

Natural Wealth Accounts:
A Proposal For Alleviating the Natural Resource Curse

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SUMMARY

Countries rich in fuel and mineral resources tend to have worse development outcomes than other countries. Commodity rents free governments from the discipline of tax revenues, so that natural resource wealth worsens the quality of governing institutions. I propose a system of *Natural Wealth Accounts* that converts rents into tax revenues, mimicking the discipline tax revenues impose in resource-poor countries. This will create an *endowment effect* (citizens will require the government to justify why it is taxing their rents); an *information effect* (citizens will understand the problem better); and an *income effect* (the population will retain some of the rents).

Keywords: Natural resource curse, Political Economy, Taxation, Distribution, Institutions, Transparency

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1. THE “PARADOX OF PLENTY”: A CURSE IN NEED OF ALLEVIATION

Economists, historians, and political scientists have for centuries been fascinated by the “Paradox of Plenty”—the observation that the countries most richly endowed with the bounties of nature often do not see that abundance translate into prosperity and power, but suffer from stagnation if not outright decline. The classic case is that of Spain’s colonization of the New World, which brought the kingdom unheard-of quantities of gold and other precious metals that nevertheless did not long prevent the country from languishing in the political and economic backwaters of Europe. In economic historian David Landes’ words:

“Ironically, the nations that had started it all, Spain and Portugal, ended up losers. Here lies one of the great themes of economic history and theory... [Spain’s] new wealth came in raw, as money to invest or spend. Spain chose to spend—on luxury and war... Spain spent all the more freely because its wealth was unexpected and unearned. *It is always easier to throw away windfall wealth...* Spain, in other words, became (or stayed) poor because it had too much money. The nations that did the work learned and kept good habits, while seeking new ways to do the job faster and better. The Spanish, on the other hand, indulged their penchant for status, leisure and enjoyment...By the time the great bullion inflow had ended in the mid-seventeenth

century, the Spanish crown was deep in debt, with bankruptcies in 1557, 1575, and 1597. The country entered upon a long decline. Reading this story, one might draw a moral: Easy money is bad for you. It represents short-run gain that will be paid for in immediate distortions and later regrets.” (Landes, 1999)

After gold in Spain, the same paradox has accompanied many other commodity booms all over the world, from guano in Chile to phosphorus in Nauru, and of course oil in a range of countries. The failure of one natural resource exporter after another has given rise to the notion of a curse of natural resources. Recent academic research, which I review in section 2, convincingly demonstrates the negative effect of natural resource dependence on economic growth and other measures of human development, and provides evidence that the curse works by undermining the quality of a country’s governing institutions, thereby increasing the incidence of corruption, waste, and mismanagement.

Much public and political attention is being paid to the natural resource curse at the moment, witness the large number of NGO reports that have recently been published on various aspects of the subject.¹ That attention is especially timely as the changes in Iraq put to the forefront the question of how to manage some of the world’s greatest oil reserves, and as new and inexperienced countries, such as East Timor and São Tomé e Príncipe, are entering the club of oil exporters.

This paper proposes a policy to address the natural resource curse. It argues that resource-rich countries should introduce *Natural Wealth Accounts*, a system in which the income from natural resource exploitation is given directly to citizens, and is only then partially collected by the government in the form of individual taxes. The rationale for this roundabout flow of

funds starts with the observation that while natural resource rents seem to have corrosive effects on governance, tax revenues do not (section 2(c)). The purpose of Natural Wealth Accounts, which I describe in detail in section 3, is to reproduce the salutary effects of taxation. The psychology of human decision-making provides a micro-mechanism for the different effects of taxes and rents. Human beings are prone to care much more strongly about money that has passed through their hands (such as income taxes) than money that they simply never see (such as wasted or diverted natural resource rents). Natural Wealth Accounts convert resource rents into tax revenues and thereby bring stronger political pressures to bear also on the governments of resource-rich states. Section 4 describes this *endowment effect*, as well as two other effects of Natural Wealth Accounts. The *information effect* is that the proposed system equips the public with better understanding of the government's revenue stream from natural resources. Finally there is an *income effect* of leaving cash in the hands of the population to the extent that a government does not tax the Natural Wealth Accounts at 100%. The potential benefits of this income effect could be enormous, especially for the poor in low-income countries, who would immediately enjoy a much larger disposable income. Section 5 addresses the challenges to Natural Wealth Accounts (hereafter NWAs), highlighting in particular the political economy obstacles to NWAs and suggesting conditions under which they are more likely to be adopted. Section 6 concludes.

2. THE CURSE OF NATURAL RESOURCES AND INSTITUTIONS

(a) Natural resources and economic performance

The notion of a curse of natural resources is not a new idea. The past decade, however, has seen a resurgence of empirical research on the subject, starting with an influential study by Sachs and Warner (1995) which showed that after controlling for other important factors,

countries' rates of economic growth in the 1970 and 1980s were strongly and negatively affected by their natural resource dependence, measured as the share of primary commodities in exports. This result has since been reproduced by a series of studies (Leite & Weidmann, 1999; Gylfason, 2001a, 2001b; Sala-i-Martin & Subramanian, 2003). Gylfason (2001a) shows that the same patterns hold if resource dependence is measured as the share of natural resource wealth (rather than exports) in total national wealth.

