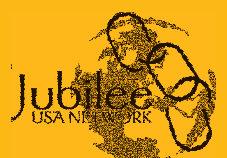




DRILLING INTO DEBT

AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN DEBT AND OIL





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An Investigation into the Relationship
Between Debt and Oil

Written and researched by:
Stephen Kretzmann and Irfan Nooruddin



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***Oil Change International** campaigns to expose the true costs of oil and facilitate the coming transition towards clean energy. We are dedicated to identifying and overcoming political barriers to that transition. Visit us at www.priceofoil.org for more information.*

***The Institute for Public Policy Research (ippr)** is the UK's leading progressive think tank and was established in 1988. Its role is to bridge the political divide between the social democratic and liberal traditions, the intellectual divide between academia and the policy making establishment and the cultural divide between government and civil society. It is first and foremost a research institute, aiming to provide innovative and credible policy solu-*

tions. Its work, the questions its research poses and the methods it uses are driven by the belief that the journey to a good society is one that places social justice, democratic participation and economic and environmental sustainability at its core.

***Jubilee USA Network** is the US arm of the international movement working for impoverished country debt cancellation and right relationships between nations. Jubilee USA is a network of more 70 religious denominations, environmental organizations, community groups, research institutes, and solidarity organizations.*

*Additional research and support provided by **Amazon Watch** and **Milieu Defensie**.*

Executive Summary

Prime Minister Tony Blair is planning to discuss climate and development in Africa at the G8 Summit in Scotland. The external debt of developing countries is already very much on the table. In addition the G8 Finance Ministers have also indicated that they want to talk about oil, specifically oil prices. If the G8 nations, and the world, want to seriously tackle climate change, poverty, and debt, its time to look deeply at the common thread between all of them: oil.

This investigation focuses on debt and oil, and exposes the very real relationship between them. In short, this research documents an energy strategy for the G8 which is fundamentally at odds with a development strategy for the rest of the world.

In their June 11 communiqué, the G8 Finance Ministers not only announced debt relief for 18 countries, they also stressed their commitment to the “elimination of impediments to private investment” in Africa. Oil and minerals are traditionally at least 60% of foreign direct investment in Africa – and much higher in certain countries. West Africa is widely regarded as one of the priority areas for investment by the oil industry, and oil production from the region is universally projected to rise. As this paper shows, the G8 commitment to growth via private investment, and specifically the oil industry, is cause for concern.

Drilling into Debt is the first study to rigorously examine the relationship in between oil and debt. To do so, we have collected data on 161 countries for the period 1991-2002, and collected further data on 88 developing countries for the period 1970-2000 for use in a statistical model of debt burdens. We have supplemented that analytical exercise with additional

research, in order to shed light on the policies that led to the current situation.

Our key findings are

1. **Increasing oil production leads to increasing debt.** There is a strong and positive relationship between oil production and debt burdens. The more oil a country produces, regardless of oil's share of the country's total economy, the more debt it tends to generate.
2. **Increasing oil exports leads to increasing debt.** There is a strong and positive relationship between oil export dependence and debt burdens. The more dependent on oil exports a country is, the deeper in debt it tends to be.
3. **Increasing oil exports improves the ability of developing countries to service their debts.** There is a strong and positive relationship between oil exports and debt service. The global oil economy improves the ability of countries to make debt payments, while at the same time increasing their total debt.
4. **Increases in oil production predict increases in debt size.** Doubling a country's annual production of crude oil is predicted to increase the size of its total external debt as a share of GDP by 43.2 per cent. Likewise, the same change is predicted to increase a country's debt service burden by 31 per cent. For example, the Nigerian government currently plans to increase oil production by 160% by 2010. Past trends indicate that Nigeria's debt can thus be expected to increase by 69%, or \$21 billion over the next six years.
5. **World Bank programs designed to increase Northern private investment in Southern oil production have instead drastically increased debt.** Northern multilateral and bilateral "aid" for oil exporting projects in the South has exacerbated, rather than alleviated debt. Specifically, an examination of those countries where the World Bank Group conducted "Petroleum Exploration Promotion Programs" (PEPPs) reveals debt levels (debt-GDP ratios) in those countries that are 19% higher than those countries that did not undergo this form of structural adjustment.
6. **The relationship between debt & oil is most likely caused by the interplay in between three factors:**
 - a. Structural incentives for and direct investments in the oil industry by multilateral and bilateral institutions, such as the World Bank Group and export credit agencies.
 - b. Oil fueled fiscal folly – both in the North by creditors over eager to lend to nations perceived as oil rich, and in the South by unwise fiscal policies.
 - c. The volatility of the oil market.

A previous report, published in 2004 by the Institute for Policy Studies¹, demonstrates how multilateral support for oil is consistent with an agenda to diversify oil supplies for Northern consumption, and open Southern reserves to Northern corporate investment. It also noted that 82 per cent of all oil extractive projects funded by the World Bank Group since 1992 are export-oriented, and primarily serve the energy needs of the North, not the South.

Countries that produce oil tend to be poorer and less productive economically than they should be, given their supposed blessings. This has been well documented over the last decade. Further research has confirmed that oil export-dependent states tend to suffer from unusually high rates of corruption, authoritarian government, government ineffectiveness, military spending, and civil war.²

Coupling these previous efforts with our key findings we see a disturbing picture of a global oil economy that primarily serves the interests of Northern consumers, creditors, and governments, while running counter to the interests of poverty alleviation, development, and a stable climate in the rest of the world.

We incorporate these analyses into our own, and make the following recommendations:

1. **End Oil Aid.** OECD countries should end Northern governmental subsidies for new oil projects in the South. Such projects have not historically provided energy for the poor, and are proven to be associated with increases in poverty, conflict, and debt, and to increase the risk to the poorest from climate change. They cannot be considered aid.
2. **Reserves, revenues, and contracts transparency.** We applaud the G8 Ministers for calling for the establishment of a “global framework for the reporting of oil reserves”. This mechanism should be mandatory, uniform, and fully transparent, as should similar mechanisms for oil revenues and contracts transparency.
3. **Support for renewable energy and efficiency should be dramatically increased.** These technologies will provide energy for those who need it, while tackling poverty, debt, and climate change.
4. **The G8 should immediately cancel 100% of the remaining multilateral and bilateral debt** without requiring that countries join the HIPC (Heavily Indebted Poor Country) initiative, or imposing any additional harmful economic conditions.
5. **Development aid to oil exporting countries should concentrate on economic diversification** in order to minimize debt burdens from excessive oil export dependence.
6. **G8 Ministers should commit by their next meeting to a**

global harmonization of energy and development strategies in light of global warming, debt, poverty, and peak oil. The issues should henceforth be viewed as inextricably woven together.

Some will undoubtedly read this research as further evidence of the urgent need for revenue transparency and anti-corruption measures regarding the extractive industries in the developing world. While this research certainly supports those claims, we are highly skeptical of the ability of the current, non-mandatory, version of the Extractive Industries Transparency Initiative (EITI) to deliver on much, except to make oil companies and governments look good.

More fundamentally, we ask, at what point do we recognize that oil has not, and is unlikely to, work as a path to prosperity? Our global continued dependence on oil is clearly changing the climate, and placing the poorest – particularly in Africa - at the front lines of global warming. If Tony Blair and other G8 leaders are serious about tackling global warming and development problems in Africa, they need to be willing to look at the common factor that causes both – oil.

Each country has a right to its share of the global commons, just as each country has the right to choose its own development path. Implementing the recommendations above would go a long way towards ending ongoing economic coercion and opening up new choices for people and our planet.

Oil's Role in Creating the Debt Crisis

"The role of the private sector as the engine for growth in Africa is fundamental to [the Commission for Africa's] action plan"

– *Prime Minister Tony Blair*, welcoming the establishment of Business Action for Africa

In their June 11 communiqué, the G8 Finance Ministers stressed their commitment to the "elimination of impediments to private investment" in Africa. Oil and minerals are traditionally at least 60% of foreign direct investment in Africa – and much higher in certain countries.³ As this paper shows, the G8 commitment to growth via private investment, and specifically the oil industry, is cause for concern.⁴

That countries that produce oil tend to be poorer and more violent and corrupt has been well documented over the last decade. In 1995, economists Jeffrey Sachs and Andrew Warner drew on data for 97 developing countries and confirmed that there was indeed a negative relationship between a country's dependence on natural resource exports beginning in 1971 - captured by their share in GDP - and its later growth performance. Further research by other academics confirmed that oil export-dependent states tend to suffer from unusually high rates of corruption, poverty, authoritarian government, government ineffectiveness, military spending, and civil war.⁵

Until this paper, it was generally thought that whatever other curses oil brought, its vast revenues offered a path out of debt for oil exporting countries, and thus perhaps, eventually out

of poverty. Like most myths sold by the institutions of economic globalization and the oil industry, the notion that oil alleviates debt proves false – in fact, quite the reverse is true.

Price Spikes Doom Oil Importers

There is general agreement that the oil shocks of the 1970s were the primary external factor in creating the original debt crisis. In the aftermath of the first OPEC oil shock of 1973-74, one observer wrote that *“no event since World War Two has had such an impact on global economic and political relationships as the quadrupling of the international price of crude oil at the end of 1973 and beginning of 1974.”*⁶ At the time, the increase in oil prices was considered a double-edged sword. Those “fortunate” enough to have oil reserves were expected to benefit considerably by the increase in export revenues, while those “unlucky” enough to lack oil reserves of their own were overnight saddled with unbearably large energy bills. This analysis is only half-correct.

It is indisputably true that oil importers were seriously harmed by the oil shocks. Indeed, William Cline wrote in 1984 that “the single most important exogenous cause of the debt burden of non-oil developing countries is the sharp rise in the price of oil in 1973-74 and again in 1979-80.”⁷ Further, Cline estimated that developing countries “lost \$141 billion in higher interest payments, lower export receipts, and higher import costs as the consequence of adverse international macroeconomic conditions” that resulted from the oil shocks.⁸

Flush with the petrodollars resulting from the first OPEC-induced oil price increases in the early 1970s, banks in the West were quick to offer generous loans to developing countries who were eager for infusions of capital to finance their development programs. When OPEC raised prices again in the late 1970s, and in particular when Western investors

began to purchase oil on the spot market in anticipation of increases in the prices of oil, the second oil shock hit the developing world. Overnight the price of these countries’ energy imports doubled or tripled, leaving them little option but to generate more debt to pay for their imports. And, quite literally, today’s debt crisis was born.

Two related developments further hurt the developing world and caused their debt situations to worsen dramatically. First, the second oil price shock worsened the situation of oil importers considerably, even as they were still reeling from the first shock. For oil exporters, the second oil price shock generated even greater export revenues, on the basis of which they generated even more debt. Second, the world economy sank into a recession as a result of increased oil prices.

The oil exporters, who were enjoying higher oil revenues, did not escape this effect. “Dutch disease” set in whereby the rapid growth of the oil sector hurt the competitiveness of other export sectors. Many oil-exporting states used their revenues to increase imports. The increased oil prices, however, led to a “concomitant rise in the price of manufactured goods imported from the developed countries.”⁹ Thus, the non-oil import bills for developing countries also increased rapidly.

The Role of Oil Exports in the Debt Crisis

Much of the analysis of the debt crisis focuses almost exclusively on the impact of high oil imports on debt burdens as a result of the oil shocks in the 1970s. What about those countries that had oil in the first place? Did the oil exporting countries benefit as a result of the higher oil prices and escape the crushing burden of debt? The short answer is no.

While the reasons were different, oil exporting countries too soon found themselves burdened by large and unsustainable

external debts. The increased oil revenues had two primary effects on these countries:

1. Increased oil revenues allowed oil exporting countries to increase their spending dramatically in anticipation of continued higher export earnings and
2. Increased oil revenues improved the credit ratings of oil exporting countries internationally, giving them access to vast amounts of capital at relatively low interest rates.

Consider William Cline's analysis of this relationship in the aftermath of the 1982 Mexican peso crisis:

*Mexico's large build-up of debt was almost certainly accelerated rather than deterred by higher oil prices. Mexico first borrowed heavily to develop oil production, and subsequently the promise of oil exports was the main basis for its ability to borrow large amounts more generally in pursuit of a high-growth strategy.*¹⁰

And he continues to state that the same is probably true for the debts of Venezuela, Nigeria, Indonesia, and Ecuador.¹¹

Thirty years after the first oil price shock, one is struck by the crushing burden of external debt on the growth prospects of developing countries, including those who are oil exporters. But in the 1970s, it was a very prescient observer who did not think that the discovery of oil in certain developing states was their ticket to an improved economic future. Peter Baker, writing about the impact of oil on African development in 1977, documents these expectations. Oil exploration in Africa increased rapidly in the period after decolonization. In 1957, African oil production was about 2.7 million metric tons (or 0.3% of world oil output). Twenty years later, in 1976, Africa was producing 279.5 million metric tons of oil or 9.85 % of world output.¹² Baker's analysis of the impact of

the discovery of African oil is worth quoting at length:

*For the fortunate few countries, such as Algeria, Libya and Nigeria, with impressive production figures and massive oil and gas reserves, the discovery of oil has done more than improve their balance-of-payment position: it has introduced a whole range of possibilities and capabilities, political as well as economic, which fifteen years ago would have been unimaginable.*¹³

So what went wrong? Why was the promise of increased economic growth replaced by a nightmare of crushing debt, civil conflict, and stagnant economies?

Three explanations are most relevant for understanding the historical indebtedness of oil-exporting countries:

- ❖ Oil wealth creates economic volatility, which causes macroeconomic shocks and destabilizes government revenues.¹⁴ Macroeconomic shocks that are not successfully managed generate fiscal and monetary disequilibria, inflation, exchange rate appreciation (which hurts other export sectors), lower private investment and capital flight (due to the increased uncertainty in the economy). Further, volatility in oil prices destabilize government revenues for oil-exporting states. Negative price shocks interrupt the revenue flow and therefore government programs dependent on those revenues. And positive price shocks are wasted because governments grow too rapidly and without adequate concern for the quality of their investments. The increased revenues from positive price shocks also create incentives for corrupt and rent-seeking behavior, and can exacerbate ethnic tensions if the distribution of oil revenues is not considered equitable. Further, the higher volatility in revenues can reduce the time horizons of policy actors who feel compelled to spend the revenues when they are there. Put together, these various effects of revenue volatility

resulted in rising fiscal deficits, the financing for which governments relied on external borrowing.

