208) puts it, 'The test of the 'resource curse' is how a country responds to the end of a boom.' As we will see, Indonesia's principal strength in managing its resource abundance has been the quality of its macroeconomic management during hard times, plus (especially during the first boom) its ability to 'recycle' a substantial proportion of the proceeds of the boom into productive investment, notwithstanding the sometimes egregious corruption that also occurred.

Our organization is as follows. We commence with a review of the resource curse literature in section 2. Section 3 examines the various dimensions of the resource booms with special reference to Indonesia and our three comparator countries. In section 4 we investigate outcomes in the four countries, including aggregate rates of economic growth and a range of variables that are commonly associated with the resource curse. Section 5 sums up.

[4] See Pasaribu (2019) who examines and compares the two episodes in great detail.

2. The Resource Curse: An Overview

We briefly summarize the voluminous literature on the relationship between natural resources and economic performance, referring in particular to three main strands – taxonomies and measurement issues, the Dutch Disease, and the resource curse. The latter is the most relevant for our study, especially as it pertains to developing countries.

The IMF classifies 51 countries as 'resource-rich'. These are defined as countries which derive at least 20% of merchandise exports or 20% of fiscal revenue from non-renewable natural resources. Twenty-nine of these countries are low- and lower-middle-income. Common characteristics of these 29 countries include extreme (or at least very high) dependence on resource wealth for fiscal revenues, export sales, or both; low saving rates; poor growth performance; and highly volatile resource revenues.

Booms (and busts) refer to sudden and substantial, often unexpected, increases (decreases) in foreign currency receipts that accrue to a country. They are most commonly discussed in the context of natural resources, through either price or quantity (new discoveries) effects, but they can in principle originate from a wide range of sources. Examples include remittances (often discussed in neighbouring Philippines for example), aid flows, and even short-term capital flows. (The latter is especially an issue for emerging market economies in times of global macroeconomic volatility.)

Boom and bust episodes vary greatly in their intensity and duration, and important policy implications follow from this fact. Countries with very large reserves of a particular commodity will likely experience several episodes depending on international price variability. In these cases a policy framework needs to be established (for example, a sovereign wealth fund, SWF) that insulates the economy from these episodes. Sudden but short-lived price spikes (or capital flows) will have different effects. The windfall gains will typically be higher in cases where domestic production costs of the booming commodity are low. Booms based on agricultural commodities may have less immediate effects depending on whether new plantings and land acquisitions are required, or there are higher marginal production costs as compared to the classic boom cases of low cost, easily accessible oil fields.

The domestic distributional implications also vary greatly. At one extreme is a single commodity and owner of that commodity. A common example is oil, the revenue of which accrues principally to the state through ownership rights and/or taxation arrangements. This approximated the Indonesian case in the 1970s oil boom. At the other extreme are decentralized, private sector beneficiaries, as is typically the case with agricultural booms. In this case the principal beneficiaries are the owners of the factors of production, mainly land and perhaps specialized market and technology knowhow. The state, and therefore the rest of the nation, are beneficiaries primarily through the increase in state tax revenues, whether general or via specific revenue measures. The owners of the sector-specific factors of production and the workers employed as a result of the boom are also beneficiaries, but these spillovers tend to be local. This latter case approximates conditions in Indonesia's second resource boom, at least for palm oil and some of the coal sector. The political economy

implications of these various types of booms are important, and will be addressed subsequently in the Indonesian case.

Analytically, the issue of booming sectors initially attracted attention through the Dutch Disease literature (see for example Corden and Neary 1982, Corden 1984). The increased foreign currency earnings result in a real exchange rate (RER) appreciation, through either higher inflation than major trading partners in the presence of a fixed nominal rate, or an appreciating nominal exchange rate, or a combination of the two. The effect is to squeeze the profitability of the non-booming tradables sectors, which then must contract as a share of output and employment. An appreciating RER also increases the profitability of non-tradables, mainly services, and therefore a three-sector model is developed: non-tradables (including services) and two tradables, the booming sector and the rest.

Two effects are at work – the resource-movement effect, as labour and other resources are pulled towards the booming sector; and the spending effect from the extra revenue generated by the boom. The increased demand for non-tradables increases their price, with precise magnitudes depending on how internationally open a country's labour market is. However the prices of tradables are set internationally, and so they cannot increase. This results in the RER appreciation.

The large literature on the appropriate policy response to the Dutch Disease has focused on how to mitigate its adverse effects. One option has been to sterilize the flows by keeping most of the revenue offshore, through some sort of SWF. This is also considered to be inter-generationally more equitable. Norway is a widely discussed model. Even poor countries such as Timor Leste have adopted variants of this approach. Another option is to adopt counter-cyclical fiscal policy, that is surpluses (or reduced deficits) during the boom periods to reduce the domestic spending pressures. This may be politically difficult in the presence of rising community expectations to spend the proceeds of the boom. A third is a set of policies to improve the competitiveness of the non-booming tradable sectors, through investments in education, infrastructure and other measures. The least desirable but politically appealing option is to increase protection for the lagging tradable sectors.

The resource curse literature builds on and extends the Dutch Disease theorizing and introduces explicit political economy considerations based on the experience of many resource boom episodes. Sachs and Warner (2001, and earlier papers) popularized the concept. It also features prominently in Collier's (2007) analysis of what he terms 'Bottom Billion' countries. Much of this literature draws on the African experience.

The central question Sachs-Warner and the subsequent literature address is the outcome shown in Figures 1 and 2, that is, that the legacy of the resource booms and busts in many developing countries is weaker and more volatile economic performance. The Dutch Disease literature is suggestive but it does not provide an analytical framework to examine all the issues. The channels identified in the resource curse literature, and in some cases empirically tested, include those listed below. These channels form the basis of our empirical analysis in the following section.

First, many resource-rich economies have experienced macroeconomic crises.[5] Governments and firms frequently borrow heavily for uneconomic projects on the assumption that the windfall revenue gains would last for an extended period. International financial agencies eager to recycle the rising 'petro dollars' often sanctioned this borrowing. At the same time, agricultural and industrial output stagnated (the Dutch Disease effect). When, inevitably, commodity prices began to fall, many countries were unable to service these debts, complicated further by declining currencies which raised their domestic-currency debt obligations. In the specific case of the 1980s debt crisis these problems were compounded by tightening US monetary policy.

Second, to support their now less competitive non-booming tradable sectors, and consistent with the predictions of the Dutch Disease literature, many countries resorted to more protectionist trade policies. In some countries (including Indonesia) the boom also tended to empower groups that could be broadly labelled 'economic nationalists', who favour state-led industrialization strategies, frequently involving state-owned heavy industry, including mineral processing.

Third, the windfall revenue gains have often resulted in institutional deterioration. In the absence of strong democratic and economic policy institutions, the windfall gains from a resource boom may promote rent-seeking and are often distributed in a corrupt and non-transparent manner. This process corrodes institutions, undermines trust in governments, and sometimes leads to conflict, particularly if there are pre-existing ethnic tensions and the resource boom exacerbates these differences. In addition, any ensuing macroeconomic crisis, and protracted debt workouts, further weakens these institutions. Illuminating case studies such as those provided by Collier (2007) document these processes, generally more convincingly than the standard governance quality metrics. As Collier observes, mainly with reference to the African economies, 'The heart of the resource curse is that it makes democracy malfunction.' (p.42)

Fourth, resource booms frequently result in increased inequality, for a number of reasons. There is inequitable access to the natural resource rents. An effective fiscal policy regime is required to tax the rents and redistribute them through national programs in education, health and infrastructure. Education in particular often receives lower priority in resource-driven economies. Subnational inequalities are likely to increase during a boom. Moreover, in the post-boom phase, the resolution of any debt crisis often requires fiscal stringencies that further reduce social expenditures and increases poverty.

Gelb and Associates (1988) provided an early and authoritative comparative examination of resource-rich developing economies during and immediately after the 1970s oil boom. The project also included six detailed country studies: Algeria, Ecuador, Indonesia, Nigeria, Trinidad and Tobago, and Venezuela. Indonesia was the

[5] The comparative multi-country study by Gelb and Associates (1988) was one of the first detailed analyses of the aftermath of the 1970s oil boom, when many commodity exporters experienced a lost decade of debt and stagnation during the 1980s. Little, Cooper, Corden and Rajapatirana (1993, chapters 4 and 5) document this debt crisis episode in great detail.

strongest performer in the group. It 'was the only country in the sample to implement a determined policy of expenditure reduction and exchange rate realignment before the fading of the second oil boom.' (p.81) 'Its macroeconomic management in 1973-81 could be considered as the most prudent in the sample.' (p.82) It was regarded as the 'exceptional case' with regard to non-oil tradable sector growth (p.90). Furthermore, 'More than any other exporter, Indonesia directed a high proportion of its development spending to rural areas for irrigation works, roads, schools and other small-scale infrastructural improvements.' (p.103)[6]

Over the years there has been an extensive empirical literature testing these and related propositions. For example a meta-study by Havranek, Horvath, and Zeynalov (2016) found weak support for the thesis that resource richness adversely affects long-term economic growth. The authors note that 'approximately 40% of empirical papers find a negative effect, 40% find no effect, and 20% find a positive effect.'[7]

3. The Evidence: (1) Resource Booms

The first empirical question to ask is, is Indonesia a resource-rich economy? Clearly its resource endowments are not comparable to those of the Middle Eastern petroleum economies; in fact it is now a net energy exporter but an oil importer. Table 1 compares its resource endowments to those of the three comparator countries; neighbouring resource-rich Australia is also included as a high-income comparator. Two standard indicators are shown: population density, a proxy for resource endowments per capita,[8] and resource intensity as measured by GDP relative to land area. On these metrics Indonesia is a moderately resource-rich economy. Its population density is second only to Nigeria, and more than five times that of Brazil. (Of course Indonesia's population settlements are highly uneven, indicating that there is considerable subnational variation in relative resource endowments.) Indonesia's natural resource intensity is comparable to that of Nigeria, about half Malaysia's and three times Brazil (and Australia).

[6] Chowdhury (2004) extended the comparative Gelb framework with a three-country study of Indonesia, Nigeria and Papua New Guinea from 1970 through until the mid 1990s. The main conclusion was to affirm Indonesia's generally stronger economic management, along with that of Papua New Guinea during its 1970s booms.

[7] See also for example a recent survey by Smith and Waldner (2021), mainly from a political science perspective.

[8] Recognizing of course that land area is an imperfect, albeit widely used, proxy for the natural resources. The geographic location of deposits of fossil fuels and hard minerals is unevenly distributed, soil fertility is highly variable, and countries in addition have exclusive access to maritime resources. The economic value of these resources also varies over time. As the global economy decarbonizes, for example, access to solar, wind and other sources of renewable energy is becoming more important.

Table 1: Comparative Resource Endowments

Country	Population Density /sq km	Resource Intensity $'000
Indonesia	**143**	**555**
Brazil	**25**	**170**
Malaysia	**98**	**1,020**
Nigeria	**223**	**468**
Australia	**3**	**173**

Note: resource intensity refers to GDP/sq km

Second, how large have the resource booms been in Indonesia and our three comparators? We employ here World Bank estimates of the value of natural resource rents relative to GDP for the period 1970-2019 (Figure 3). The estimates of natural resource rents are calculated as the difference between the price of a commodity and the average cost of producing it. This is done by estimating the price of units of specific commodities and subtracting estimates of average unit costs of extraction or harvesting costs. These unit rents are then multiplied by the physical quantities countries extract or harvest to determine the rents for each commodity as a share of GDP. A key analytical issue concerns the definition of 'natural resources'. The general (implicit) assumption in the literature on natural resource rents is that they refer to non-renewable natural resources, principally oil, gas and minerals. But as will be evident from Figure 5 below, the World Bank estimates also include forest resources. Forests could equally be regarded as a renewable natural resource since they can in principle be managed through a sustainable strategy of harvesting and replanting. This qualification needs to be kept in mind in interpreting these data, particularly in the Indonesian case owing to its booming palm oil sector.

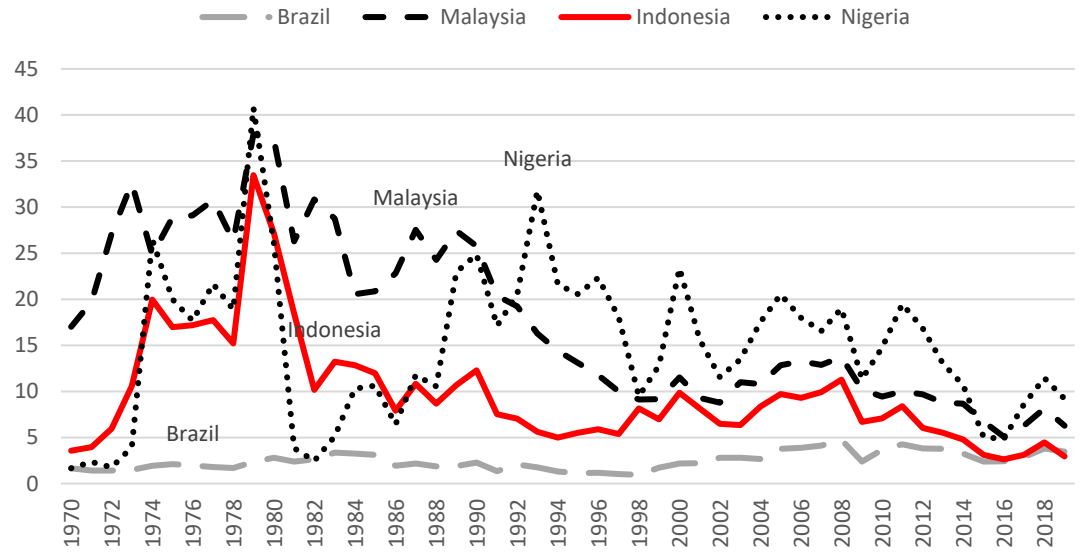


Figure 3. Total Natural Resource Rents (% of GDP)

Source: World Development Indicators, World Bank (2021)

Several features of these data warrant attention. One is that the really large boom for Indonesia was during the 1970s OPEC-led oil price increases, when the rents rose suddenly from negligible levels to the equivalent of 20% of GDP in 1974 and further to 33% in 1979. Since the early 1980s the rents have never exceeded 15% of GDP. Moreover, during the 'second resource boom', broadly 2004-11, the rents only exceeded 10% in one year (11.3% in 2008). So by this conventional definition, the major boom was more than four decades ago, in the earlier years of the Soeharto era, rather than the post-1999 democratic era.[9] Part of the explanation for the difference between the two periods lies in the definition of 'natural resources' in the World Bank methodology, in particular that palm oil and other tropical cash crops are not included. We return to this issue in the next section.

The other key feature to emphasize for Indonesia (and virtually all resource-rich economies) is the volatility of the rents, especially in the first boom: on two occasions they doubled in a single year, 1973-4 and 1978-9, while by 1982 they had fallen to just one-third of the 1979 figure. The implications of such volatility for macroeconomic management have already been mentioned. As noted, it was this volatility, combined with the Volcker-led US monetary policy shocks, that triggered the lost decade of the 1980s for many developing country commodity exporters, notably excluding Indonesia (and Malaysia) (Gelb and Associates, 1988).

Figure 3 also draws attention to the Indonesian experience in contrast to our three comparator countries. There are significant differences among the four, reflecting the size and composition of their natural resource sectors. The relative importance of the rents for all four has generally declined over the period reflecting economic diversification, including the rising importance of the industrial and (especially) service sectors. Figure 4 shows the share of natural resources in the total exports for each of the four countries over time, following the conventional SITC classification.[10] For much of the period Nigeria has *enjoyed* the largest rents, a qualifier added to 'enjoyed' since its extreme oil dependence has also created the greatest volatility and hence resource curse potential.[11] At the other extreme, rents/GDP in Brazil have never exceeded 5%, even though it is conventionally classified as a resource-rich economy. The main explanation is that most of Brazil's natural resource abundance derives from its extensive land-based agricultural activities rather than non-renewable mining, at least until recently.[12] Malaysia adopts an intermediate position; its rents have always been

[9] In passing it is worth noting also that one of the smallest rent years was 1997. That is, commodity prices were of little economic assistance during the Asian financial crisis.

[10] Note importantly that palm oil is here included in natural resource exports, within SITC4.

[11] Oil has typically accounted for over 80% of Nigeria's merchandise exports since its large-scale commercial exploitation in the early 1970s. Figure 3 highlights the volatility: rents/GDP rose from 2% in 1972 to 26% in 1974 and 41% in 1979, but then fell back to 2% again in 1982.
The classic study of the Nigerian economy over this period, which also includes some Indonesian comparisons, is Bevan, Collier and Gunning (1999).

[12] See the widely cited study by the late Werner Baer (2007), which ran to six editions.

slightly higher than Indonesia, peaking at 39% in 1979, and with less volatility, reflecting its more diversified commodity, manufacturing and services export base.