- ❖ Oil wealth increases the ability of oil-exporting countries to finance their fiscal deficits and balance-of-payment deficits by borrowing abroad. Robert Aliber, in his analysis of the Latin American debt cycle, argues that *“the common factor explaining the increase in external loans of both oil-importing and oil-exporting countries is that international lenders were relaxing their credit-rationing standards.”*¹⁵ In part, these lower standards were the result of increased deposits of petro-dollars into these banks as a result of the oil shocks. The banks had more money on hand to lend, and there was no shortage of developing countries willing to borrow. But a second aspect of a bank's lending decision concerns the credit-worthiness of the potential borrower. And here the presence of proven oil reserves in an era of increasing oil prices gave oil-exporting developing countries a credit-rating far higher than their domestic political and macroeconomic fundamentals would have otherwise justified. Solvency and liquidity are two criteria used by lenders to evaluate a country's creditworthiness.¹⁶ International lenders have proven eager to provide financing to countries with oil resources because they anticipate this source of wealth coming on-line. The World Bank and IMF have been quick to finance projects to develop extractive sectors because of anticipated high rates of return.¹⁷
- ❖ Third, once countries are in debt, the temptation to turn to oil as a means of digging oneself out of debt is great. William Easterly has argued that there is a similar perverse relationship between oil resources and the level of a country's debt. Easterly argues that governments generating high levels of debt do so because they are not interested in the future and are irresponsibly “mortgaging the future” of their countries. To bolster his case that higher levels of debt are evidence of irresponsible policy-

making, Easterly furnishes data on oil production, which he equates to “selling off assets” and therefore another form of mortgaging the future. Analyzing oil production between 1987 and 1996, Easterly finds that “the average growth in oil production is 6.6 percentage points higher in the HIPCs [Highly Indebted Poor Countries] than in the non-HIPCs.”¹⁸

To make matters worse, there is strong evidence that oil dependence can hurt democratic rule.¹⁹ To the extent that non-democratic rulers are more likely to engage in corrupt practices that hurt the economy, as well as engage in kleptocratic behavior in which they divert loans to their personal wealth, the negative link between oil and democracy suggests another channel through which oil dependence might increase a country's indebtedness.

This strategy of leveraging oil wealth to gain access to international capital is understandable. Indeed, since oil is an asset, one of its advantages is it can be traded on the futures market, allowing a developing country to run current account deficits now and use expected future surpluses to repay them.²⁰ But the sustainability of such a strategy depends on the expectation that boom and bust years will alternate at roughly the same frequency. If, however, the oil market were to enter a period of sustained sluggishness, serious dislocations are the consequence. In hindsight, we know that this is exactly what happened.

Pinto argues that it is quite plausible “that the transient nature of the oil boom was not foreseen in the mid-1970s.”²¹ To support this claim, he provides the following forecasts from the World Bank's Economic Analysis and Projections Department for the 1985 price of a barrel of oil made at 3 different points in time: “in 1976, the forecast was \$21.9; in 1979, following the second oil shock, the number was

revised upward to \$47.3.”²² Following the oil glut of 1982, in 1983 the Bank revised the forecast downward to \$29.0, but even this proved too optimistic. Von Lazar and McNabb concur: “Popular prevailing wisdom forecast national economic expansion and growth throughout the 1980s, with oil prices reaching the \$75-80 level by 1990.”²³ But the oil glut and decline in demand result in a much greater than anticipated softening in the price of oil, the net effect of which “was that heavy borrowers/exporters suddenly found themselves unable to service even their debt charges, much less to pay on the actual principal.”²⁴

The changes in domestic economic policy enabled by increased revenues, especially in an environment that expected these revenues to continue increasing for the foreseeable future, coupled with an unanticipated global recession which resulted in increased global interest rates followed by reduced demand for oil, thus came together to create a ‘perfect storm’ for the oil-exporting developing countries. They had spent too much in the good times, and the bad times caught them

unprepared. The result was that thirty years later they find themselves mired in unsustainably large debts and with dismal economic performances as the legacy of their oil wealth. In the late ‘70’s though, observers were only too eager to praise oil as the engine of African development:

*By the last decade of this century, the African oil industry will have changed both in terms of its present economic importance and geographical distribution. It is to be hoped that by then the large revenues which have accrued to the present and future producers will be used in the most effective way to provide the ‘take-off’ to sustained economic growth, combined with a rapid improvement in living standards. On present evidence, particularly when one views Algeria and Nigeria, it seems that this hope may well be realized.*²⁵

Tragically, this optimism was entirely misplaced at the time. Similar statements today should also be viewed with serious skepticism.

Not to Heal but to Rub Salt

Forty years of the World Bank experiment in turning the economies of debtor-nations round has not resulted in success in a single country. Yet the Bank persists in its folly. Which makes you believe that their mission in debtor nations is not to heal but to rub salt into wounds. To collect debts and to send the nations into even greater debt so that the World Bank can remain in the nations forever...

...the sooner debtor-nations realize the political nature of the World Bank, the sooner they will be able to face the bogus economic theories of the Bank with an equivalent weapon--people's power. At no matter what cost.

-Ken Saro-Wiwa²⁶

In 1981, the newly elected Reagan administration saw their opportunity to implement a deflationary economic policy and increase interest rates, which strengthened the dollar and caused debt burdens in the developing world to increase since much of their debt was dollar-denominated.²⁷

But both oil shocks had harmed the American economy too, and had revealed a new threat in the world where Saudi Arabia, not Texas, occupied the key position in the global oil economy.²⁸

In Congressional testimony regarding the National Energy Act of 1977, President Carter's Secretary of Defense Harold Brown, testified: "...There is no more serious threat to the long-term security of the United States and to its allies than that which stems from the growing deficiency of secure and assured energy resources."

That same year, the World Bank began to invest in oil for the first time. From 1977 to April 1981 the Bank made 27 loans for oil and gas projects, totaling roughly \$1.2 billion.²⁹ At this point, with the new Reagan administration just beginning its term, World Bank President Robert MacNamara proposed to dramatically increase Bank lending for oil and gas. The rationale for this investment was two-fold:

1. Developing countries were paying high prices to import oil and gas from OPEC nations, making them unable to service their debt to the World Bank and other lenders, and
2. Northern governments wanted to see non-OPEC countries open up their oil and gas fields to reduce OPEC control over oil prices.

Developing countries needed more money (to service Northern debt), and the US and its allies needed more non-OPEC oil. The perfect solution was to increase development “aid” for oil and gas projects.

A July 1981 report from the office of the US Treasury’s Assistant Secretary, entitled “An Examination of the World Bank Energy Lending Program” was particularly concerned that the Bank was not doing enough to leverage private investment and stated that:

A major purpose of Bank oil and gas lending, in fact the formal stated policy in such lendings, is to catalyze private investment flows. However, an examination of the Bank’s oil and gas loans to date shows little catalytic effect. Of these first 27 loans...none involved private oil company financial participation. (emphasis in original)³⁰

The US Treasury was highly critical of the Bank for failing to use its lending to leverage further private investment, and emphasized that: *[t]he need for and desirability of the Bank-proposed expansion...[be] examined against the background of the following U.S. objectives:*

1. Removal of impediments – political, financial, and practical – to development of LDC [Least Developed Country] energy resources by the private sector.
2. More generally, encouraging host countries to adopt appropriate policies to establish the necessary climate to foster private sector investment – in energy and other sectors.
3. Where official assistance is needed, structuring such assistance in such a way as to catalyze and complement private investment, while limiting the budgetary impact and ensuring economic soundness.
4. Expansion and diversification of global energy supplies to enhance security of supplies and reduce OPEC market power over oil prices.
5. Structural adjustment in key countries with balance of payments disequilibria due to oil costs that threaten their participation in the international economy, including their ability to service debts to the private commercial banking network.³¹

The US Treasury Department also noted that, as opposed to the US government, “*the neutral stance of the Bank can play an important role. As a multilateral ‘development advisor’ it can help Least Developed Countries revise their incentive structure to encourage investment.*”³²

The World Bank apparently listened to the message from its largest and most important stakeholder, the United States. Writing in 1995, William T. Onorato, the Principal Counsel for Energy & Mining at the World Bank noted that:

*“...since 1980, the Bank has financed PEPP’s (Petroleum Exploration Promotion Projects) and other forms of petroleum sector legal reform and TA (technical assistance) with the consistent objective of acting as a catalyst to mobilize the inflow of foreign direct investment into the developing petroleum sectors of many of the Bank’s borrowing members.”*³³

As a result, many new areas of the world opened up their oil supplies to the North. The legislative and regulatory reforms encouraged by the Bank's legal staff have set the stage, in turn, for billions of dollars in investment from export-credit agencies, other international financial institutions, as well as from private capital.

As we will see in the next section, the impact of PEPPs was dramatic, and perhaps successful from the perspective of the Bank and the US Treasury. The impact on people and economies in the developing world was much less academic, and much more dire.

The Extractive Industries Review

At the World Bank Annual Meetings in Prague in 2000, President James Wolfensohn responded to the mounting critiques of World Bank funding for fossil fuels by pledging to evaluate the impact of lending for oil, gas, and mining on poverty alleviation. The Extractive Industries Review (EIR) was born.

Three years later, in December 2003, Dr. Emil Salim, the Eminent Person selected by the Bank to head the EIR, delivered his final report. Among the strong recommendations was the following:

"The World Bank Group should phase out investments in oil production by 2008 and devote its scarce resources to investments in renewable energy resource development, emissions reducing projects, clean energy technology, energy efficiency and conservation, and other efforts that de-link energy use from greenhouse gas emissions."

Over the course of two years of examination, the World Bank Group (WBG) was unable to provide an example of a single instance where an oil project alleviated

poverty. Many examples were provided of oil projects that exacerbated poverty.

Academic studies, personal testimonies, and governmental data were submitted to the EIR that establish a clear correlation between a country's reliance on oil exports and its levels of poverty, child mortality, child malnutrition, civil war, corruption, and totalitarianism. The EIR also made important recommendations in the areas of governance, revenue management, and human rights that should be considered as *preconditions* to lending for the extractive industries.

The effect of the EIR on the Bank's lending portfolio has been minimal. Despite adoption of only the most timid of the EIR recommendations, implementation has been practically nonexistent over the past year. Bank staff and Directors defend ongoing lending for oil as necessary for poverty alleviation and energy for the poor, and yet to date over 80% of Bank lending for oil projects has gone to finance export oriented efforts that bring oil, and finance debt payments, to the North.³⁴

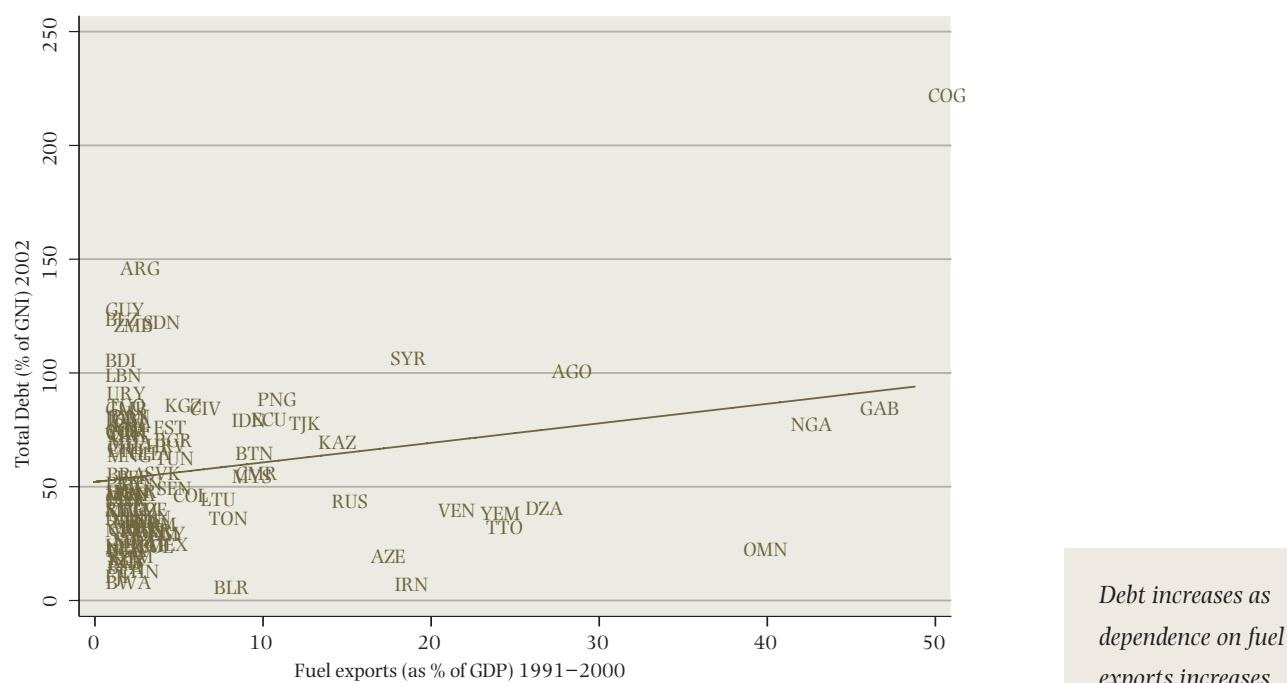
Quantifying the Correlation

As plausible as some of these arguments sound, is there any rigorous evidence that there is in fact a positive association between a large domestic oil sector and the size of a country's debt burden?

Figures 1 through 3 demonstrate an apparent relationship between oil wealth and indebtedness. To ameliorate concerns of reverse causation, the oil wealth variables are measured as averages for the 1990s while the debt variables are measured as averages of 2001 and 2002. This lag allows us to be more confident that any apparent relationship can be attributed to oil wealth "causing" debt rather than the other way around.³⁵

In each figure, the horizontal axis plots a measure of oil wealth while the vertical axis plots a measure of the country's debt burden. Most countries, of course, are clustered towards the low end of the oil wealth axes, but the relationship between debt burdens and oil wealth, indicated by the straight line, is positive in each figure, indicating that it is robust to different measures of debt and oil wealth. As oil wealth increases, so does a country's debt burden.