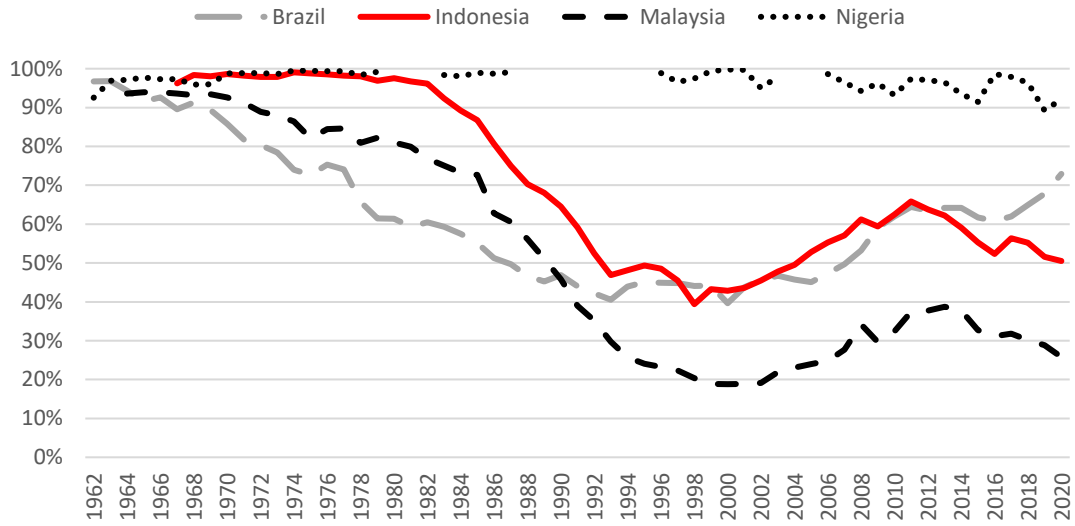


Figure 4. Natural resource exports as percentage of total exports

Notes: Natural Resource is defined as SITC1 0 (Food and live animals),1 (Beverages and Tobacco), 2 (Crude materials, inedible, except fuels), 3 (Mineral fuels, lubricants, and related materials – includes coal and oil), 4 (Animal and vegetable oils and fats – includes palm oil), 68 (Non-ferrous metals). Source: UN Comtrade (2021)

To facilitate an understanding of Indonesian resource booms over time, Figure 5 disaggregates its rents into the five main components, oil, gas, coal, minerals and timber. As expected, oil dominates the 1970s resource boom, but it has become progressively less important over time. In fact the main feature of the smaller rents in the democratic era is that all five sectors have played a role, with coal emerging as the most significant contributor in most years. Note again that the magnitudes and compositions of the rents are affected by the exclusion of palm oil.

Notwithstanding recent discoveries, oil and gas have never been major Brazilian exports, and they have not ranked in the country's top five exports (of sugar, soybeans, coffee, beef and orange juice).

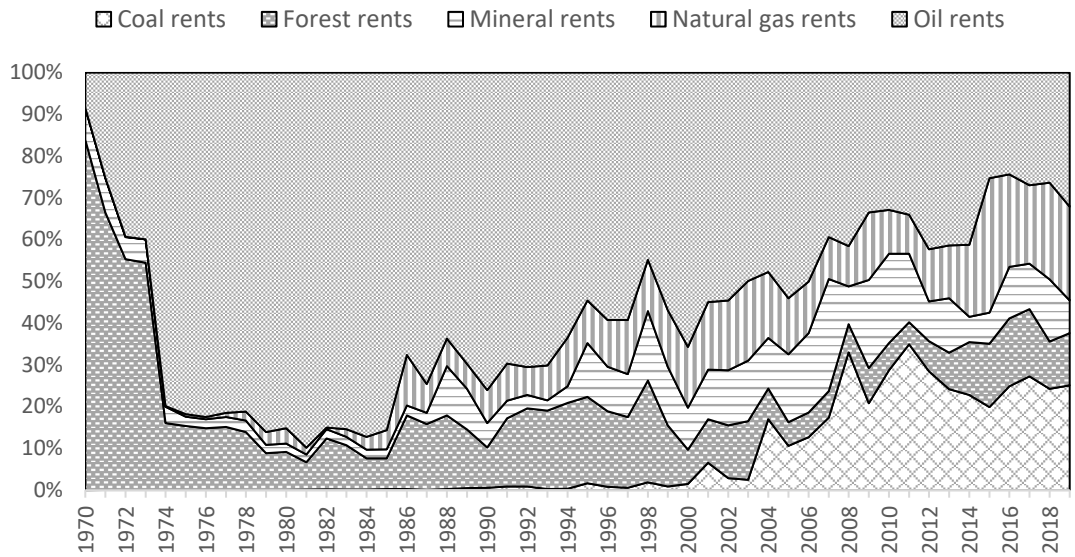


Figure 5. Composition of Indonesia's Natural Resource Rents (% of total rent)

Source: World Development Indicator, World Bank (2021)

The international dimensions of natural resource volatility are further illustrated by two data series. First, the terms of trade (ToT) show clearly the magnitudes of the external shocks (Figure 6). The four countries divide into two groups – Indonesia and Nigeria on the one hand, and Brazil and Malaysia on the other. As is partially evident in earlier figures, Indonesia and Nigeria were more reliant on oil exports in the 1970s, and thus their terms of trade were more volatile. Through that decade their TOT's more than doubled and quadrupled respectively, and then fell very sharply, by similar orders of magnitude in the 1980s. They rose again in the 21st century, especially in the case of Nigeria, where exceptional volatility has been the norm, creating serious macroeconomic management challenges. The ToT's of Brazil and Malaysia have been much less volatile, reflecting their broader export bases and less reliance on fossil fuel exports.

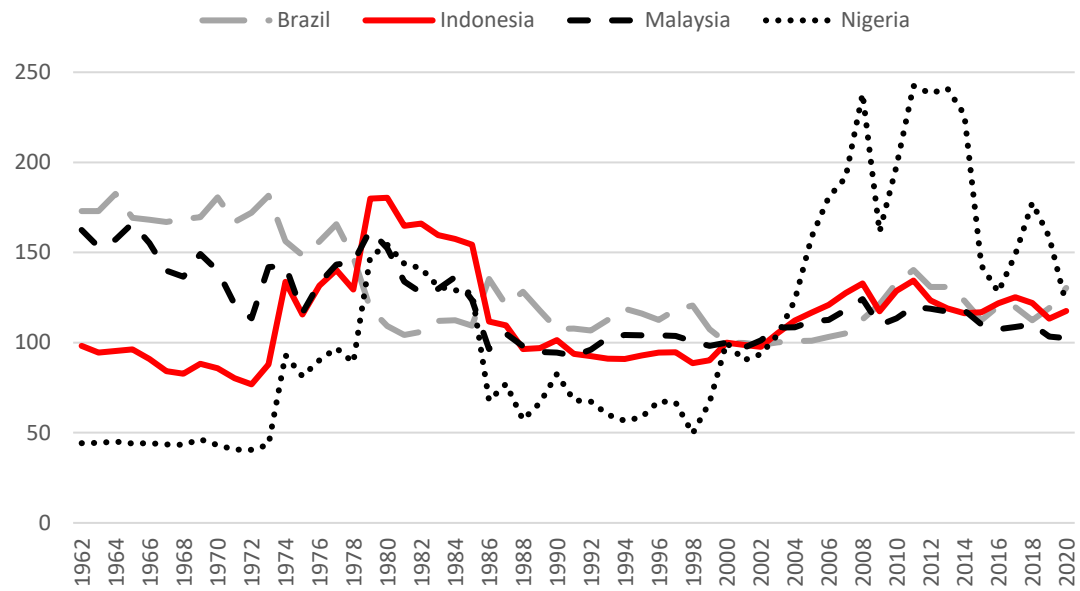


Figure 6. Terms of Trade (2000=100)
Notes: index weighted by net exports to total merchandise trade, rolling weights. Source: IMF (2021)

Assuming that the export earnings are not completely sterilized offshore, the principal international adjustment mechanism for ToT volatility is the real exchange rate. That is, as the Dutch Disease literature articulates, a resource boom triggers rising inflation, in excess of the country's major trading partners, in the context of a fixed nominal rate, or there is a nominal exchange rate appreciation, or a combination of both. Figure 7 provides a first look at this complex theoretical and empirical issue for the four countries with reference to the Bruegel real exchange rate (RER) database. As expected, the RER trends align with those of the ToT's. Nigeria in particular experienced very large RER movements. Indonesia's RER appreciated significantly through most of the 1970s, and briefly rose again in 1980-81 in response to the second, smaller oil price shock. The three significant depreciation events are also evident – the 1978 and 1983 devaluations, both in the context of a fixed rate regime, and the Rupiah collapse during the 1997-98 Asian financial crisis. But for most of the other periods its RER has been relatively stable, with a gradual appreciation evident as a result of the 21st century resource boom. The Malaysian series has followed a similar trend to Indonesia, albeit with less volatility, while Brazil has experienced greater volatility, reflecting its various high inflation episodes. We return to the exchange rate issue in the following section.