To examine the relationship between oil and debt more rigorously, we collected data on all developing countries for the period 1970-2000 for use in a statistical model of debt burdens. To ensure that any association between oil and debt is not spurious, we included in our analysis other factors typically thought to lead to higher levels of debt. Existing explanations of debt identify the following factors:

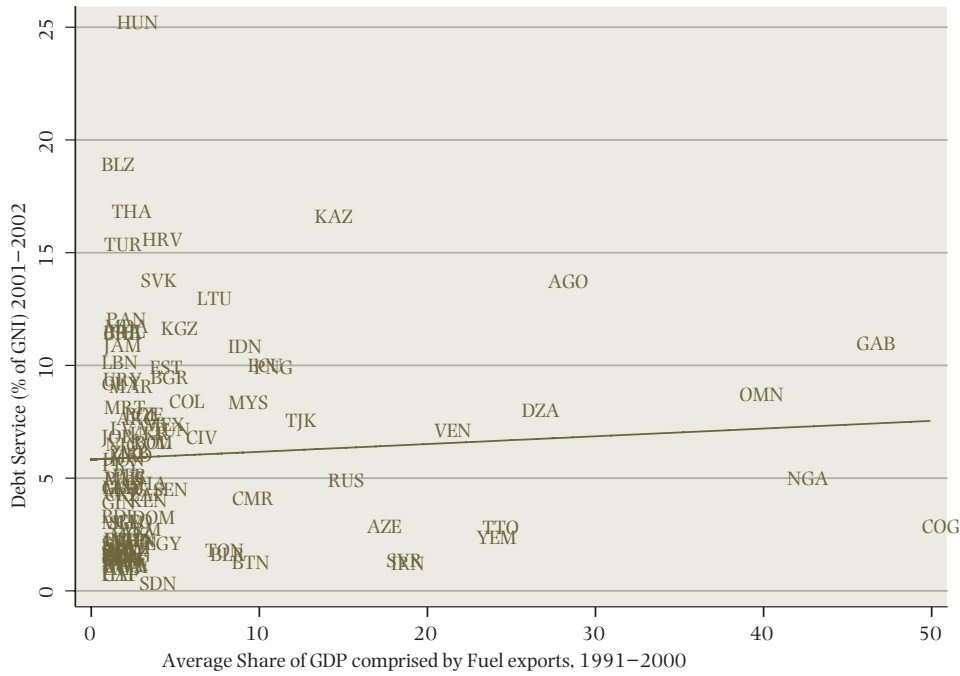


Debt increases as dependence on fuel exports increases

FIGURE 1: Oil export dependence and Total Debt 1991-2002, for 161 countries

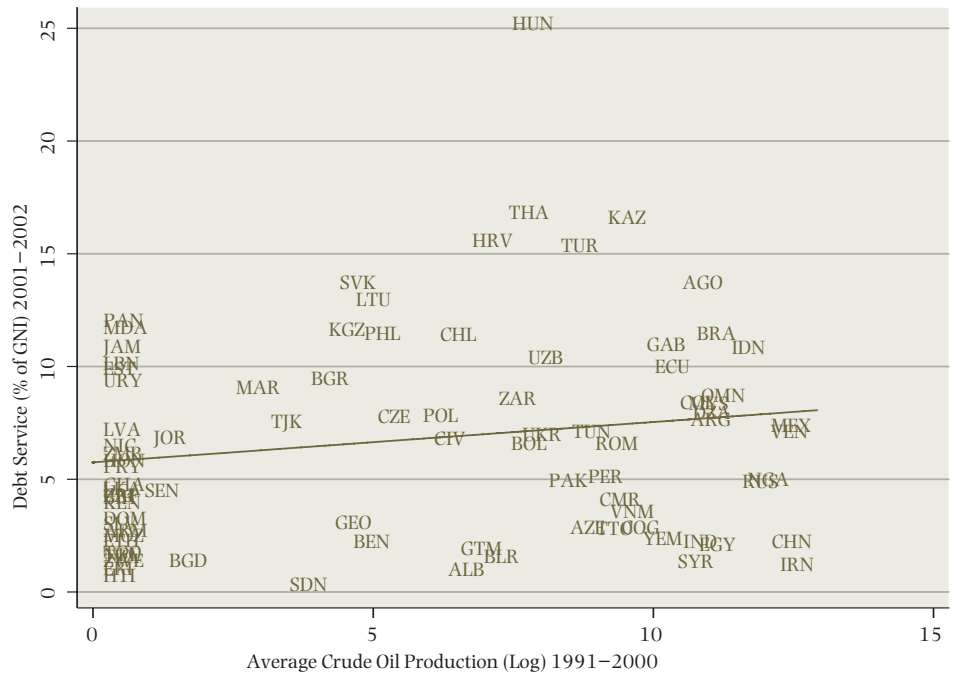
- ❖ **Size of Government:** Governments that spend more are more likely to incur debt to cover their budgets;
- ❖ **Energy Import Dependence:** Countries that rely on imports to meet their energy needs are more likely to be hurt by price shocks, but since energy demand is relatively inelastic in the short-run, this is likely to lead to higher debts;
- ❖ **Trade Openness:** Developing countries that have more of their economy exposed to the vagaries of international trade might be expected to have higher debt burdens because of higher volatility of income and the possibility of trade deficits;
- ❖ **Size of Economy:** The larger a country's economy, the more likely it is to be able to attract loans and to generate debt;
- ❖ **Growth Rate:** Similarly, countries that are growing faster should have lower levels of debt burden; and
- ❖ **Liquidity:** The size of a country's reserves should be negatively correlated with debt.

Having identified these factors, we build a statistical model to explain the *size of a country's external debt to GDP ratio and its debt-service to GDP ratio*. The main explanatory variable of interest is its *oil production*, which is measured as the annual level of crude oil production (in units of 1000 metric tons).³⁶ An advantage of this indicator is that it captures nicely the size of the oil industry in a particular country, while reducing concern that we are measuring "Dutch Disease." For example, a measure of oil dependence in the form of the share of national income comprised from oil revenues might tell us about how large the oil industry is, but is also correlated with the performance of other sectors in the economy. Thus, a 'monoculture' economy dominated by oil could have a higher Oil-GDP (or Oil-Exports) ratio than one in which the economy is diversified *even if* the latter country produced more oil annually.³⁷ All data used in the statistical analysis are drawn from the World Bank. Details on the variables, sample and methods used are presented in the appendix.



Increasing fuel exports are used to finance the debt rather than contributing towards economic development

FIGURE 2: Oil export dependence and Debt Service 1991-2002, for 161 countries



Increasing oil production is associated with higher debt burdens

FIGURE 3: Crude Oil Production and Debt Service 1991-2002, for 129 countries

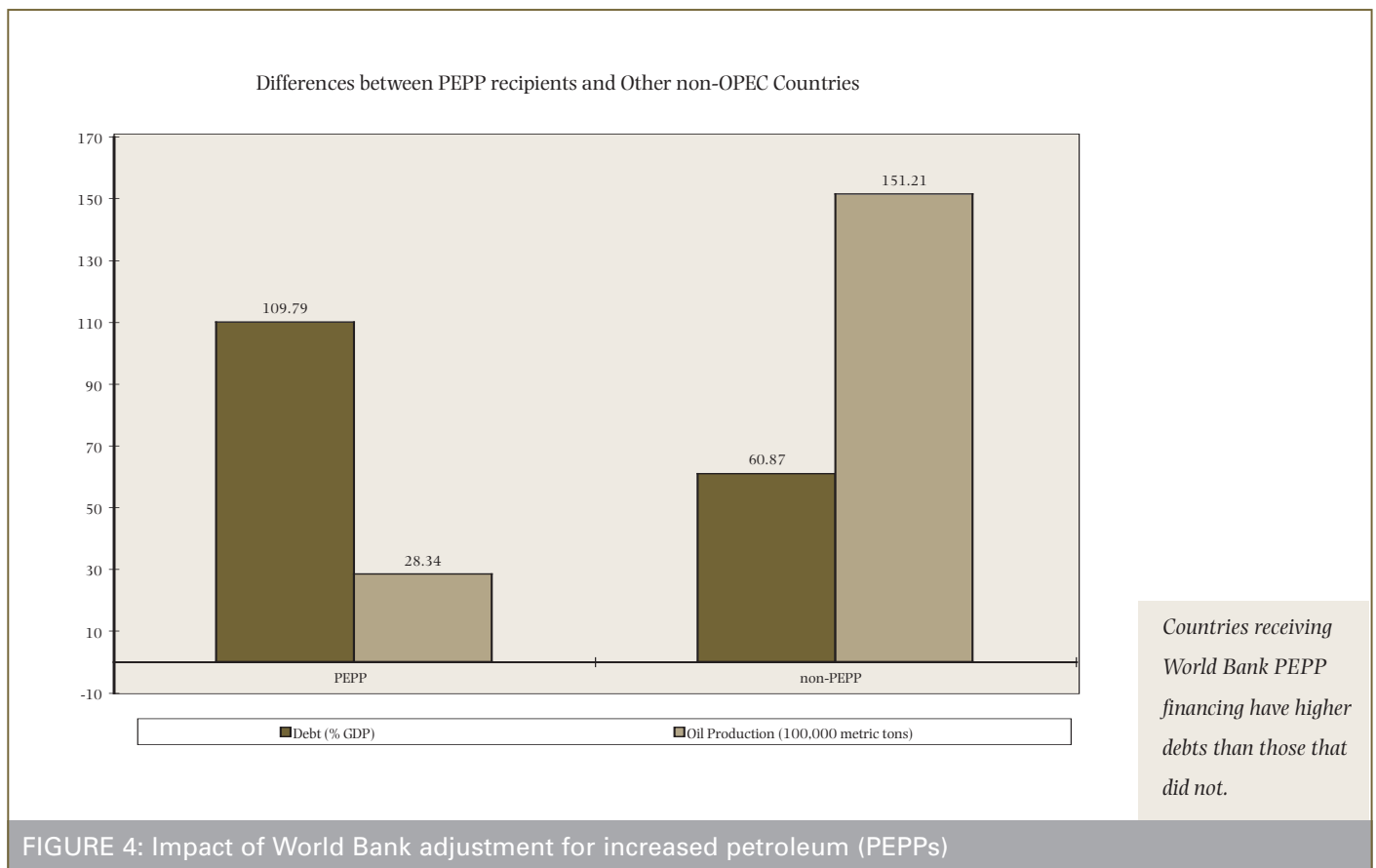
The impact of the World Bank

In 1980, the World Bank initiated the Petroleum Exploration Promotion Program (PEPP) to help oil importing developing countries increase their oil production and reform their policy environment to attract more foreign investment from international oil companies.³⁸ Between 1980 and 1992, 42 PEPP projects were initiated.³⁹ Figure 4 below plots the differences in average debt burdens and oil production between developing countries that received a PEPP loan and those that did not over the 1980-2000 period.⁴⁰

As Figure 4 makes clear, the PEPP recipients had higher debt-to-GDP ratios than the countries that did not receive PEPP loans. This is particularly significant because the PEPP countries do not generally include oil exporters, had lower levels of oil production (which, of course, is why they

received the PEPP financing) and had less of their GDP made up by revenues from oil (1.89% versus 3.75%). Together, this suggests that the differences documented in Figure 4 are not simply a reflection of the larger trend identified in this report, but rather an independent effect of the World Bank’s support of petroleum exploration via increased private investment in the developing world.

When a variable indicating receipt of a PEPP loan is added to the model of debt-to-GDP ratio in Table 2 in the appendix, both the oil production variable and the PEPP indicator are positively signed and statistically significant. *The results from this augmented model suggest that, other things equal, debt’s share of GDP was 19% higher in PEPP recipients than for other non-OPEC developing countries.*⁴¹



Future Oil Production Predicts Debt

As the results from Tables 2 and 3 in the appendix make clear, there is a strong and positive relationship between oil dependence and debt burdens, whether measured as the absolute size of a country’s debt or the amount of its national income devoted to servicing that debt. And the effect is sizable. Doubling a country’s annual production of crude oil is predicted to increase the size of its total external debt as a share of GDP by 43.2 per cent.⁴² Likewise, the same change is predicted to increase a country’s debt service burden by 31 per cent.⁴³ And the effects are dynamically increasing over time. Figure 5 plots the predicted effect on future debt stocks for different *one-time* changes in oil production. Specifically, Figure 5 plots the effect of a country increasing its oil production levels by 20 per cent and 40 per cent in a given year, and then maintaining this increased oil production for the next three decades. Of course, most oil-producing countries

continue to ratchet up their production levels each year, but this simulation is conservative in exploring the effect of just a single increase.

Figure 5 makes two points quite clearly. First, the effect of a single one-time increase in oil production levels has long-term consequences, as debt levels continue to rise for many years after in response to that decision. Second, the effect of oil production increases on debt burdens accumulate. Ten years after a decision to increase oil production by 40 per cent, the predicted level of debt is predicted to have doubled (an increase of 110 per cent), all else equal. Larger increases would have even greater effects, and given that the world wide average increase in oil production levels between 1972 and 2000, according to World Bank data, was 17 per cent, the impact on growth of debt is easy to see.

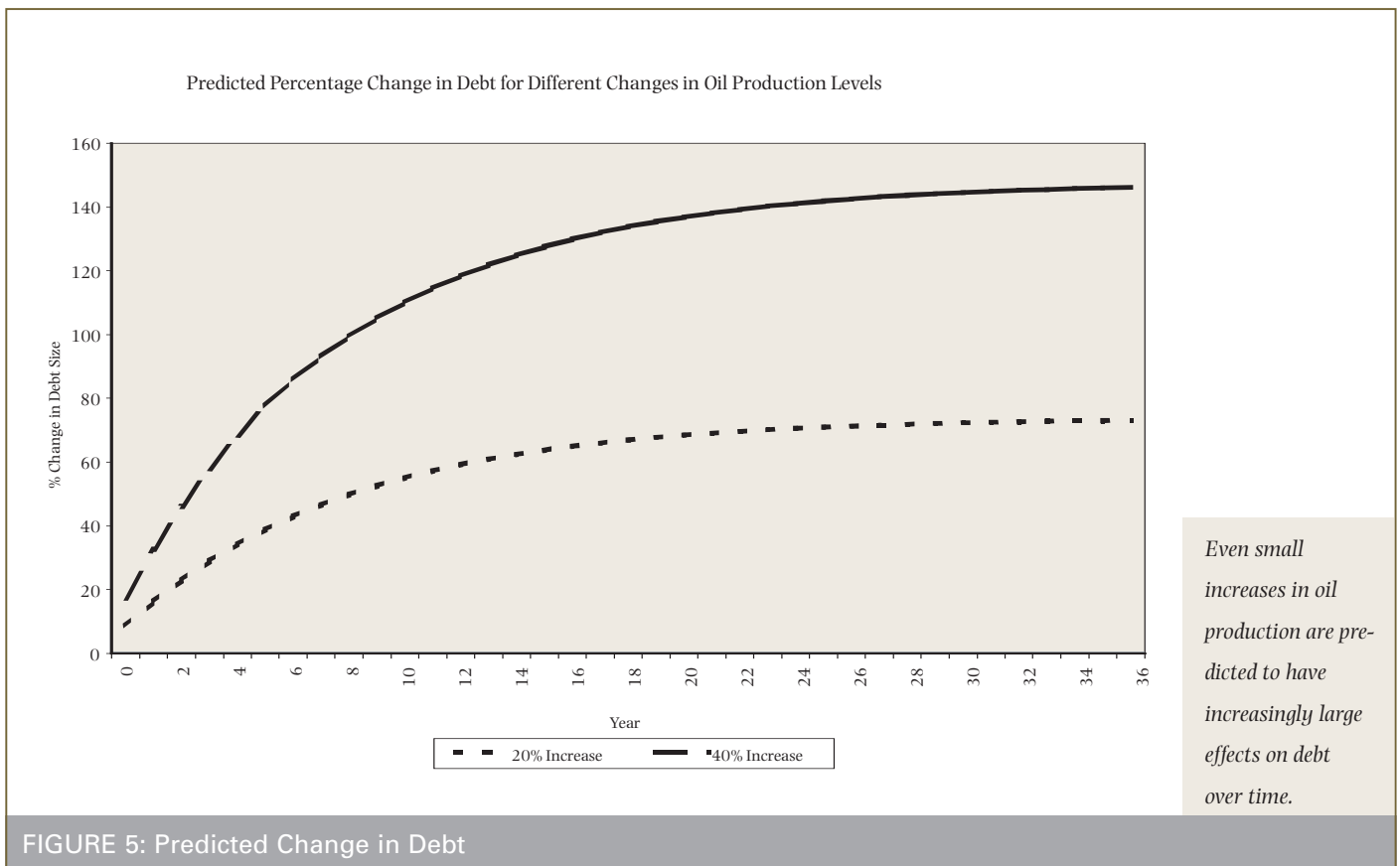


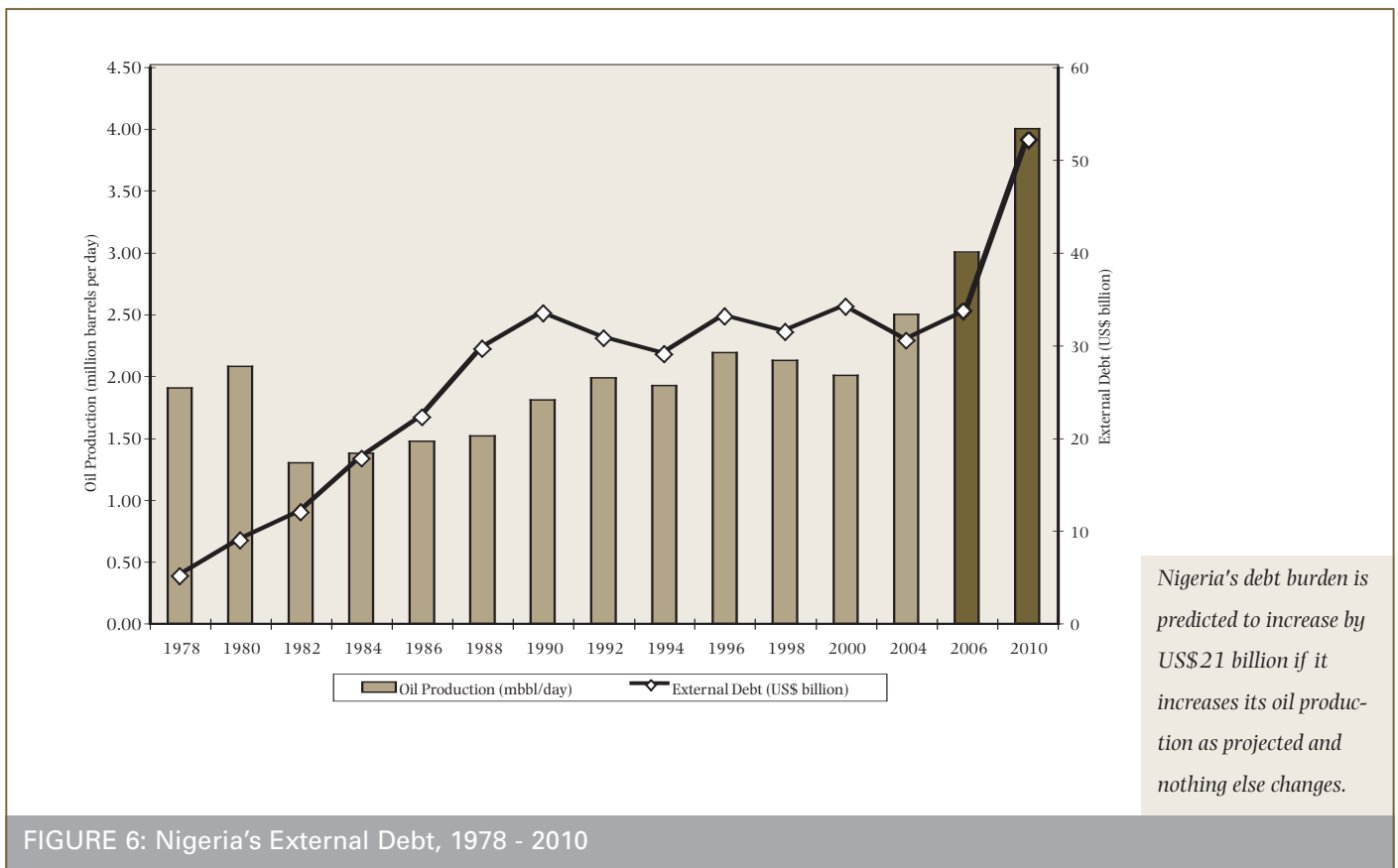
FIGURE 5: Predicted Change in Debt

Applied to Nigeria, the model predicts that, other things equal, if Nigeria increases its oil production from its current level of 2.5 million barrels per day to its projected 3 million barrels per day in 2006 and 4 million barrels per day by 2010, Nigeria's external debt will grow by 69% or US\$21 billion over that time period. Figure 6 below plots the projected increase in debt for the projected increase in oil production:⁴⁴

When we use the oil rents variable instead, our statistical model, which we summarize in Table 3 in the appendix, predicts that doubling the level of oil rents in an economy should increase the debt stock by between 16 and 32 per cent depending on the statistical technique used.⁴⁵ And, a ten percent increase oil rents' share in national income is associated with a .65 per cent increase in a country's debt service burden as a share of GDP.⁴⁶ Given that the world average debt

service burden over the time period considered here is just 5.1 per cent of GDP, this is a large effect, and its normative implications are troubling: Rather than help pay down the existing debt, increasing revenues from oil production have resulted in higher debt service burdens.

This section, and the technical appendix, present evidence that oil production is closely related to country's debt levels. Using rigorous statistical techniques, and controlling for a host of likely suspects as well as multiple indicators of oil wealth, our results document statistically and substantively significant effects of oil dependence and production on debt burdens.



The Other End of the Pipe:

Oil's role in fueling coming crises in climate and debt

Oil provides 40–43% of all energy used by the world.⁴⁷ Oil and gas account for just over one third of all global greenhouse gas emissions.⁴⁸

Climate scientists have, for the past decade, foreseen the need for a 60-80% reduction in the global emissions of carbon dioxide, in order to stop global average temperatures from rising to dangerous levels.

And while the vast majority of those emissions happen in the North, it will be the poorest countries, those can least afford to adapt to a changing climate, who will suffer first and worst.

Developing countries economies are harmed when oil is extracted from them, or when they are dependent on volatile oil imports. And when the oil is finally burned, and the carbon contained in it released into the atmosphere, oil contributes heavily to decreased agricultural production, increased droughts, human health impacts, environmentally related refugees and other already observed and predicted impacts of climate change.

The word “climate” does not appear in the G8 Finance Ministers Conclusions on Development issued on June 11th. The pre-summit statement does mention it, as follows:

“To help meet the challenge of climate change, we urge the World Bank and other multilateral development banks to increase dialogue with major borrowers on energy issues and put forward specific proposals at their Annual Meetings that encourage cost effective investments in lower carbon energy infrastructure.”

While this is an admirable sentiment, the G8 Ministers do not mention the fact that World Bank support for renewable energy is currently roughly 6% of the Bank's total energy related lending, while fossil fuels are the other 94%. Less than a year ago, the Bank's Management rejected a proposal to end support for oil and coal that came from a report that it had commissioned (see Extractive Industries Review box on p.11).

In addition, the Bank has trumpeted their renewed commitment to 20% annual increases in clean energy lending, while actually committing to fewer renewables projects this year than last.

This kind of spin and greenwash has no place in any real commitment to tackling climate.

Ecological considerations are not the only limits on the industry though—geology and economics are increasingly becoming factors. As oil continues to hover around \$60/barrel, we are reminded on a daily basis that the current supply of oil barely exceeds demand, and that demand is continuing to grow. As long as that trend continues—and the growth of China, India and other countries, coupled with the continued thirst of US consumers ensures that it will—global demand for oil will soon exceed supply.

The G8 would like us to know that they are concerned about oil prices. *"We agree that IFIs have a role in helping address the impact of higher oil prices on adversely affected developing countries and encourage the IMF to include oil prices in the development of facilities to respond to shocks."*⁵⁰ This statement undoubtedly reflects an ongoing conversation on the possible onset of peak oil and which an increasingly loud chorus including the likes of Goldman Sachs believes may be upon us in the very near future.

If the global peak of oil production is nearly upon us, it is certain to be a disaster for the vast majority of the world that is dependent on cheap oil imports. A rapid and severe spike in oil prices is exactly what created the first debt crisis, and there is no reason to think that this round would be much different for the oil importers.

For oil exporters, peak oil and a sustained period of high oil prices could be a boon, at least in the short term. But there are few if any reasons to believe money from a new oil boom would be spent any more wisely than similar windfalls have been in the past.

The likely outcome of continued oil dependence by both groups, is more debt, more global warming, more poverty, more conflict, and more corruption.

Ecological Debt

The industrialized North, which is home to only 20% of the world's population, consumes 80% of the world's resources. The concept of ecological debt refers to the ongoing liability that wealthy nations of the North owe to the South for centuries of environmental and human resource exploitation, dumping of waste, over-consump-

tion of collective resources (including the air), and profits from ancestral and indigenous knowledge.

Viewed from this perspective, many consider it fair to say that the South does not owe the North anything – rather it is the North that owes the South.

CASE STUDIES

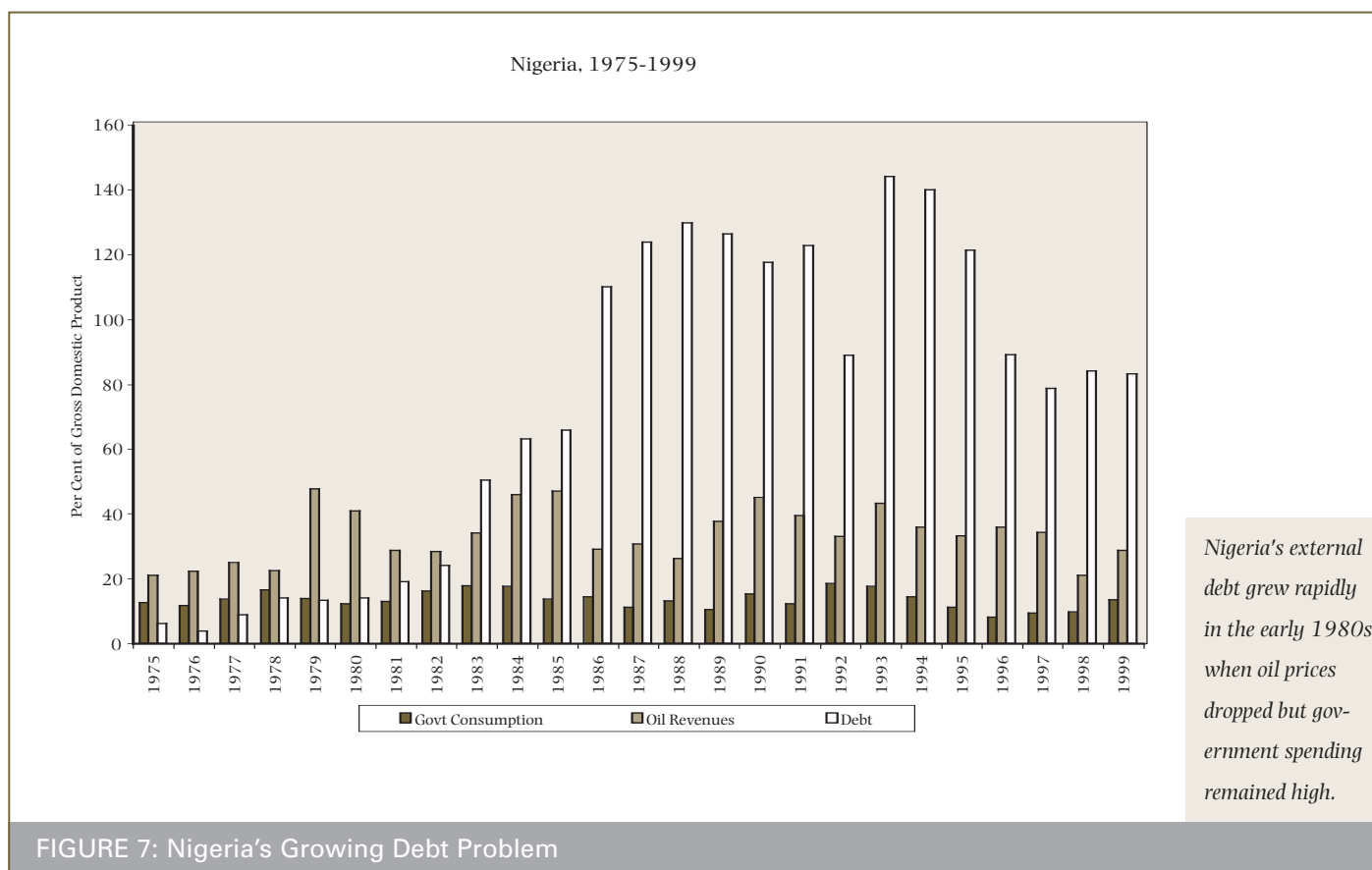
To identify just how things went wrong, we consider in more detail the experiences of three oil-exporting countries: Nigeria, Ecuador, and Congo-Brazzaville. These case studies illustrate the close link between oil revenues, fiscal mismanagement, and a worsening debt situation.