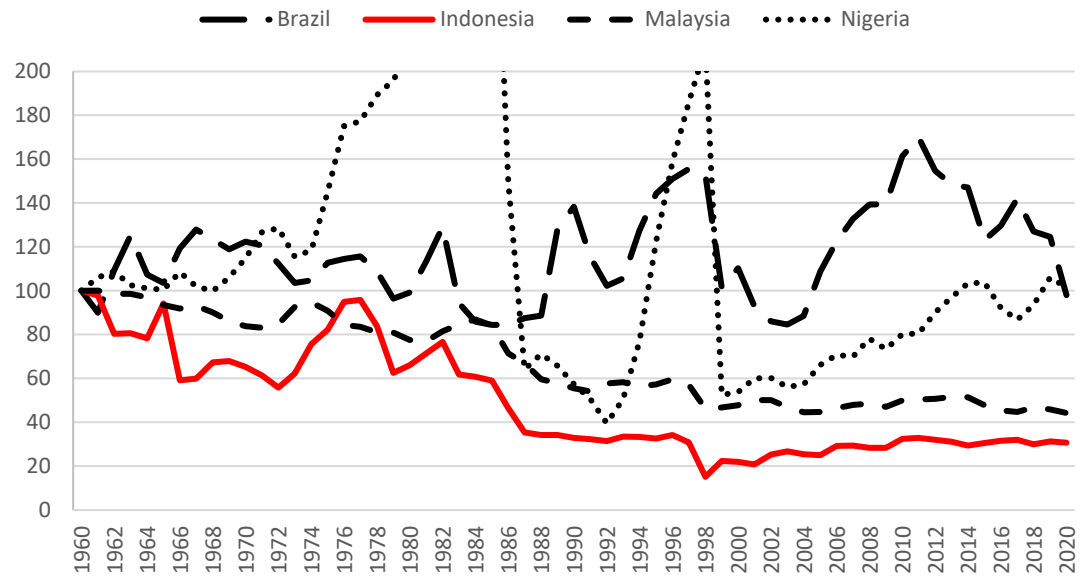


Figure 7. Real Effective Exchange Rates (CPI-based, 65 partner countries,1960 = 100)

Notes: The Y axis is capped at 200 to exclude outlier levels for Nigeria. Nigeria REER reached a peak of 373 in 1984 and 211 in 1998. Source: Bruegel database (2021)

4. Outcomes

a) **Economic Growth**

The most important indicator of a country's ability to navigate the resource curse is its long-term economic growth, with the usual caveats that economic growth is the outcome of a many other factors, and that the poverty, distributional and environmental impacts of booms and busts also need to be examined carefully.

Table 2 shows the economic trajectories of the four economies. Indonesia and Malaysia are clearly the economic success stories, with income per capita over the period 1970-2019 rising almost five-fold and more than five-fold respectively. This compares to the dismal record of Nigeria, where per capita income has actually *declined* over this period, and the indifferent record of Brazil, where income per capita has risen only slightly, notwithstanding the 'BRICS' hype. The superior performance of Indonesia and Malaysia is evident throughout the period, including the first boom, the 1980s 'bust', and subsequent cycles. The 1980s was the first major test of economic resilience in the modern era, as commodity prices declined. As we have emphasized, it is during the periods of declining and low commodity prices that countries' economic management is tested. Per capita income in both Brazil and Nigeria declined during the decade, severely in the case of Nigeria, whereas during this adjustment period Indonesia and Malaysia recorded average annual per capita growth of more than 3%. Indonesia's performance is especially creditable: it grew slightly faster than Malaysia, even though it was then more dependent on oil exports. During the 21st century the differences narrowed, although both Brazil and Nigeria experienced negative growth 2015-19.

Table 2 Average GDP per capita growth rate (constant 2015 US$)

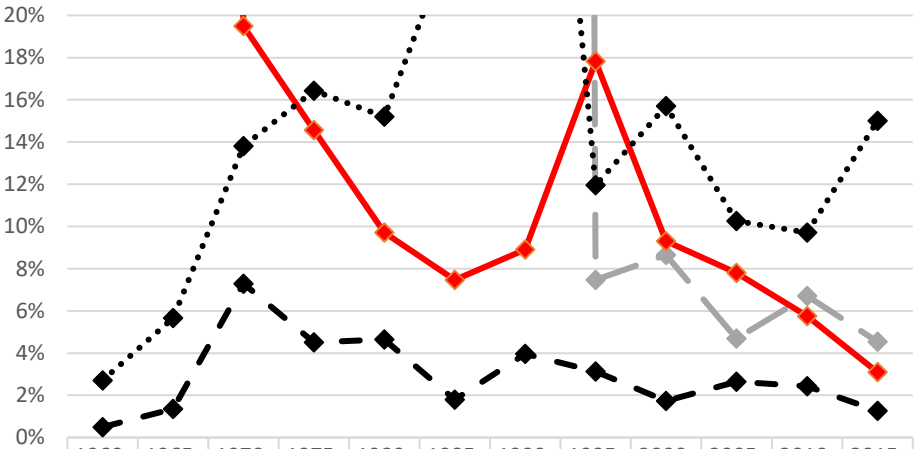
Year	Brazil	Indonesia	Malaysia	Nigeria
1960-65	1.6%	-0.7%	3.6%	2.3%
1965-70	5.0%	3.0%	3.5%	2.1%
1970-75	7.7%	4.2%	5.5%	3.0%
1975-80	4.2%	5.3%	5.8%	0.9%
1980-85	-1.2%	2.4%	2.6%	-7.9%
1985-90	0.3%	4.3%	3.8%	2.1%
1990-95	1.4%	5.4%	6.7%	-2.3%
1995-00	0.6%	-0.7%	2.2%	0.5%
2000-05	1.6%	3.3%	2.6%	6.1%
2005-10	3.4%	4.3%	2.5%	4.3%
2010-15	0.3%	4.1%	3.8%	2.3%
2015-19	-0.5%	3.9%	3.4%	-1.8%

Source: Authors' calculation based on World Development Indicators, World Bank (2022)

b) **Macroeconomic and Crises Management**

Abstracting from any political developments (coups, conflict, and the like), a key determinant of a country's ability to manage resource booms and busts is the quality of macroeconomic management. This has several dimensions: whether macroeconomic (fiscal and monetary) prudence is maintained, how the exchange rate is managed during periods of volatility, and how much of the boom was saved and/or productively invested. The resource curse literature is clear on this point: countries that engage in adventurous macroeconomic policies, especially borrowings for extravagant projects and outright corruption, are more likely to experience a crash as commodity prices fall. Let us now examine the record in the four countries.

With respect to inflation outcomes (Figure 8), the countries' prior macroeconomic history matters. This is a central theme in the magisterial Little et al (1993) comparative macroeconomic survey, which drew on 18 developing country case studies, including three of the countries included in this paper (all but Malaysia). Brazil had a history of hyperinflation and was not able to control it until the late 1990s. Indonesia also had a history of hyperinflation, mainly in the 1960s, but it learnt from it, thereafter becoming moderately inflation-averse. In both cases the primary cause of inflation was the monetization of fiscal deficits. Malaysia has had a history of prudent monetary policy, and it has never fundamentally deviated from this stance. In spite of its poor economic performance, Nigeria never experienced sustained hyperinflation, although inflation has been at least double-digit for extended periods, and was very high 1990-95.



	1960-65	1965-70	1970-75	1975-80	1980-85	1985-90	1990-95	1995-00	2000-05	2005-10	2010-2015	2015-2020
Brazil					146%	673%	737%	7%	9%	5%	7%	5%
Indonesia	123%	138%	19%	15%	10%	7%	9%	18%	9%	8%	6%	3%
Malaysia	0%	1%	7%	5%	5%	2%	4%	3%	2%	3%	2%	1%
Nigeria	3%	6%	14%	16%	15%	24%	47%	12%	16%	10%	10%	15%

Figure 8. Average Annual CPI Inflation Rate (%)

Notes: The Y axis is capped at 20% to exclude outliers. Source: World Development Indicator, World Bank (2022) and World Economic Outlook, IMF (2022)

The immediate implication of high and variable inflation is the necessity of prompt nominal exchange rate adjustment to restore competitiveness. Referring back to Figure 7, this clearly distinguishes Indonesia and especially Malaysia from Brazil and Nigeria, both of which experienced wild oscillations in their RER's, owing to their inability to promptly adjust the nominal rate to recoup the lost competitiveness. The Indonesian experience is of particular interest in this case. From 1971 to 1978 the Rupiah was pegged to the US dollar. If allowed to float it would likely have appreciated during the oil boom. In fact, as Figure 7 shows, the RER appreciated, and this was mainly owing to Indonesia's higher inflation. In November 1978 the government depreciated the Rupiah by 50% before returning to the fixed rate regime. The justification for the depreciation was the impending decline in oil prices, and the desire to restore the competitiveness of non-oil tradables. However, the devaluation was quickly overtaken by rising oil prices, and thus the competitiveness effects were substantially nullified through higher inflation. It was the large 1983 and 1986 devaluations that translated into significant real depreciations since they were undertaken at a time of low commodity prices and inflation. Thereafter Indonesia adopted a more flexible exchange rate regime, fully flexible from late 1997 as the Asian financial crisis hit and, combined with moderate inflation (except for the crisis years of 1997-98), its RER has generally been quite stable.[13]

To examine how the proceeds of the booms were spent, and how adjustment proceeded during the downturns, it is necessary to examine fiscal policy outcomes and public and public-related investment behaviour. This has two main dimensions:

[13] The precise measurement of Indonesia's RER is a matter of ongoing debate. For an early discussion of the technicalities see Warr (1984). Garnaut (2015) discusses exchange rate policy during the more recent boom.

the overall conduct of fiscal policy, including fiscal balances and how any deficits were financed; and how the proceeds of booms were disbursed, including the proportion saved and the quality of any public investments. Comprehensive data on all the relevant variables are not available for the four countries, but the general picture is nevertheless clear enough.