Nigeria

There are few better examples of the tragedy of oil wealth than Nigeria. For the largest crude oil producer in Africa, the discovery of immense oil wealth was expected to herald a brighter future. In 1974, 83 per cent of government revenues were derived from oil, and the five-year plan initiated in 1975 involved a total investment ten times larger than the previous plan. Today Nigeria continues to be dependent on oil revenues for its national income. And with proven oil reserves of 35.2 billion barrels, and goals of expanding the proven reserves to 40 billion barrels by 2010, it is doubtful that Nigeria's dependence on oil is likely to change anytime soon.⁵¹

This immense oil wealth has not trickled down to the citizens of Nigeria. In purchasing-power-parity (PPP) terms, Nigeria's per capita GDP was US\$1,113 in 1970; in 2004, it was estimated to be US\$1,000.⁵² Given that, since 1965, Nigeria's cumulative net revenues from oil are estimated to amount to US\$350 billion (in 1995 prices), and that per capita GDP hasn't changed while oil revenues per capita have increased ten-fold, it is not unfair to conclude that Nigeria's oil wealth has had no positive effect on the lives of its citizens.⁵³ Indeed, much of the oil revenues have never reached Nigeria's citizens. The World Bank estimates that 80% of revenues from Nigeria's oil industry accrue to only 1% of the general population.⁵⁴

Against this backdrop of tremendous oil resources and poor macroeconomic performance is the additional fact that Nigeria's debt situation is crippling. Nigeria's external debt stands at US\$30.5 billion.⁵⁵ The debt-output ratio has risen from 3.7% in 1980 to 76.7% today.⁵⁶ This growth in external debt has also caused the debt service burden, defined as the ratio of exter-



nal debt to the export of goods and services, to shoot up from 13.1% in 1980 to 163% today.⁵⁷

Figure 7 plots the shares of GDP comprised by government spending, oil revenues, and external debt from 1975 to 1990. Two facts are evident from this graph, both of which will be documented more thoroughly in the narrative below. First, when oil revenues fell dramatically in 1985-1986, government (military) spending, and borrowing, remained more or less constant in an attempt . Second, this is exactly when Nigeria's debt grows to unsustainable levels.

Oil Fueled Fiscal Folly

Being a member of the International Monetary Fund, the World Bank, and the African Development Bank, as well as an increasingly important player in the global economy,

allowed Nigeria's military dictatorship to finance its increased spending by external borrowing leveraged against its present and future oil export proceeds.⁵⁸ The generals explored these opportunities and thus accumulated increasing levels of debt.

The revenue windfall from the first oil shock led to significant increases in government expenditure designed to expand infrastructure and improve non-oil productive capacity.⁵⁹ The pressures to spend these new-found resources came from all quarters of the Nigerian state.⁶⁰ Nigeria also used its oil export revenues to finance its growing appetite for imports both in terms of capital-intensive technology and assembly-type industries required for industrial development and in terms of consumer goods. The increased public expen-

ditures went primarily into transportation, primary education, a major steel complex, construction, and an automobile assembly plant.⁶¹ Nigeria's federal structure, and the increase in the number of states from 4 (after 1963) to 19, meant higher expenditures on infrastructure at the local levels as well and less federal control over spending.⁶² As such, these expenditures were not fundamentally misguided for a developing country. Rather, the problem was that buoyant oil revenues enabled the government to rule "excessively, inefficiently, corruptly, and often ineffectively."⁶³

Declining Oil Prices and Policy Crisis

In 1978, there was a slump in the oil market causing a temporary downturn in revenues and in the economy. However, the second oil price increase of 1979-80 provided reassurance that all was still well, and Nigeria's military government continued its profligate ways of running large fiscal and current account deficits and financing these by borrowing against its immense oil wealth.⁶⁴ The decline in oil prices and rise in global interest rates in the early 1980s caused a rapid increase in the value of the existing debt stock, and a drop in government revenues from oil exports from US\$23.4 billion in 1980 (when oil prices peaked) to less than \$10.2 billion in 1983 (when oil prices began to fall).⁶⁵ Meanwhile, the loans sold during the boom times of the 1970s came due, and were further exacerbated by more short-term borrowing to smooth the revenue downturn and to finance even more spending.⁶⁶

By 1983, in the aftermath of the 1982 global oil glut, Nigeria was severely over-borrowed, and the economy was in crisis. External pressures imposed by structural adjustment, political considerations and widespread corruption had made the government incapable of dealing with the crisis, and necessary adjustments have been continuously postponed.⁶⁷ Promises to reduce spending were regularly made

and just as regularly – and understandably - broken when the popular backlash against the austerity measures grew too heated.⁶⁸

When Nigeria's attempts to borrow more on the international market were rebuffed by wary creditors, it turned to the IMF for assistance. Over the next twenty years, from 1985 to the present, Nigeria's policies have oscillated between attempts at austerity and adjustment, and responses to the very real human needs of its people, against a backdrop of policies of patronage and corruption. Unable to service its debt, Nigeria first suspended all debt payments, which led to a rapid accumulation of arrears, and has now capped its annual debt servicing payments, but still at a level that leaves it in arrears.⁶⁹

Given Nigeria's extremely high levels of debt, and its vast oil and natural gas reserves,⁷⁰ one question is why Nigeria has been unable to reschedule its debt at more favorable terms. Two reasons are most plausible in this regard, both of which are consistent with the larger story of Nigeria's woes. First, the lack of export diversification has made Nigeria's terms of trade synonymous with the price of oil. When oil prices are high, as they are today, oil revenues mask the deeper structural problems with Nigeria's economy. But, when they decrease, Nigeria has been unable to manage the ensuing crisis effectively. Second, and closely related to the first point, the perceived economic risk for Nigeria is quite high, and is shaped by a perceived inability of the government to adjust to the high real interest rate-oil price squeeze that afflicts oil-dependent states from time-to-time.

Nigeria has recently succeeded in rescheduling its debt with the Paris Club and is hoping to receive further debt relief later this year.⁷¹ The authors of this report certainly hope they are successful in this regard.

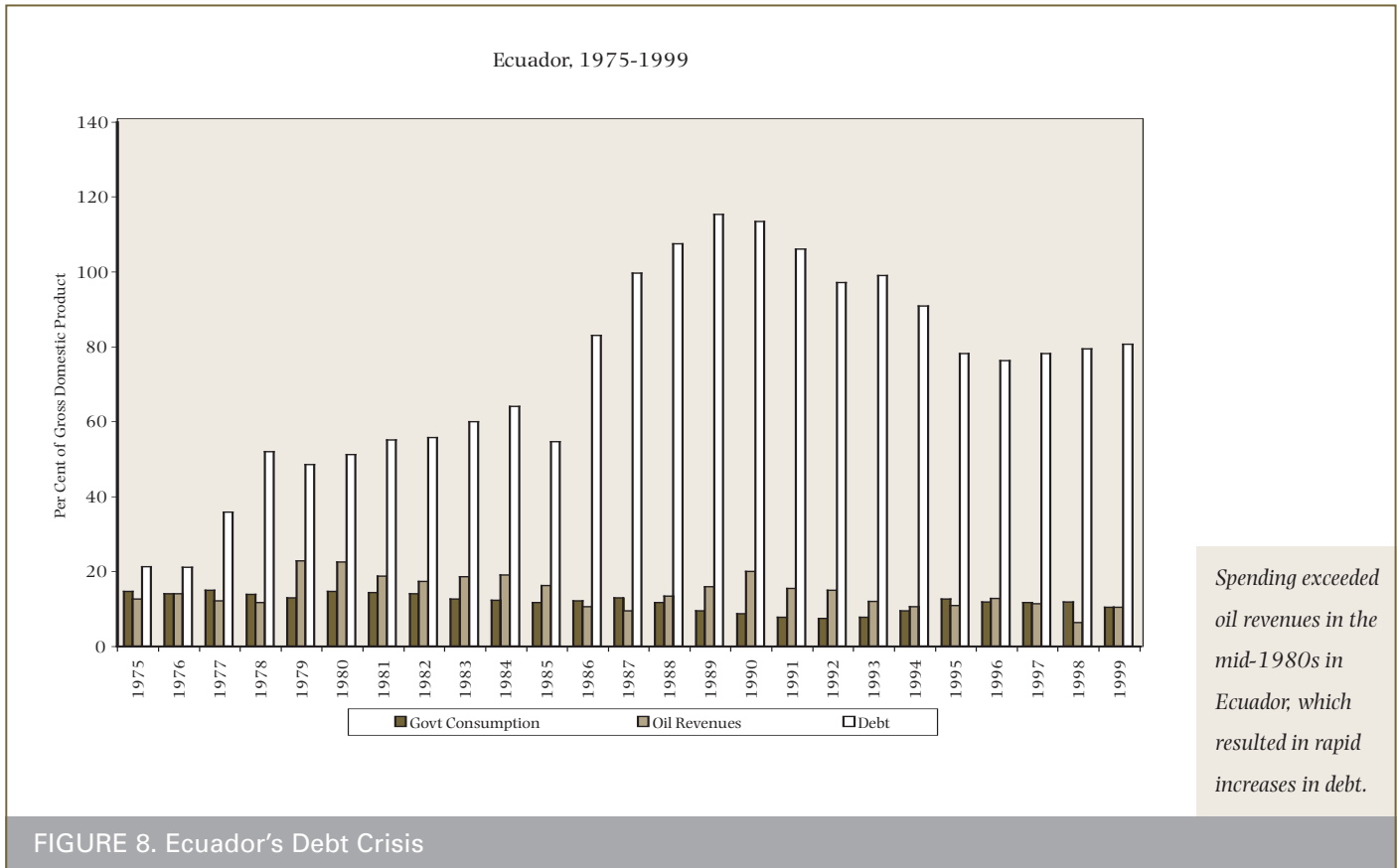
Ecuador

The story of Ecuador over the past thirty years bears striking similarities to that of Nigeria.

Figure 8 tells the essential story of Ecuador's rising debt burden by demonstrating that government spending remained fairly stable even after oil revenues fell, which led to the growth of debt to an unmanageable level.

Ecuador is presently the fifth largest producer of crude oil in South America, producing about 534,800 barrels per day in 2004, a considerable increase from its production level of 200,000 barrels per day in 1980.⁷² Its estimated reserves are 2.1 billion barrels of crude oil, and its economy is largely dependent on oil for revenues. While oil comprises 20% of national output, it accounts for 45% of exports, making it the primary source of government revenues.⁷³ The majority of foreign investment in Ecuador is related to the oil industry, boosted recently by the construction of a new pipeline which increased production considerably (see sidebox).

The other similarity to Nigeria is Ecuador's rapidly worsening external debt burden. Today the size of the external debt is estimated at US\$11.2 billion, and the debt has risen steadily over the past twenty years⁷⁴, coinciding with the country's oil boom. Ecuador's external debt pre oil extraction in 1970 was a manageable \$217 million.⁷⁵ Since 1972, the per capita debt burden has increased 300 per cent, making it the most indebted per capita country in all of South America.⁷⁶



Oil-Fueled Fiscal Folly

Ecuador began to export oil a year before OPEC's first oil price increase. Oil prices jumped from US\$2.50 a barrel in 1972 to US\$35.22 in 1980.⁷⁷ The revenue windfall that resulted from the increasing oil prices and concomitant increasing oil exports fueled state-supported growth starting in 1972, and allowed Ecuador to obtain foreign loans at interest rates that were effectively negative during the 1970s.⁷⁸ It looked too good to be true, and it was.

In 1972, the military seized power from José María Velasco Ibarra. The new leader, Rodríguez Lara, presided over an elaborate celebration of the country's first barrel of crude, which after being blessed with holy water by the country's high ranking Archbishop, was paraded through the streets.

Lara expanded the state's role in the economy, relying on increased petroleum revenues to fund an ambitious five-year development plan that included import-substitution industrialization, infrastructural development (especially energy and roads), generous state incentives and tariff protection for domestic producers, low interest rates, and high subsidies.⁷⁹ Over the course of the next few years, Lara's popularity gradually declined till he was replaced by a military triumvirate in 1976. The new rulers leveraged their oil revenues to increase foreign borrowing to finance higher expenditures and a balance-of-payments deficit, which they hoped would limit domestic unrest.⁸⁰ Within a year, the debt increased exponentially, and even though oil prices continued to rise in the late 1970s, by 1980, Ecuador's debt stock stood at over 200 percent of its exports, and its total public

and publicly-guaranteed (PPG) external debt, which was a mere US\$328 million when Lara came to power, now reached US\$3.3 billion.⁸¹

Declining Oil Prices and a Policy Crisis

Ecuador's exponential growth in debt can be explained by a combination of factors including the decline in export prices which reduced government revenues making it unable to service its debt, the increase in interest rates which raised the value of the debt stock, and the reduction in lending by the IMF and private banks after Mexico's near default in 1982.

From a high of US\$35.22 a barrel in 1980, the price of oil dropped to US\$12.70 in 1986.⁸² The fall in oil prices, coupled with a natural disaster (coastal flooding in 1982-1983), limited national food supplies and increased the demand for food imports, at the same time that commodity prices for Ecuador's agro-exports were declining. Unable to cover the costs of servicing its increasing debt, Ecuador's total debt stock rose 66 per cent to US\$5.5 billion by 1983.⁸³

This pattern continued through the 1980s. Declining oil prices in 1986-87 forced the government to interrupt debt service on its foreign commercial loans, and the 1987 earthquake caused oil exports to cease for five months, leading to a

decline in foreign reserves, currency depreciation, and speculative attacks against the sucre. Even when oil production resumed, the government failed to make its debt service payments, and allowed arrears to accumulate for seven years.⁸⁴

The 1990s have scarcely been better for Ecuador's debt situation. In 1997, declining oil prices and the El Niño weather patterns, reduced oil and tax revenues causing the fiscal deficit to widen, and reduced exports leading to a greater current account deficit. In response, foreign banks retracted credit, which led to the failure of some domestic banks, and two devaluations of the currency. Meanwhile the debt continued to increase, reaching US\$13 billion by the end of 1998, or about two-thirds of national output.

Ecuador's situation shows little signs of improving. The economy and government are over-reliant on oil exports, leaving them vulnerable to price volatility. Ecuador attempted to qualify for debt relief in 1989 under the Brady Plan. The country's proposal sought a reduction of their commercial debt by 70 percent, thereby allowing a repurchasing of the remainder at significantly lower rates. However, international creditors rejected this proposal on the basis of Ecuador's untapped oil reserves.⁷⁸

Poverty pipeline: the OCP and the IMF

The construction of Ecuador's second national pipeline, the OCP, was touted as an economic panacea for the country.⁸⁶ The privately financed, heavy crude pipeline was constructed to relieve the country's transport bottleneck, and envisioned to double Ecuador's crude capacity from 400,000 to 850,000 bpd. However, output estimates have been severally scaled back, and the pipeline—online since September 2003—currently carries 325,000 bpd, while the state run SOTE pipeline has dropped to 198,000 bpd. The country's limited proven reserves are expected to run dry by 2021, and doubts remain about the economic viability of accessing existing reserves in the country's remote Amazon rainforest needed to fill the pipe.⁸⁷ Much of civil society remains skeptical about the long promised benefits of oil extraction, as well as much needed immediate relief for the country's impoverished majority.

In accordance with IMF loan conditions, Ecuador's Congress approved the Fiscal Responsibility and Transparency Law in September 2002. A key provision of this law mandated that all revenues from the pipeline be put into a fund for debt repayment, stabilization, and investment, known as FEIREP. At the direction of the IMF, 70% of the revenues were earmarked for debt servicing, 20% reserved for stabilization, and 10% destined

for social spending.⁸⁸ The revenue allocation became a key sticking point in Ecuador's attempts to seal a \$240 million stand-by agreement from the IMF in 2003, with the Fund pushing for an even greater percentage of revenues needed for debt servicing.⁸⁹

On June 15, 2005, Congress approved a redistribution of the oil fund, putting 30 percent towards health and education, 35 percent split between national investment and debt buyback, 20 percent for possible oil price stabilization, and the rest divided between infrastructure improvements, environmental remediation, and technology research.⁹⁰ The initiative has been met with widespread concern and skepticism from creditors.

Alfredo Palacios, the country's seventh president in nine years, pushed the reform. Palacios assumed power in April 2005, after violent street protests ousted Col. Lucio Gutierrez, the third president to be removed from power in ten years for implementing austerity measures that cut basic services and subsidies for the country's poor. The cycles of Ecuador's boom and bust oil economy, as well as specific IMF mandated policies and SAPs, like the FEIRER, have led to record political instability in the Andean nation. According to the U.N., the average term of a president in Ecuador is two years.

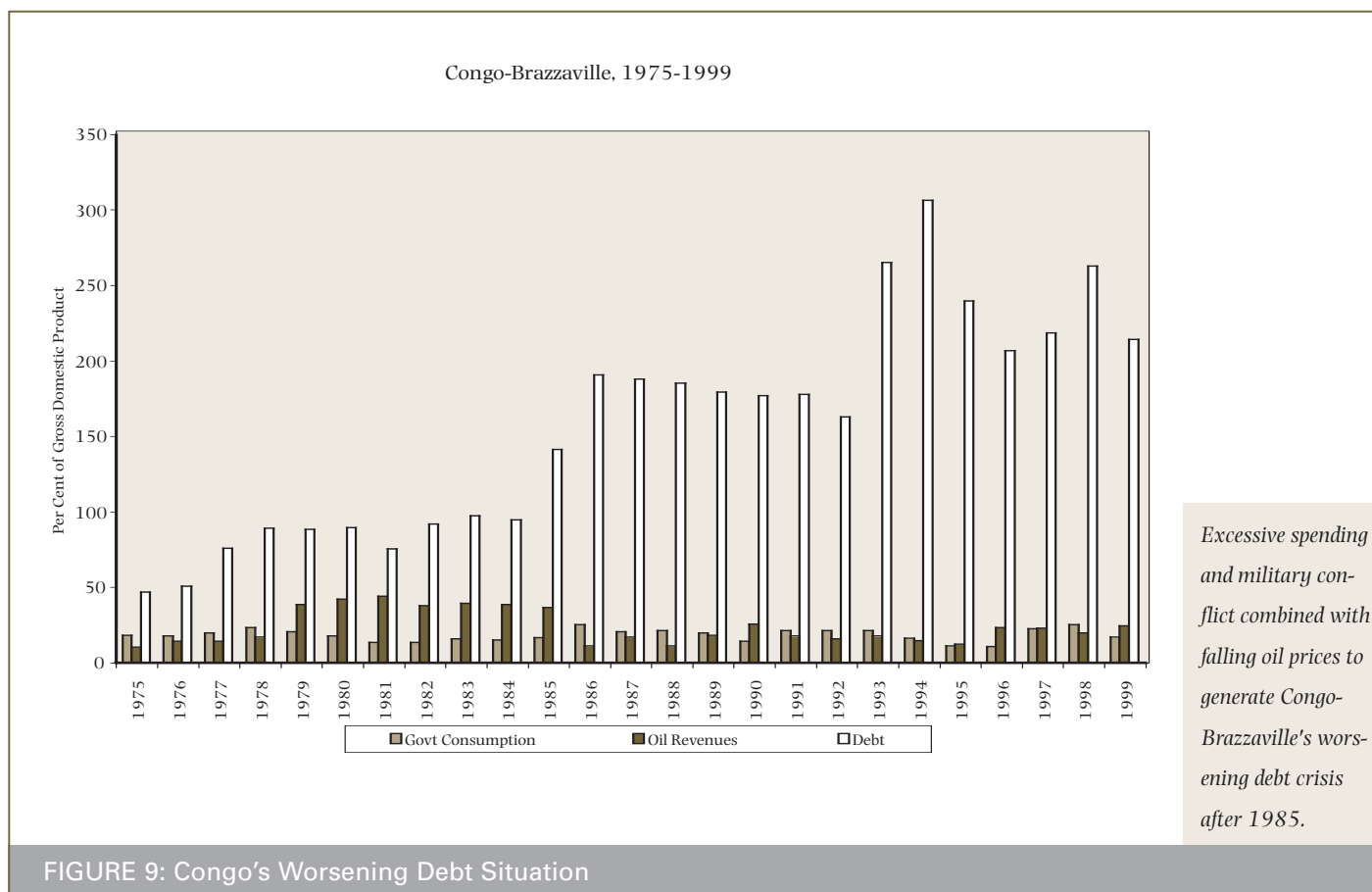
Congo-Brazzaville

Congo-Brazzaville is the third case examined here to understand how access to revenues from oil exports might in fact deepen a country's debt loan. Congo is Sub-Saharan Africa's fifth largest oil producer, with estimated proven reserves of 1.5 billion barrels of crude oil.⁹¹ The economy is heavily dependent on oil: oil exports account for 67% of real GDP, 78% of the government budget, and 95% of export earnings.⁹² As with the previous two cases, Figure 9 summarizes Congo's experiences over the crucial period of 1975 to 1990 with respect to the relationship of its oil revenues to government spending, and to debt levels. Once more, the key point is that Congo's spending remained high even after oil revenues plummeted, which led to a burgeoning debt burden.

Congo's oil industry is largely off-shore and heavily dependent on foreign technology and personnel, which results in considerable capital outflows due to production-sharing agreements with foreign collaborators.⁹³ Lack of domestic technology is also evidenced in its poor refining capacity, causing the government to have to import oil from Zaire at various points in the 1990s.⁹⁴ Overall, domestic use of oil is very limited; the electricity infrastructure was severely damaged by civil conflict, and the majority of the population lives in rural areas and relies on wood as a primary source of fuel.⁹⁵ Oil production therefore is almost entirely directed to export markets.

Oil-Fueled Fiscal Folly

In 1971, Congo produced 500,000 tons of oil per year. Congo's oil production quadrupled after the 1973 oil price shock, averaging between 1.5 and 2.5 million tons for the remainder



of the 1970s. By 1983, production was up to 5 million tons, and it reached 8 million tons a year by 1989, at which level it has since remained. Revenues from oil also increased dramatically after 1973, going from less than \$25 million in 1972 to about \$170 million in 1975, and reaching a peak of US\$1 billion in the early 1980s.

During the period of rising oil revenues in the 1970s, the Congolese governments rapidly increased their expenditures. The oil wealth led to an expansion of imports, including consumer goods and foods, to which the Congolese population became accustomed.⁹⁶ Further, Presidents Nguouabi and Sassou-Nguesso used the oil revenues to provide patronage, promising civil service jobs to all new university graduates.⁹⁷

No wonder the civil service expanded from 3300 in 1960 to 73,000 in 1986, amounting to more than a quarter of the work force.⁹⁸ These leaders also expanded the size of Congo's armed forces and financed a well-paid presidential guard, both of which were used to maintain order and preserve power.⁹⁹ Finally, other export sectors declined due to Dutch Disease, and the rapidly growing state sector bred corruption and proved a drain on resources "requiring heavy subsidization to cover losses due to over-staffing and inefficiency."¹⁰⁰

Then, in 1981, on the heels of the second oil price increase, rather than use the record oil revenues to pay off old debts, the government adopted an ambitious five-year plan that gave priority to improving basic infrastructure and state

enterprises.¹⁰¹ Government investment rose on average by 15 percent per year from the late 1970s to the early 1980s, creating massive fiscal imbalances, which were financed by increasing external indebtedness. The Sassou-Nguesso regime turned often to its foreign partner Elf-Congo to finance development projects and chronic budget deficits, thereby mortgaging Congo's future oil earnings well into the future.¹⁰²

Its also worth noting that in 1980, Congo received one of the first World Bank Petroleum Exploration Promotion Projects (PEPPs). Although the details of this \$5 million loan are unknown, we do know that the general purpose of the PEPP program was to catalyze foreign direct investment into the petroleum sector of developing country economies. The PEPP imprimatur undoubtedly reassured foreign investors, who thus continued to supply the Congo with new loans.

Declining Oil Prices and a Policy Crisis

But oil-based revenues are notoriously volatile, and despite rising production in the 1980s, falling oil prices proved a greater problem as revenues fell from about \$800 million in 1985 to \$160 million in 1989.¹⁰³ The collapse in oil revenues left Congo unable of meeting its debt obligations and necessitating an appeal to the IMF.¹⁰⁴ The country's external debt doubled between 1980-84 and 1985-89¹⁰⁵, going from \$1.2 billion in 1980 to \$4.7 billion in 1990.¹⁰⁶ And, by 1990, the Congolese government was bankrupt, and over \$1 billion in arrears on its debt payments, even though its debt-service payments had doubled since the previous year.¹⁰⁷

Congo's crippling debt burden should have reduced its creditworthiness to nothing, but the attraction of its oil reserves should not be underestimated. In 1993, Elf-Congo turned

down a loan request from President Pascal Lissouba. Lissouba turned to Occidental Petroleum (a US company), which promptly provided a \$150 million loan at low rates in exchange for future petroleum production.¹⁰⁸ And, as before, this loan accomplished little for the people of Congo: Lissouba used the loan to pay the back-wages of government workers on the eve of the 1993 elections and to assure his re-election.¹⁰⁹

The conflict of the late 1990s, and the declining oil prices that accompanied it, have caused the fiscal and current account deficits to mushroom. Recently rising oil prices have caused the situation to improve, but the government's decision to finance the large deficits of the low oil price period by running arrears on its debt has meant that the debt-GDP ratio now stands at 193% and the total external debt has crossed the \$7 billion mark.¹¹⁰ The poor performance of the government, in terms of its transparency, fiscal imprudence, high external arrears, and high cost over-runs for civil service salaries, also resulted in Congo foregoing a IMF poverty-reduction growth-facility (PRGF) program in 2003, which would have provided it much needed debt relief. The government recognizes these shortcomings and in a 2004 letter of intent to the IMF admitted that its "overall debt situation has worsened because a portion of the spending on reconstruction and elections was financed through oil-backed borrowing."¹¹¹ The future for Congo therefore remains bleak. Maintaining peace and high oil prices are crucial to it repaying its huge external debts and fostering economic growth, but the question remains whether the government will be able to restrain its worst tendencies.

Conclusions

The three case-studies of Nigeria, Ecuador, and Congo-Brazzaville, document a tragic story of wasted opportunity. Over the past thirty years immense oil wealth has been squandered leaving a legacy of damaged economies with pathological structural weaknesses and crippling debt burdens.

The high debt burden of each of these countries hinders any opportunity for long-term growth and development. Yet, getting out from under the debt has proven impossible since governments have been unable to mobilize sufficient domestic resources to liquidate the debt.¹¹² In the absence of increased domestic resources, three options present themselves to these governments: they can pump more oil and mortgage the future of their countries to pay the debt today; they can borrow more to pay off their loans; or they can generate arrears and worsen their external debt situation.