Figure 9 shows a key indicator for the conduct of fiscal policy, public sector net borrowing/lending relative to GDP for the four countries over the period 1990-2021. Indonesia is distinctive in two respects. First, its deficits have been moderate throughout the period, with the partial exception of the two major crisis periods, 1997-98 and 2020-21. Second, fiscal policy has been relatively stable, in the sense that year-to-year variations have almost always been moderate. That is, reflecting its fiscal prudence, there have not been major episodes of loose fiscal policy that in turn required a major fiscal consolidation. Among the other countries, Malaysia most closely resembles Indonesia in this respect, apart from the global financial crisis year of 2009, when (unlike Indonesia) the country experienced a significant economic recession. The one difference between the two is that Malaysia quite often ran larger deficits, which it could afford to do owing to its high domestic savings rate (the fiscal deficits were often accompanied by current account surpluses) and its strong ratings in international financial markets. Fiscal outcomes in Brazil and Nigeria reflect their macroeconomic policy struggles. By the mid 1990s Brazil had largely brought inflation under control, but there were still very large deficits in some years, notably as commodity prices weakened from around 2014. Nigeria has experienced large oscillations in its fiscal balances, with occasional surpluses in years of high oil prices.

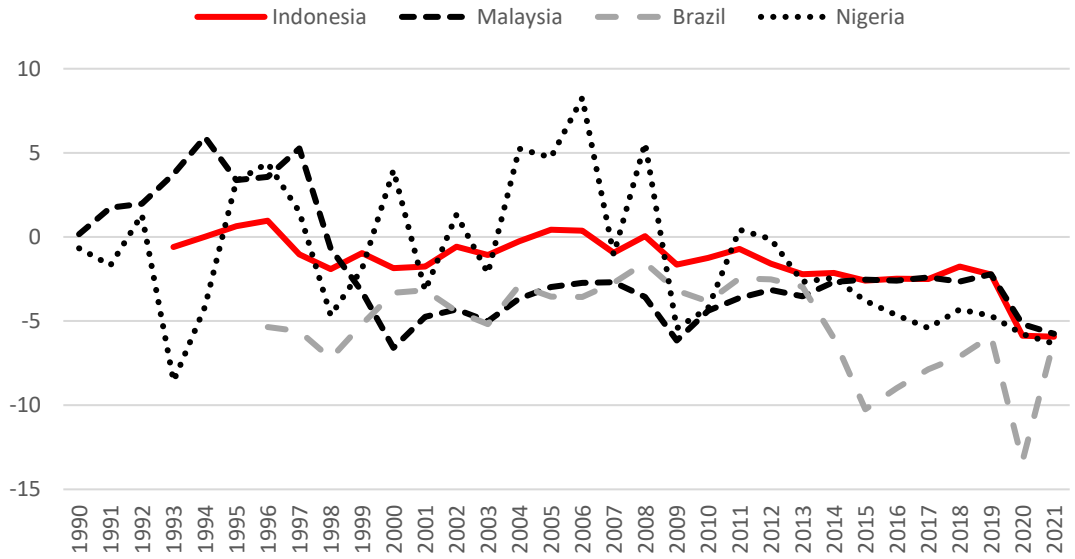


Figure 9. Government Net Lending/Borrowing (as % of GDP)

Source: Euromonitor International (2022) from International Monetary Fund (IMF), Government Finance Statistics (GFS)/national statistics/Eurostat

As argued above, ideally counter-cyclical budgetary policy would be a major element in the fiscal policy toolkit to manage resource booms and busts. That is, governments would run surpluses (or at least smaller deficits) in boom times, and the reverse as commodity prices decline. We have argued that Indonesian fiscal policy has generally been fairly prudent, but how closely has it approximated this ideal? Figure 10, which

shows the relationship between these two variables for the period 1990-2020, indicates that for most of the democratic era this has largely been the case. That is, as commodity prices began to strengthen early in the 21st century, the fiscal deficits shrank. There were fiscal deficits of around 1% or less for the years 2004-11, except for the global financial crisis year of 2009. Then as commodity prices began to fade the deficits increased, albeit to still very modest levels. Part of the explanation for this outcome was of course that the government was intent on fiscal consolidation in the wake of the Asian financial crisis, to bring down the debt. But the finding is nevertheless quite a significant one. There doesn't appear to be the same relationship during the Soeharto era, but the data period is too short to draw any firm conclusions. In any case, over this earlier period there was extensive off-budget financing.

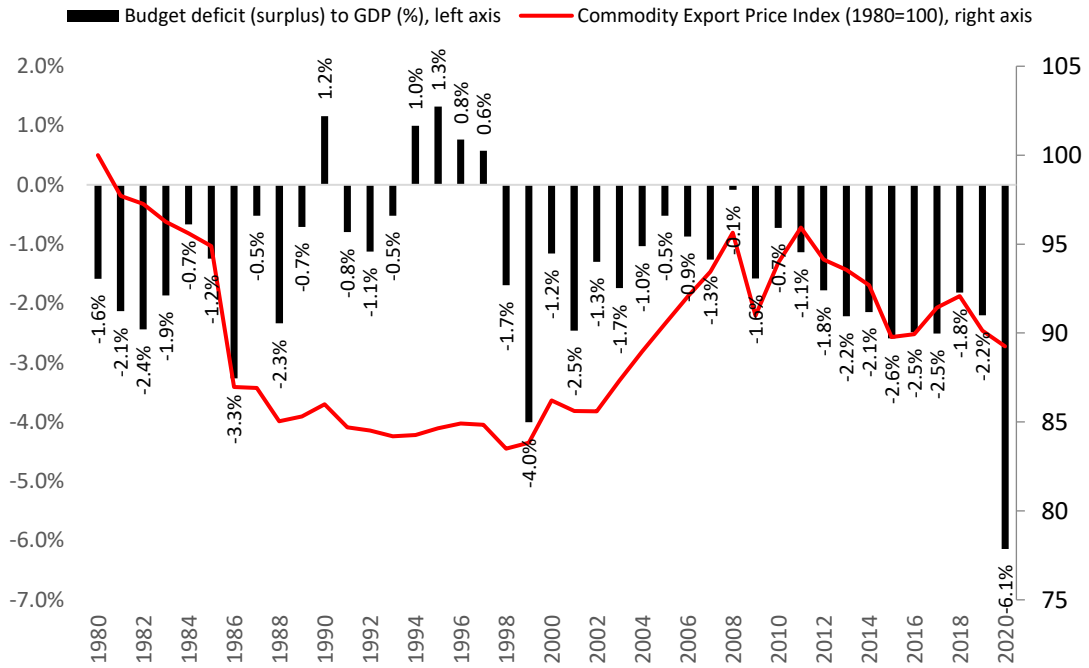


Figure 10. Indonesian Fiscal Balances and Export Price Index, 1980-2020

Sources: Author's calculation based on Bank Indonesia (2022), Finance Ministry (2022), and IMF (2022)

One indication of the use of the windfall revenue gains from oil price booms is domestic petroleum prices relative to world prices. Many oil producing countries heavily subsidize domestic oil consumption, squeezing out expenditure on more socially productive programs, from education and health to infrastructure. The subsidies are also unequalizing, as the principal beneficiaries are disproportionately the higher-income groups. Figure 11 shows that Indonesia, Malaysia and Nigeria have all consistently and heavily subsidized domestic oil prices over the period 1998-2016, in contrast to the approach in most OECD economies that have taxed oil consumption. Brazil adopts an intermediate position, and in any case has not been a significant oil producer until very recently.[14] On occasion the scale of these subsidies has been such as to have macroeconomic consequences, as in the case of Indonesia when in some

[14] Brazil has however subsidized diesel fuel, in some years heavily.

years they have approached 4% of GDP and exceeded the combined expenditures on education, health and infrastructure.

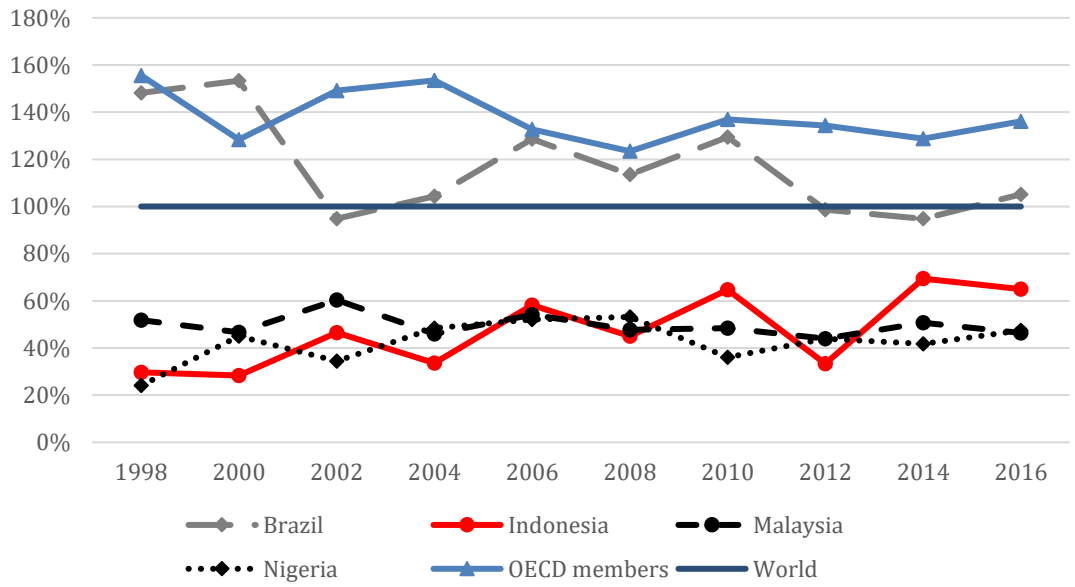


Figure 11 (a). Pump Price for Gasoline by country, as a percentage of world average price
Source: Authors' calculation based on WDI data, World Bank (2022)

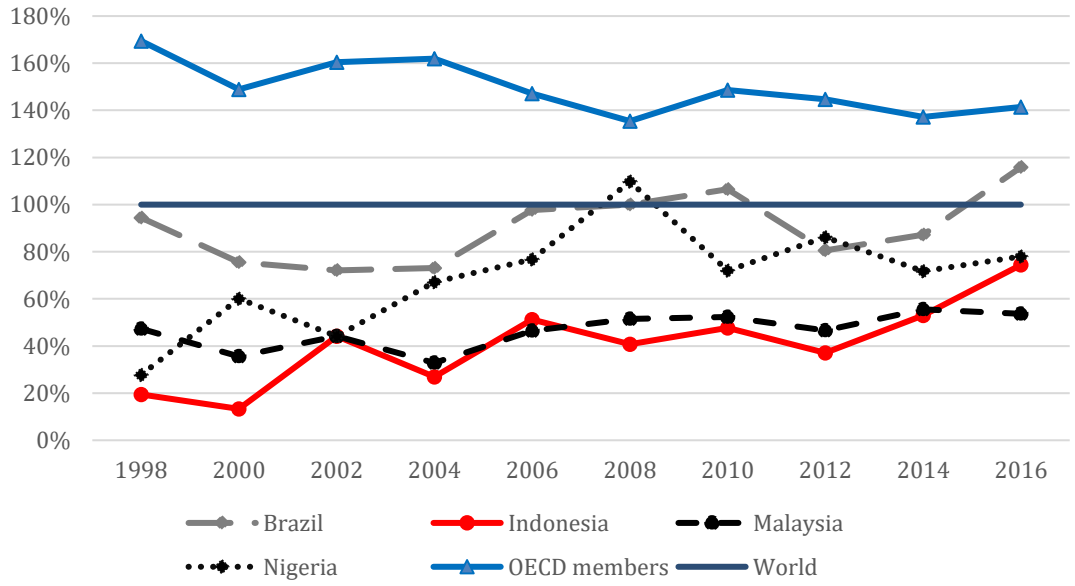


Figure 11 (b). Pump Price for Diesel by country, as a percentage of world average price
Source: Authors' calculation based on WDI data, World Bank (2022)

c) **Trade Policy**

Historically the response of developing countries to macroeconomic and balance of payments crises was typically to erect 'temporary' import restrictions that, for political

economy reasons, often became a permanent feature of trade policy.[15] But such a strategy, sometimes termed 'import starvation', was no solution and often exacerbated the economic recession since it also impeded the development of new, non-commodity sectors that invariably would require imported inputs to expand. By the 1980's, however, what Little et al (1993) characterize as 'the new liberalization' was becoming more attractive, based on the evident success of the outward-looking East Asian economies, in some cases further encouraged by World Bank and IMF loan conditionality.

In the aftermath of the first boom, Indonesia exemplifies this new approach to trade policy in times of crisis. As noted above, during the 1970s boom the forces of economic nationalism became more powerful. But as oil prices fell, the government promptly adjusted its exchange rate settings to restore competitiveness to the non-commodity tradables, and it maintained its prudent fiscal policy settings. Moreover, and crucially, it introduced sweeping trade liberalizations and microeconomic reforms (Hill, 2000). These were the keys to its strong economic rebound from the mid 1980s. They have continued to be a feature of the country's policy regime, a factor that has facilitated ongoing export diversification, and one which will also be relevant during the recovery from the current Covid pandemic.[16] The story during the second boom is more mixed, reflecting both Indonesia's changed political circumstances and the nature of the boom. The country remained moderately open, but not as decisively as during the 1980s, and there was a continuing drift towards "resource nationalism" and various trade and investment restrictions (Patunru et al, eds, 2018).

Among the other countries, Malaysia continued to maintain the very open trade and investment policies that have been a feature of the country since independence. There were some exceptions, notably in heavy industry and food crops, but they were contained. Brazil and Nigeria have had chequered trade policy histories, with extended periods of inward-looking, protectionist trade regimes, including those adopted during the 1970s and 1980s (Little et al, 1993). Table 3 clearly shows these general trade policy orientations, with reference to the widely used Sachs-Warner binary trade openness indicator. Indonesia became 'open' in 1971 and remained so thereafter. Brazil did not become open until 1991. Nigeria remained closed for the duration of the estimates through to 2001.[17] [18]

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[15] Little et al (1993, chapter 9) survey much of this earlier literature through to around 1990, and mainly in the context of the link between trade policy and macroeconomic crises. The classic Southeast Asian example of a country experiencing a balance of payments crisis and resorting to 'temporary' import controls that became a policy fixture for the next four decades is the Philippines. See Power and Sicat (1971).

[16] See for example the World Bank's Global Economic Prospects 2022: https://openknowledge.worldbank.org/handle/10986/36519

[17] The attraction of the Sachs-Warner index is its binary simplicity. It does not of course purport to provide a detailed description of each country's trade regimes. The regular WTO country Trade Policy Reviews provide this information. We prepared alternative indicators such as trade/GDP, non-commodity trade/non-commodity GDP, and average tariff rates, but they are all subject to well-known limitations.

[18] One could in principle add an indicator of capital account openness, on the premise that more open capital accounts could smooth the adjustment path in response to terms of trade volatility. However, it is not clear what indicator could be used. Capital

Table 3
Trade openness: I. Sachs & Warner (1995)

YEAR	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
NIGERIA	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
BRAZIL	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Open	Open
INDONESIA	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
MALAYSIA	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open

Trade Openness: II. Sachs-Warner (1995), updated by Wacziarg and Welch (2008) until 2001

Country	Year uninterrupted openness began
Brazil	1991
Indonesia	1970
Malaysia	1963
Nigeria	Closed

Source: Sachs-Warner (1995), updated by Wacziarg and Welch (2008)

d) **Distributional Impacts**

The distribution of the benefits of a resource boom, and of the pain during the adjustment period of low commodity prices, is central to understanding the development impacts of resource abundance. Great wealth can be created during boom periods. If it is unequally shared, and ostentatiously so, it can sow the seeds of political instability and conflict. This applies with even greater force in the case of structural adjustment and painful fiscal consolidation – especially the cutting of social expenditures – during the downturns. If, as is commonly the case, the resource boom originates from an enclave mining operation, geographic and sometimes ethnic tensions may arise over the distribution of the benefits, especially when accompanied

flows (relative to GDP) include both long- and short-term capital, portfolio, FDI, and concessional flows. Ideally these various components need to be separately identified. For example, during crisis episodes – which frequently occur in the 'bust' episodes – there is the phenomenon of 'firesale FDI', that is, inward FDI attracted to the now cheaper domestic asset prices, the latter the result of the crisis and the accompanying capital flight.

by local environmental degradation. Related to the latter point, from a distributional viewpoint the nature of the booming sector is also relevant. For example, a location-specific oil industry and a broad-based cash crop sector will cet par have very different distributional outcomes. Political and governance systems are also relevant: the greater the transparency of fiscal and financial arrangements, and the stronger the institutional commitment to equitable outcomes, the more likely it is that the benefits will be broadly distributed.