Recent oil price increases, and the fact that world energy demand is expected to increase more than 50% over the next two decades, as is the demand for natural gas, would suggest that export earnings are likely to increase rapidly for these countries.¹¹³ But, if history is any indication, there is little reason to be optimistic that these revenue windfalls will be used to improve the economic situation of the citizens of these countries. The overwhelming evidence is that mineral wealth hurts the societies "lucky" enough to have it by encouraging rent-seeking, increasing revenue and economic volatility, inducing Dutch disease, increasing corruption and reducing institutional quality, and increasing the risk of civil war.¹¹⁴

To this dismal list we can now add the high debts generated as a result of structural adjustment, fiscal irresponsibility and over-generous credit induced by the promise of oil.

Glossary of Terms

Balance of payments: An accounting of all of a country's international transactions for a given time period, usually one year. A country is said to have a balance of payments deficit if the payments out of the country exceed the payments (credits) into the country.

Brady Plan: Allowed creditors of Latin American countries to convert their existing debt claims into a menu of new claims during the debt crisis of the 1980s. First articulated by Nicholas F. Brady, Secretary of the U.S. Treasury, in March 1989.

Capital flight: Large financial capital outflows from a country. Typically prompted by increased uncertainty, fear of default or, especially, by fear of devaluation.

Current Account: A country's international transactions arising from current flows, as opposed to changes in stocks, which are part of the capital account. Includes trade in goods and services (including payments of interest and dividends on capital) plus inflows and outflows of transfers. A country is said to have a current account deficit if its payments exceed its credits.

Debt (external): Total owed to nonresidents repayable in foreign currency, goods, or services. For the purposes of this report, we have aggregated commercial, multilateral, and bilateral debt. Future inquiries should disaggregate these in search of deeper dynamics.

Debt Service: The payments made by a borrower on their debt, usually including both interest payments and partial repayment of principal.

Debt Sustainability: The ability of a debtor country to service its debt on a continuing basis and not go into default.

Deflationary economic policy: A policy designed to cause a fall in the general level of prices.

Disequilibrium: A untenable state of an economic system, from which it may be expected to change.

Dollar-denominated debt: Refers to the fact that external debts were expressed in dollar terms, which means the value of the debt varied with the strength of the dollar.

Dutch Disease: The adverse effect on a country's other industries that occurs when one industry substantially expands its exports, causing a real appreciation of the country's currency. Named after the effects of natural gas discoveries in the Netherlands, and most commonly applied to effects of exports in natural resource extractive industries on manufacturing.

Economic volatility: The extent to which an economic variable, such as a price, exchange rate, or revenue, moves up and down over time.

Exchange rate appreciation (depreciation): A rise (fall) in the value of a country's currency on the exchange market, relative either to a particular other currency or to a weighted average of other currencies.

Foreign (or International) reserves: The assets denominated in foreign currency, plus gold, held by a country's central bank. Usually includes foreign currencies themselves (especially US dollars), other assets denominated in foreign cur-

rencies, gold, and a small amount of Special Drawing Rights.

Liquidity: The capacity to turn assets into cash, or the amount of assets in a portfolio that have that capacity. Cash itself (i.e., money) is the most liquid asset.

Oil export-dependent: Refers to either the degree to which a country's total exports are dominated by exports of oil, or the share of national income comprised by revenues from oil exports.

Oil price shocks: An unexpected change in the price of oil. Typically refers to the increases in the price of oil in 1973 due to the OPEC oil export embargo and in 1979 due to uncertainties surrounding the Iranian revolution.

OPEC: Organization of Petroleum Exporting Countries. Current members are Algeria, Libya, Nigeria, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, Venezuela, and Indonesia. Ecuador was a member till 1992 and Gabon was a member till 1994.

Petrodollars: Refers to the profits made by oil exporting countries when the price rose during the 1970s, and their preference for holding these profits in U.S. dollar-denominated assets, either in the U.S. or in Europe as Eurodollars. The

banks in turn lent a portion of these to oil-importing developing countries, which used the loans to buy oil.

Solvency: Refers to the ability to pay all legal debts. A country is considered solvent if the rate of growth of its income exceeds the rate of growth of its debts.

Speculative attacks: In any asset market, this refers to a surge in sales of the asset that occurs when investors expect the price of the asset to drop.

Special Drawing Rights (SDRs): Originally intended within the International Monetary Fund (IMF) as a sort of international money for use among central banks pegging their exchange rates, the SDR is a transferable right to acquire another country's currency. Defined in terms of a basket of currencies, today it plays the role in that form of a unit of international account.

Spot market: A market for exchange in the present (as opposed to a forward or futures market in which the exchange takes place in the future).

Terms of trade: The relative price of a country's exports compared to its imports.

Technical Appendix

The results described in this paper were obtained with cross-national time-series analysis using a Generalized Method of Moments (GMM) estimator implemented in Stata 8.2. Data on all variables were collected for as many developing countries as possible over the period 1970-2000.¹¹⁵ We include in the analysis both oil producers and those that do not produce oil. Both sets of countries are relevant to the study of debt for the non-oil producers incurred large debts as a result of the increased energy import bills due to the oil price shocks of 1973 and 1980. As such, there are two distinct oil-related mechanisms to high debts: debt generated to pay for more expensive oil imports, and debt generated on the basis of increased credit and spending due to the possession of oil resources. Including both sets of countries therefore makes this a harder test.

The GMM dynamic panel data estimator, developed by Arellano and Bond (1991) and described in Bond (2002), posits a model of the following form:

$$[1] \quad D_{i,t} = D_{i,t-1}\alpha + OIL_{i,t-1}\beta_1 + X\beta_2 + v_i + e_i$$

Where D_i is a measure of debt for country i ; OIL_i is a measure of oil dependence; X_i is a set of other variables that might affect debt; v_i are random effects that are independently and identically distributed (i.i.d) over the panels, and e_i are i.i.d. over the whole sample.¹¹⁶

First differencing equation (1) removes the v_i and produces an equation that can be estimated via instrumental variables. Arellano and Bond (2001) derive a Generalized Method of Moments (GMM) estimator that uses lagged levels of the dependent variable and any predetermined or endoge-

nous variables, and first differences of any strictly exogenous variables. Estimates are consistent provided there is no second-order serial correlation present in the residuals.

This first-differenced GMM estimator has been shown to have poor finite sample properties in the particular case when the lagged levels are weak instruments for the subsequent first-differences. In the AR(1) model of equation (1), this occurs as the autoregressive parameter (α) approaches unity; that is, when the data series are highly persistent, the first-differenced GMM estimator works less well, specifically exhibiting a large downward finite-sample bias.¹¹⁷ In this case, we can use instead the “system” GMM estimator which combines the set of equations in first-differences instrumented by suitably lagged levels, with an additional set of equations in levels which uses lagged first-differences as instruments.

For our purposes, the external debt stock indicator is highly persistent with estimates of its autoregressive estimate above 0.9 (and as high as 0.98). The debt service indicator, on the other hand, is not persistent, with estimates of α around 0.5. Therefore, we use the system GMM estimator to analyze the external debt stock data, and the differenced GMM estimator to analyze the debt service burden data. In both cases, we utilize the one-step version of these estimators and restrict the set of instruments to three lags.¹¹⁸

Finally, to ensure that our results are not driven by the choice of estimation technique, we replicated our analysis using a Least Squares Dummy Variable (LSDV) estimator that included fixed country and period effects. For time samples approaching 30 periods, Monte Carlo evidence indicates that the LSDV estimator is at least as good as the GMM estimators

VARIABLE	N	MEAN	STD DEV	MIN	MAX
External Debt (% of GDP)	2985	63.4	68.6	0	1064.4
Debt Service (% of GDP)	3358	5.1	5.1	0	107.4
Oil Production (Log)	3660	4.6	4.6	0	13.1
Oil Rents (% of GDP)	2856	0.03	0.1	0	86.3
Government Consumption (% of GDP)	4016	16.1	6.8	1.4	76.2
Net Energy Imports	3804	-96.7	652.6	-16983.2	100.0
Trade Openness (% of GDP)	4083	71.4	45.7	1.1	439.0
Income per capita (Log)	4266	7.5	1.6	4.4	10.9
Size of Economy (Log GDP)	4255	23.2	2.2	18.0	29.8
GDP Growth (%)	4331	3.3	6.6	-50.6	85.9
Change in Liquidity	3339	-0.9	3.9	-34.4	26.2
Democracy	4776	-0.6	7.53	-10	10

TABLE 1: Summary of Variables

in terms of bias¹¹⁹ and superior in terms of its Mean Squared Error (MSE).¹²⁰

The variables are defined as follows (all data are from World Bank 2004 unless otherwise noted):

- ❖ **External Debt** is total debt owed to nonresidents repayable in foreign currency, goods, or services. It is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. Total external debt is measured here as a share of total GDP. Data for Bahrain, Kuwait, and Saudi Arabia are supplemented from the CIA World Factbook.
- ❖ **Debt Service** is the sum of principal repayments and interest actually paid in foreign currency, goods, or services on long-term obligations of public debtors and long-term private obligations guaranteed by a public entity.

Debt service is measured here as a share of total GDP.

- ❖ **Oil Production** is the log of the annual level of crude oil production (in 1000 metric tons).
- ❖ **Net Energy Imports** are calculated as energy use less production, and is measured in oil equivalents.
- ❖ **Trade Openness** is the sum of total exports and imports as a proportion of GDP.
- ❖ **Size of Economy** is the natural log of GDP measured in 1995 constant US \$.
- ❖ **Growth** is the annual percentage change in GDP measured in 1995 constant US \$.
- ❖ **Change in Liquidity** is the change in reserves as a proportion of GDP.
- ❖ **Democracy** is a 20 point scale ranging from non-democracy (-10) to democracy (10). The scale was developed by Ted Gurr and can be downloaded from <http://www.cidcm.umd.edu/inscr/polity/> (Marshall, Jagers, and Gurr 2003).

The statistical results using the GMM and LSDV estimators with the variables described above are presented in Table 2 below.¹²¹

	EXTERNAL DEBT		DEBT SERVICE	
	GMM	LSDV	GMM	LSDV
1-Year Lag of Dependent Variable	0.982 (.031)***	0.914 (.034)***	0.529 (.056)***	0.591 (.058)***
2-Year Lag of Dependent Variable	-0.096 (.029)***	-0.109 (.035)***	0.112 (.049)**	0.118 (.055)**
Gross Domestic Product (Log)	-1.473 (.523)***	-14.615 (3.379)***	-1.396 (1.078)	-0.552 (.494)
GDP Growth Rate (%)	-0.668 (.105)***	-0.526 (.110)***	-0.043 (.022)**	-0.026 (.019)
Net Energy Imports	0.008 (.003)***	-0.007 (.006)	-0.0001 (.002)	-0.001 (.001)
Foreign Reserves (% of GDP)	0.007 (.199)	0.034 (.198)	0.023 (.022)	0.027 (.023)
Trade Openness (% of GDP)	0.070 (.024)***	0.248 (.045)***	0.030 (.009)***	0.025 (.008)***
Democracy	-0.189 (.061)***	-0.164 (.106)	-0.011 (.034)	-0.007 (.018)
Annual Oil Production (Log)	0.431 (.210)**	0.753 (.251)***	0.308 (.186)*	0.112 (.049)**
No. of Observations	1542	1542	1392	1474
No. of Countries	84	84	79	80
First-order Autocorrelation	0.000	.949	0.000	1.000
Second-order Autocorrelation	0.054	.649	.085	1.000
Country Fixed Effects Included?	NA	Yes	NA	Yes
Period Fixed Effects Included?	Yes	Yes	Yes	Yes

Notes: 1) Robust standard errors reported in parentheses; 2) p-values: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$; 3) p-values reported for tests of first- and second-order autocorrelation; 4) Fixed effect coefficients and intercept suppressed.

TABLE 2: Statistical Results

Next, we utilize a different indicator to capture the size of revenues earned from oil production. Oil Rents is the ratio of total rents from oil to GDP. Oil rents are calculated as $(\text{Production Volume}) \times (\text{International Market Price} - \text{Average Unit Production Cost})$. These data are obtained from the World Bank’s Environment Department and are available for download at <http://lnweb18.worldbank.org/ESSD/envext>

[.nsf/44ByDocName/GreenAccounting](#)

Table 3 below summarizes the results from using different versions of this measure instead of the oil production indicator in the same statistical models we used above. To conserve space, we report only the key statistics relevant to our argument here, though the complete results are available from the authors.

	EXTERNAL DEBT		DEBT SERVICE	
	GMM	LSDV	GMM	LSDV
Oil Rents (Log)	0.182 (.081)**	0.302 (.103)**	.048 (.038)	.020 (.021)
Oil Rents (% of GDP)	14.33 (11.16)	0.201 (.184)	6.481 (3.08)**	5.172 (2.28)**
Country Fixed Effects Included?	NA	Yes	NA	Yes
Period Fixed Effects Included?	Yes	Yes	Yes	Yes

Notes: 1) Robust standard errors reported in parentheses; 2) p-values: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$; 3) p-values reported for tests of first- and second-order autocorrelation; 4) Fixed effect coefficients and intercept suppressed.

TABLE 3: Statistical Results using Oil Rents Variable¹²²

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¹ Vallette, Jim, and Steve Kretzmann. 2004. *The Energy Tug of War: The Winners and Losers of World Bank Fossil Fuel Finance*. Washington, DC: Institute for Policy Studies.

² Ross, Michael L. 2001b. *Extractive Sectors and the Poor*. Oxfam America., and others

³ [http://wbln0018.worldbank.org/research/workpapers.nsf/0/224dc23f67e3412a8525698b005c3872/\\$FILE/wps2481.pdf](http://wbln0018.worldbank.org/research/workpapers.nsf/0/224dc23f67e3412a8525698b005c3872/$FILE/wps2481.pdf)

⁴ Initial research on this topic, conducted for Oil Change by Michael Ross, actually finds that a relationship between debt and minerals extraction generally holds true. The relationship was strongest regarding oil, but still significant regarding all minerals exports.

⁵ Ross op. cit., and Karl, Terry Lynn, *Paradox of Plenty*

⁶ Baker 1977, p. 192.

⁷ Cline 1984, pp. 8-9.