Evaluating the link between resource abundance and distributional outcomes is of course a vast topic. The lines of causality are complex and often blurred, and the outcomes, and indeed the measurement criteria, are contested. We focus here on the 'big picture', of trends in headcount poverty and inequality, while recognizing that there are many other dimensions of living standards and equity, including education and health indicators (these sectors often suffer from neglect in resource-rich countries), regional inequality, and environmental and gender dimensions.

For poverty we employ the World Bank Povcal headcount estimates using the middle-income $3.20 (PPP at 2011 prices) poverty line. This is best suited for a range of middle-income economies. The lower yardstick ($1.90) shows little poverty for upper middle-income economies, while the higher one ($5.50) is less relevant for countries like Nigeria (and Indonesia arguably). In any case, the trends are broadly similar for all three series. Owing to its standardization procedures, Povcal is well-suited to international comparisons. The country poverty estimates are typically available for longer time periods, whereas the Povcal series commence in the early 1980s for most countries. We therefore cannot track outcomes comparatively during the course of the first resource boom.

Figure 12 shows the trends for the four countries. We put aside the case of Malaysia since its reported poverty incidence is now very low, reflecting its higher per capita income and historic economic dynamism. For the other three, Indonesia is clearly the superior performer, reflecting its much higher long term growth rate. In the early-mid 1980s its poverty incidence was the highest, marginally higher than Nigeria and about double that of Brazil. By the mid 1990s it had already fallen below the Nigerian level and, apart from a short blip during the Asian financial crisis, it continued its downward progression during the 21st century, in contrast to Nigeria's stagnation. In fact, if Indonesia's trend resumes in the post-Covid era, its poverty incidence should fall below that of the considerably richer Brazil, where poverty progress stalled in recent years, in spite of its widely publicized cash transfer program, the Bolsa Familia.

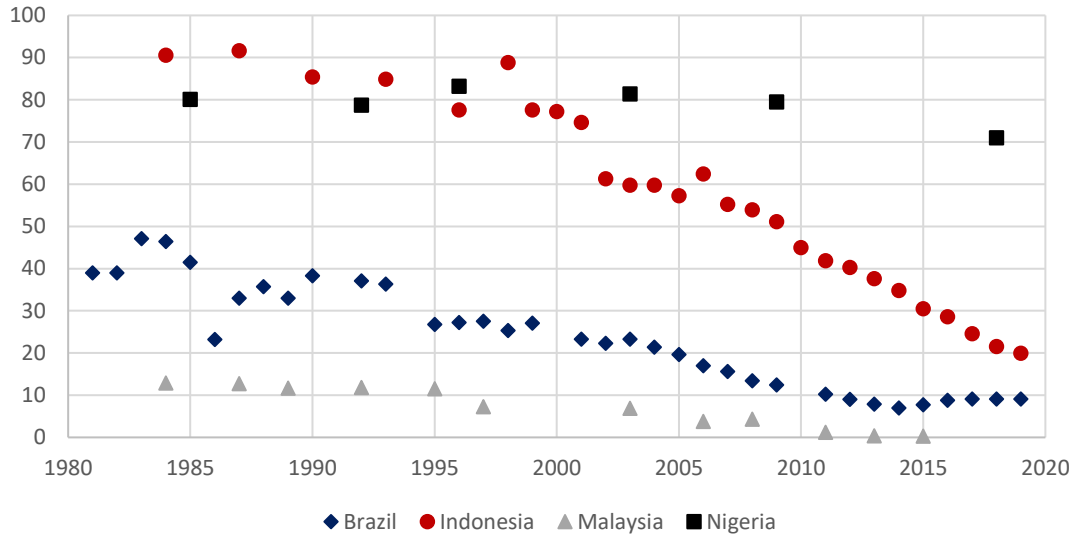

Figure 12. Poverty headcount ratio at $3.20 a day (2011 PPP) (% of population)

Source: Poverty and Equity Database, World Bank (2022)

Poverty has fallen faster in Indonesia not only because of its higher economic growth but also because its poverty has been more growth-responsive. A partial indicator of its growth-poverty elasticity, at least compared to Brazil, is its lower inequality, as measured by comparative Gini indices, again sourced from Povcal (Figure 13). Indonesia's Gini is approximately 15 percentage points lower than that of Brazil, even though the indices have tended to converge this century. Two additional conclusions from these data deserve comment. The first is that Nigeria's indices have displayed considerable volatility, but are currently slightly lower than Indonesia's. In other words, Indonesia's superior poverty performance is due almost entirely to its higher growth rate. Secondly, Indonesia's Gini has risen appreciably during the 21st century, by almost 10 percentage points through to around 2015, before tapering off slightly.

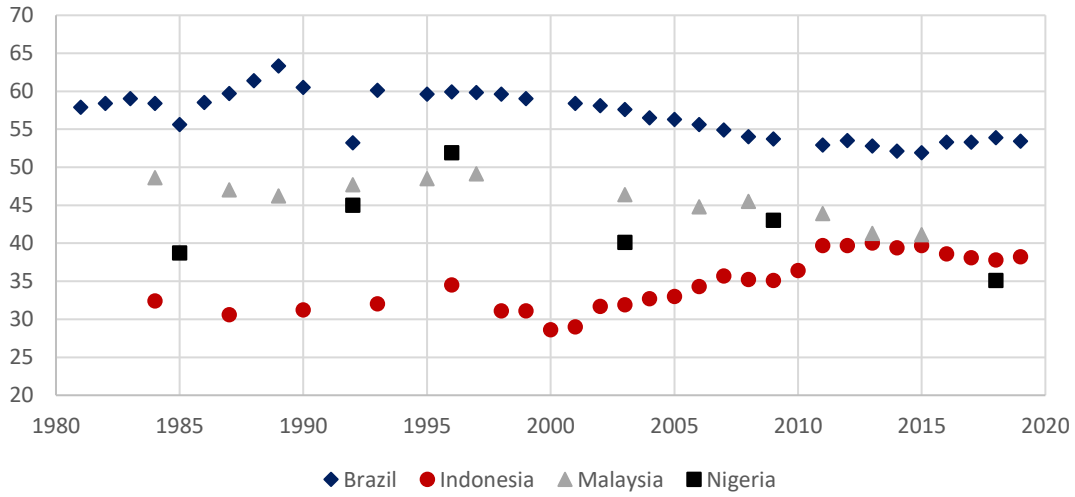

Figure 13. Gini Index (World Bank estimate)

Source: Poverty and Equity Database, World Bank (2022)

We note in passing the 'irony' of a stable Gini during the first boom, of authoritarian, centralized governance and a single, geographically concentrated major booming commodity, compared to a rising Gini during the second boom period, of decentralized, democratic governance, of more dispersed beneficiaries, and in the presence of a rudimentary social welfare net. It is beyond the scope of this paper to discuss this phenomenon, except to reiterate our earlier point that the causal links between resource abundance and living standards are diffused and often weak. Moreover, there are differential impacts across the various commodity booms. For example, Pasaribu (2019) found that, although local poverty incidence fell significantly in districts that experienced coal and palm oil booms, the effects were more pronounced in palm oil regions owing to the fact that this commodity generated more lower-paying jobs, mainly directly in the agricultural sector, in contrast to the more capital-intensive coal sector.

e) **Institutional Effects**

Finally, what of the effects of resource abundance on governance and institutional quality? Here too the resource curse literature hypothesizes that the effects may be negative, particularly in developing countries with low prior institutional quality and unsettled polities. This question is often most effectively addressed through detailed country studies. But since we are examining Indonesia in comparative context, we draw on a widely used indicator of governance quality, Transparency International's 'Corruption Perceptions Index' (CPI). This series has the advantage of a reasonably long time span, it has a plausible analytical rationale, and it has been 'road tested', as many studies have used and scrutinized the data. Several other comparative indicators could be used, for example, the World Bank's World Governance Indicators. However, they are broadly consistent, and they are all subject to similar caveats: they are subjective, occasionally politicized, and they grapple with the question of causality since these indicators tend to be highly correlated with per capita incomes. An additional limitation for our purposes is that these quantitative indicator series typically commence in the 1990s and so they can be employed mainly to examine the 21st century booms.