⁸ Cline 1984, p. 13.

⁹ Baker 1977, pp. 192-3.

¹⁰ Cline 1984, p. 10.

¹¹ Ibid, 11.

¹² Baker 1977, p. 175.

¹³ Baker 1977, p. 175.

¹⁴ Ross 2003, p. 4.

¹⁵ Aliber 1985-86, p. 118.

¹⁶ Ajayi 2000, pp. 30-33. Also, a country is considered solvent if the growth rate of its exports exceeds the interest rate on the debt, and is considered liquid if its export earnings exceed its net debt (i.e., its total debt less its foreign reserves). For the oil-exporting countries in the 1970s, both measures leaned heavily in their favor. Their liquidity was extremely high as they were relatively under-borrowed given their new-found oil wealth and their export earnings were sky-rocketing. Likewise, in an era of low global interest rates, the growth rate of their exports far exceeded the interest rate on their debt. Therefore, they were able to leverage their oil wealth to generate huge influxes of foreign loans.

¹⁷ Ross 1999, 2001a, 2001b, 2003.

¹⁸ Easterly 2001, p. 129.

¹⁹ Ross 2001a.

²⁰ Pinto 1987, p. 435.

²¹ Pinto 1987, p. 424.

²² Ibid.

²³ von Lazar and McNabb 1985, pp. 124-125.

²⁴ von Lazar and McNabb 1985, p. 125.

²⁵ Baker 1977, p. 212. Baker identifies three countries as

the unlucky ones whose known hydrocarbon reserves are considered unsuitable for profitable production: Benin, Ghana, and South Africa. While all three have problems, most observers of African politics would probably consider them among the “success” stories in terms of economic performance and democratic governance.

²⁶ Saro-Wiwa, Ken, *The World Bank and Us*, original undated in 1989-1990 in *Lagos Sunday Times*. Reprinted in *Similia: Essays on Anomic Nigeria* (Port Harcourt: Saros, 1991) Note that Saro-Wiwa referred in this article to the World Bank and IMF interchangeably.

²⁷ Cline 1984, pp. 11-12.

²⁸ U.S., Congress, House, *The National Energy Plan Options under Assumptions of National Security Threat*, Hearings before the Ad Hoc Committee on Energy, U.S House of Representatives, 95th Congress, 1st session, on the National Energy Act of 4 May 1977, 95th Congress, 1st session, April 1978, p 28., as cited in Lt Col Joseph A. Breen, *Energy, America, and the Military: Can we get there from here?*, *Air University Review* / November-December 1980 <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1980/nov-dec/breen.html>

Note: This paragraph and the subsequent section draw heavily from SEEN’s *Tug of War*, by Vallette and Kretzmann, 2004

²⁹ *An Examination of the World Bank Energy Lending Program*, Office of International Energy Policy, US Treasury, July 28, 1991, p.31

³⁰ *ibid.*

³¹ *op. cit.* p.1

³² *ibid.*

³³ *Legislative Frameworks Used to Foster Petroleum Development*, William T. Onorato, The World Bank Legal Department, February 1995

³⁴ Vallette and Kretzmann, *Tug of War*, SEEN, 2004

³⁵ Neumayer (2005) demonstrates quite conclusively that there is no statistical evidence for the reverse hypothesis that high indebtedness leads to natural resource exploitation.

³⁶ Neumayer (2005) uses the same measure in his analysis of how indebtedness affects natural resource exploitation.

³⁷ When we replicate our analysis using a new measure of oil rents developed by the World Bank (and described in the technical appendix), our results hold for the model of debt service burden. Results summarized in Table 3.

³⁸ Odoulowu 1992.

³⁹ Countries receiving a PEPP loan were Algeria, Benin, Burundi, Central African Republic, Congo, Ethiopia, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Mali, Mauritania, Senegal, Somalia, Sudan, Tanzania, Uganda, Zaire, Zambia, Jordan, Pakistan, Portugal, Tunisia, Yemen, Guyana, Honduras, Jamaica, Panama, Bangladesh, Nepal, Papua New Guinea, and the Philippines. List drawn from Annex 1 to Odoulowu (1992).

⁴⁰ All the differences are statistically significant. The differences remain significant if we limit the period to 1980-1992.

⁴¹ To provide a fair test of PEPP’s impact on debt, we restrict

our analysis to non-OPEC countries since the explicit goal of PEPP was to facilitate oil production in oil importing countries. Also, since PEPP was started in 1980, we only consider data after that date. The result cited in the text is from a Least Squares Dummy Variable model, which yields a coefficient of 19.04 for the PEPP variable (s.e.=10.49; p=0.074). The coefficient on the Oil Production variable increases to 1.17 and remains highly statistically significant (s.e.=0.556; p=0.038).

⁴² This effect falls within a 95 per cent confidence interval.

⁴³ This effect falls within a 90 per cent confidence interval.

⁴⁴ Data on Nigeria's oil production projections are drawn from the US Department of Energy's Energy Information Agency website.

⁴⁵ These effects fall within 95 per cent and 99 per cent confidence intervals respectively.

⁴⁶ This effect falls within a 95 per cent confidence interval.

⁴⁷ Lovins, Amory, et.al., *The Oil Endgame*, www.oilendgame.com

⁴⁸ Hare, William, *Fossil Fuels and Climate Protection: The Carbon Logic*, Greenpeace International, <http://archive.greenpeace.org/climate/science/reports/carbon/clfull-2.html>

⁴⁹ Various and diverse sources are now openly warning about the approach of peak oil – notable among them is Matthew Simmons's *Twilight in the Desert*.

⁵⁰ Pre-Summit Statement By G8 Finance Ministers, London, 10-11 June 2005.

⁵¹ DOE 2005c, p. 1.

⁵² Sala-i-Martin and Subramanian 2003, p. 4, for the 1970 figure; CIA World Factbook for the 2004 figure.

⁵³ Sala-i-Martin and Subramanian 2003, p. 4. One illustration of this is the fact that Nigeria's oil is almost entirely destined for export markets. Country Watch Nigeria (2005d, p. 1) estimates that 80% of the oil produced by Nigeria is exported (50% to the US; 25% to the EU states; and the rest to Asia and elsewhere), which illustrates both how little oil is used domestically in Africa's most populous country and the rudimentary state of Nigeria's industrial and commercial development. A large part of the problem is the poor state of Nigeria's domestic refining capacity. In fact, the Nigerian National Petroleum Company's "failure to maintain baseline refinery operations gives rise to the absurdity of a globally significant oil producer importing much of its gasoline and other refined products" (Ibid.). There is some evidence that the Nigerian government is trying to change this. According to the US Department of Energy, in August 2004, Nigeria announced it would require producers to refine at least half of the oil produced in country by 2006. Other than providing more oil to domestic consumers, such a move would also save the government the US\$2 billion it spends each year on oil imports.

⁵⁴ DOE 2005c, p. 6.

⁵⁵ EIU 2005, p. 42.

⁵⁶ It peaked in at 114.6% in 1990 (Edo 2002, p. 224; EIU 2005, p. 42).

⁵⁷ Ibid.

⁵⁸ Edo 2002, p. 223.

⁵⁹ Ajayi 2000, p. 13; see also Lewis 1996, p. 81.

⁶⁰ Rimmer 1985, p. 437.

⁶¹ Pinto 1987, p. 432.

⁶² Suberu and Diamond 2002, p. 406. The states exploited the common pool problem of government expenditures and perpetually ran deficits that required the government to bail them out (Rimmer 1985, p. 438). Thus, Nigeria's federal structure has arguably hurt the federal government's control on fiscal policy, especially given the volatility of oil revenues (IMF 2004, p. 23).

⁶³ Rimmer 1985, p. 445. Lewis (1996, p. 81) alleges that the rapid influx of oil cash fostered a rapid increase in corruption and rent-seeking behavior throughout the government and society. And, Sala-i-Martin and Subramanian note that, to date, not a single ton of commercial steel has been produced by the Ajakouta steel complex which was built with oil revenues in the 1970s (2003, p. 14).

⁶⁴ Pinto 1987, pp. 428-9; Lewis 1996, p. 81.

⁶⁵ Edo 2002, p. 223; Rimmer 1985, p. 436.

⁶⁶ Pinto 1987, p. 428.

⁶⁷ Ajayi 2000, p. 14.

⁶⁸ Lewis (1996) documents the oscillation in policy nicely.

⁶⁹ Economic Intelligence Unit (EIU) 2005, p. 42.

⁷⁰ Nigeria has an estimated 124 trillion cubic feet of proven natural gas reserves, the 9th largest such reserve in the world (Ross 2003, p. 3). Once it increases its capacity to liquefy and export this gas, Nigeria's petroleum revenues

should increase further. Whether this helps Nigeria escape its problems, or deepens its pathologies, remains to be seen.

⁷¹ EIU 2005, p. 42.

⁷² DOE 2005b, p. 3.

⁷³ Country Watch Ecuador 2005, p. 1.

⁷⁴ DOE 2005b, p. 10. More troublingly, the growth rate of the debt has regularly exceeded Ecuador's GDP growth rate during this period too (Beckerman 2001, p. 2).

⁷⁵ Kimerling, Judith. 1991 Amazon Crude. Natural Resources Defense Council.

⁷⁶ Beckerman 2001, Figure 1.

⁷⁷ Weiss 1997, p. 11.

⁷⁸ Weiss 1997, pp. 10-11.

⁷⁹ Weiss 1997, p. 14; Beckerman 2001, p. 5.

⁸⁰ Weiss 1997, p. 14; IMF 2003b, p. 11.

⁸¹ Ibid.

⁸² Weiss 1997, p. 11.

⁸³ Beckerman 2001, p. 5.

⁸⁴ Beckerman 2001, pp. 6-7; IMF 2003b, p. 12.

⁸⁵ Kimerling, Judith. 1991. Amazon Crude. Natural Resources Defense Council.

⁸⁶ *Oleoducto de Crudos Pesados*, or Heavy Crude Pipeline, and Forero, Juan. 2002. Oil Pipeline Forges Ahead in Ecuador.

New York Times, October 30.

⁸⁷ IMF Country report, No. 03/91, April 2003, pp. 28-29.

⁸⁸ Fund for Stabilization, Social and Productive Investment and Public Debt Reduction (FEIREP), World Bank Country Assistance Strategy, Report No. 25817EC, p. 17.

⁸⁹ Vasquez, Patricia. 2002. Fund Saga Threatens Ecuador's Economic Health, Oil Investment. *Energy Intelligence*, September 25.

⁹⁰ Associated Press. 2005. Ecuador Congress Approves Reform Package, *Los Angeles Times*, June 16.

⁹¹ DOE 2005, p. 2. Congo also has an estimated 3.2 trillion cubic feet of natural gas reserves, the third largest such reserves in Sub-Saharan Africa behind Nigeria and Cameroon. Natural gas is not effectively utilized currently, but this should change over the next few years (DOE 2004, p. 5).

⁹² *Ibid.*, p. 1.

⁹³ DOE 2004, pp. 2-3.

⁹⁴ DOE 2004, p. 5.

⁹⁵ *Ibid.*, p. 6.

⁹⁶ Clark 1997, p. 73.

⁹⁷ Clark 1997, pp. 65-67.

⁹⁸ Clark 1994, p. 3.

⁹⁹ Clark 1997, p. 67.

¹⁰⁰ *Ibid.*

¹⁰¹ Clark 1994, p. 3.

¹⁰² Clark 1997, pp. 72-73.

¹⁰³ Clark 1997, p. 65.

¹⁰⁴ Clark 1997, p. 75.

¹⁰⁵ IMF 2004, p. 14.

¹⁰⁶ Clark 1994, p. 3.

¹⁰⁷ Clark 1994, pp. 3-4.

¹⁰⁸ Clark 1997, p. 73.

¹⁰⁹ *Ibid.*

¹¹⁰ DOE 2004, p. 7.

¹¹¹ IMF 2004b, para. 7.

¹¹² Edo 2002, p. 223.

¹¹³ Ross 2003, p. 3.

¹¹⁴ Sala-I-Martin and Subramanian 2003, pp. 5-6; Ross 2003, p. 3; Hamilton, Ruta, and Tajibaeva 2005, p. 1.

¹¹⁵ Countries included in the analysis are Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bolivia, Brazil, Bulgaria, Cameroon, Chile, China, Colombia, Congo (Democratic Republic of), Congo (Republic of), Costa Rica, Cote d'Ivoire, Croatia, Czech Republic, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Gabon, Georgia, Ghana, Guatemala, Haiti, Honduras, Hungary, India, Indonesia, Iran, Jamaica, Jordan, Kazakhstan, Kenya, Korea (Republic of), Kuwait, Kyrgyz Republic, Latvia, Lithuania,

Malaysia, Mexico, Moldova, Morocco, Mozambique, Nepal, Nicaragua, Nigeria, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Russian Federation, Saudi Arabia, Senegal, Slovak Republic, South Africa, Sri Lanka, Sudan, Syria, Tajikistan, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Ukraine, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen (Republic of), Zambia, and Zimbabwe.

¹¹⁶ Including covariates (i.e., X_i) in equation (1) has the practical consequence of reducing the number of observations available for the analysis. When we estimate this equation with only the lags of the dependent variable, the oil production variable, and the fixed effects included, our results hold.

¹¹⁷ Bond, Hoeffler, and Temple 2001, p. 6.

¹¹⁸ Judson and Owen (1999, p. 13) provide evidence from Monte Carlo experiments that the one-step GMM estimator performs better than its two-step counterpart, and that a 'restricted GMM' procedure does not hurt the estimator's

performance while easing considerably its computation.

¹¹⁹ Judson and Owen 1999, p. 13.

¹²⁰ Beck and Katz 2004.

¹²¹ Plotting the estimated residuals versus the fitted values and examining partial leverage plots from our estimates indicated that Oman, Nicaragua, the Republic of Congo, and Zambia might be influential 'outliers.' The results reported in Tables 2 and 3 are from estimations that exclude these countries from the sample. Our results hold, indeed are stronger, if these countries are included.

¹²³ Each cell in this table comes from a different statistical model. Given two different versions of the *Oil Rents* variable, two different versions of the *Debt* variable, and two different statistical indicators, this results in 8 estimated coefficients.