With these caveats in mind, Figure 14 presents the CPI trends for the period 1995-2021. There are two key conclusions. First, reflecting the ambiguous causality referred to above, the country rankings generally follow those of per capita GDP. But second, Indonesia is the only country for which there has been a general improvement over the longer term. Its index dipped during the difficult years of deep crisis and transition to democracy after 1997, but it began to recover from around 2004, notably coinciding with the commencement of the second boom, which coincidentally approximates the period when the country's periodically effective anti-corruption commission (known by its acronym the KPK) was established. The indices for Brazil and Nigeria show no clear trend. Both have declined in recent years. Indonesia has in fact overtaken Brazil in some years. To repeat, this finding is at best indicative and suggestive. Many other factors influence governance quality. But at least these and other series do not point to any significant deterioration in institutional quality in Indonesia during the second commodity boom. In fact, the data rather point in the opposite direction.[19]

[19] This conclusion needs to be supported with reference to detailed case studies of key institutions, including the bureaucracy (on which see for example ADB (2020) for

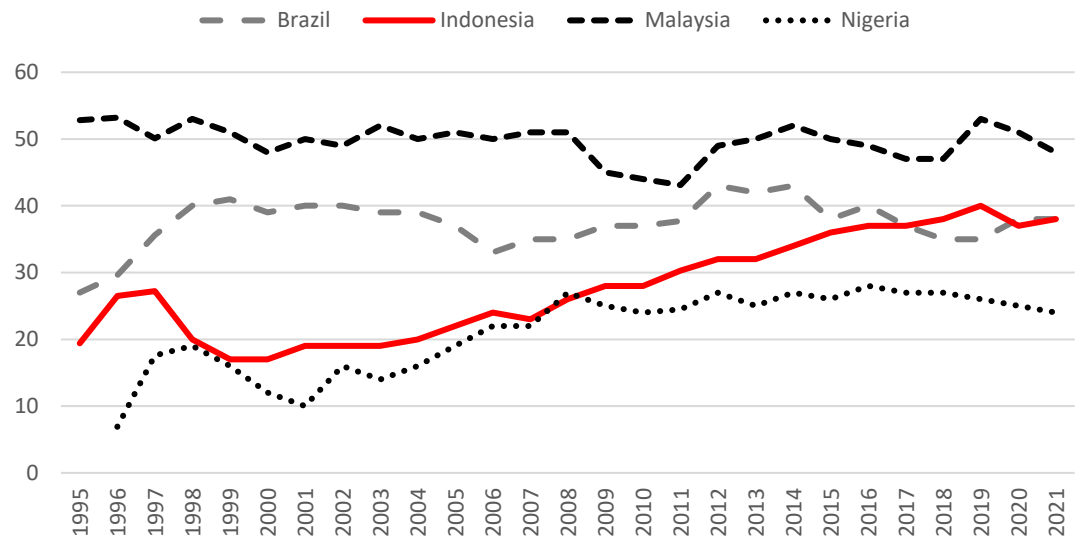

Figure 14. Corruption Perception Index

Notes: data are only available from 1995. The method was changed in 2012 and the scale was changed from 1-10 to 1-100. This graph converts the figures before 2012 to a scale of 1-100. A higher score indicates lower perceived corruption. Source: Transparency International (2022).

5. Summing Up

Our principal conclusions are threefold.

First, Indonesia, a moderately resource-rich economy, has not suffered a resource curse in any significant sense. Apart from the special case of the 1997-98 Asian financial crisis (AFC), the causes of which were unrelated to natural resource endowments, and the current Covid-19 pandemic, Indonesia has recorded consistently positive, sometimes rapid, economic growth since the late 1960s. In particular, periods of high economic growth have occurred during periods of resource booms (the 1970s) and low commodity prices (the late 1980s/early 1990s). Among our three comparator countries, Indonesia has clearly outperformed relative to Nigeria, the country with the most similar initial conditions. More generally, its experience is quite different from the 'Bottom Billion' cases (Collier 2007), mainly African, where resource abundance in weak and ethnically divided states has triggered conflict, corruption and economic stagnation.

The reasons for Indonesia's superior performance are complex and beyond the scope of this paper. The main proximate explanation is its generally prudent macroeconomic management and reasonably open economic policies. Except for the AFC, successive Indonesian governments in both the authoritarian and democratic eras have consistently presided over modest fiscal deficits, rarely in excess of 3% of GDP. Consequently, when commodity prices fell, even sharply as in the first half of the 1980s, the government was able to implement fiscal consolidation effectively and

a recent study), the legal system, the media, and other independent checks on government.

avoid a deep debt crisis. These fiscal policy settings have been further supported by a professional, inflation-averse central bank, which has been formally independent since 1999. In turn, this economic growth has resulted in rising living standards, as indicated by the steadily declining poverty incidence in almost all years since the early 1970s, again apart from the AFC and Covid-19 pandemic.

Three additional factors have supported these positive outcomes. One is the general avoidance, at least on an egregious scale, of low-quality public investments – 'white elephant' projects – of the proceeds of the booms. In fact, a striking feature of the first decade and a half of the oil boom was the major commitment to infrastructure and to agriculture, resulting in a fundamental agricultural transformation, especially in rice (Timmer 1989). There was of course large-scale corruption too, especially in military and state enterprises. Ironically, and fortunately, the major 1970s case, involving the state oil company Pertamina, occurred relatively early in the boom, and it enabled the technocrats to quickly retake control of public finances.[20] This was an illustration of the so-called 'Sadli Law', that bad times make for good policies, that is, through Soeharto's empowerment of the technocrats in periods of economic difficulty.

Another factor has been that Indonesian trade and investment policies have never fundamentally deviated from a moderately open stance. To be sure, protectionist and economic nationalist pressures have strengthened during the boom periods, as a buoyant economy reduced the case for the perennially unpopular economic liberalizations, and owing to the squeeze on the tradable sectors. But for a variety of domestic and international reasons Indonesian has never basically turned inwards since the late 1960s.[21]

Finally, in both boom periods, the Indonesian polity and governance structures were relatively settled and stable, as were the broad political economy parameters. During the first boom, Soeharto's authoritarian rule, and his team of able technocrats, was firmly established, while by the time the second boom arrived the transition to democratic and decentralized rule was in place. Thus the policy struggles and competition for rents that occurred in both periods were largely within these well-established confines, and they did not spill over into extensive extra-governmental disputes and conflict.[22] [23]

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[20] See McCawley (1978) for a detailed analysis of the Pertamina debacle. Its debts at one stage were equivalent to 30% of GDP. It is a matter of speculation what the scale of losses could have been if left unchecked.

[21] See the extensive discussions of this issue in the Patunru et al (eds, 2018) volume. Indonesia's political economy construct was such that the positive correlation between economic nationalism and commodity prices was stronger in the first boom. See Basri (2001).

[22] For authoritative surveys of Indonesian politics during the two periods, see Mackie and McIntyre (1993) and Crouch (2010).

[23] Of course localized conflict has been an ever-present feature of Indonesia. It was most serious in 1997-99 following the generalized breakdown of law and order during the AFC. There have also been long-running separatist movements in the outlying regions of Aceh (now brought under control) and Papua. Papua is however a special case: although resource-abundant (principally its two huge mining operations, one in each Papua province), the fundamental grievances have been political, reflecting the

Our second main conclusion, nevertheless, is that Indonesia could have managed its natural resource endowments more effectively. It could have saved more of the proceeds of the booms and insulated the economy from short-term volatility, by for example establishing a sovereign wealth fund (SWF).[24] Related, nor was there any explicit attempt to introduce concerted counter-cyclical fiscal policy during either boom, although as noted such a policy was somewhat evident from around 2004. Admittedly, however, such a judgement has to be balanced against other considerations. In the 1970s Indonesia was still an extremely poor country, with huge backlogs in practically every area of government expenditure, so the pressure to spend the boom's proceeds was immense. Moreover, as noted there were large investments in infrastructure and rural development. In the second boom much of the proceeds went to the private sector in the coal and palm oil sectors, and so was not as easily taxable as was the case with the first, oil-centred boom.

In addition, Indonesian governments have not maximized the public benefits of the booms owing to the imposition of sub-optimal tax and regulatory arrangements, the selective allocation of licences to the politically well-connected (and state enterprises in some cases), and the imposition of compulsory domestic processing requirements that have transferred the rents to the processors and created deadweight losses. In some local government districts the access to natural resources has been unregulated, indeed lawless (Garnaut, 2015).[25]

Our third conclusion, and one that illustrates a broader issue of the diversity of resource boom experiences, is that there are pronounced differences between the two resource boom episodes. As noted, the 1970s boom was based primarily on oil, and later gas. The proceeds accrued mainly to a highly centralized, authoritarian, development-oriented government, through direct taxation and through the operation of the state-owned miner, Pertamina. The second boom differed in practically every respect: Indonesia was a democratic, decentralized nation state, the boom sectors were predominantly in private hands (albeit with a sizeable state sector), the production technologies were dispersed, often small-scale (particularly in palm oil, but also in some coal operations), and geographically dispersed. In addition, the macroeconomic management of the two boom and their distributional consequences also differed.

manner of the region's controversial incorporation into the Republic (Resosudarmo et al, 2014).

[24] Ironically the government established an SWF in November 2020, *after* the booms had passed.

[25] There are of course broader environmental management issues, especially in the case of forest and maritime resources, that are beyond the scope of this paper.

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