A study by Stijns (2001) claims that the Sachs-Warner regression results are not robust to replacing the primary share of exports by either the total stock of resource reserves or total production flows. It is not clear how significant this finding is for the presence of a resource curse. Stijns' analysis seems to measure reserves and production in absolute levels per capita, rather than in monetary value as a share of the GDP. He does not, therefore, capture the importance of resources relative to the size of the economy. Moreover, he does not control for the endowment of *other* resources, so he does not capture *relative* abundance, which is what matters for how the economy is affected.ⁱⁱ When one uses measures that properly reflect countries' *dependence* on natural resources (rather than just their absolute endowment), as almost all the other studies do, there is clear evidence of a curse. It is manifest in slower economic growth, but also shows up in higher risk of violent conflict (Collier & Hoeffler, 1998; Fearon & Laitin, 2003), less democracy (Ross, 2001a) and more severe poverty (Ross, 2003). The magnitude of the curse is considerable. The estimates from the various regression studies cited above suggest that a one standard deviation increase in natural resource dependence as measured by Sachs and Warner is associated with an economic growth rate that is lower by one-half to one percentage point per year.

(b) The mechanics of the curse: Natural resources and governing institutions

The possible explanations of the natural resource curse largely fall into two classes: Economic factors and institutional factors (political economy factors). The economic phenomenon behind a negative growth effect of natural resource dependence is *Dutch disease*. Named after the negative effects on the Dutch manufacturing sector of Holland's natural gas revenues from the North Sea, the "disease" refers to the contraction of other tradables sectors as a result of a boom in the natural resource sector. As natural resource revenues flow into the country, the real exchange rate appreciates, which increases the demand for services and other non-tradables, pushing up wages and making the (non-resources) tradables sectors less competitive vis-à-vis foreign imports. This *spending effect* can also be accompanied by a *resource allocation* effect, as the natural resource sucks in factors of production and bids up their rewards. The question is why the resulting sectoral allocation of production factors should lead to lower growth in the long-run. The assumption made in much of the Dutch disease literature is that manufacturing has particularly high learning externalities and therefore is a source of faster productivity growth (Krugman, 1987; Matsuyama, 1992). There is however little empirical evidence to prove that manufacturing is necessarily a more growth-producing sector than, say, the agriculture or natural resource sectors. A related problem with factor reallocation is that the dislocation in an economy which experiences rapid change can be very costly, and since fuel and mineral resources are exhaustible, there comes a time when the reverse reallocation has to happen. Unless the revenue flow is managed very prudently, this can cause much unnecessary pain in the adjustment process. Moreover, networks, supply chains and institutional memory can be lost when an industry contracts, and this will create large, perhaps prohibitive start-up costs in a later period.ⁱⁱⁱ

As for political economy explanations, they center around the interaction between the flow of rents from natural resource exploitation and the quality of the institutional environment. The key idea in this class of explanation is that that easy money corrupts: Resource rents remove political barriers on how those in power spend public funds, which encourages spending on wasteful but politically important projects as well as outright corruption. Terry Lynn Karl (1997) and Michael Ross (2001b), among others, have shown how the availability of resource rents fuelled ever-increasing and unsustainable spending for patronage and political purposes in contexts as different as the Venezuela oil boom and the South East Asia timber boom.

These insights can be refined further. Economic studies show that natural resources need not be a curse if institutions are good enough to discourage corruption and graft. Mehlum *et al.* (2002) present an elegant model in which the effect of resource abundance on growth is ambiguous, and depends on the amount of resources and on the quality of governing institutions. At low levels of resource abundance more resources help growth, but at sufficiently high levels, more resources hurt growth. As institutions become more “producer-friendly” and less “grabber-friendly” the threshold for a negative effect increases, so that natural resources are growth-enhancing for a wider range of abundance. To test the model they run Sachs and Warner’s regression enhanced with an interaction term between institutional quality and resource abundance. Their coefficient estimate implies that when institutions are sufficiently good, a larger share of primary commodities in exports is associated with *faster*, not slower growth. Similarly, Røed-Larsen (2003) finds that solid institutions have protected Norway from the natural resource curse. The lesson that the institutional framework matters is corroborated by the case studies reported in Auty (2001).

While the effect of resource rents on growth may depend on the strength of institutions, there is also much evidence that the institutions *themselves* are influenced by the existence of rents. The works of Karl and Ross cited above document how the increased magnitude of rents in resource booms leads policy-makers to dismantle institutional safeguards that would have constrained the use of rents. Ross calls this *rent seizing*—when rents are large, there are strong incentives to gain control over the process of allocating the rents, which can in turn produce incentives to weaken the institutional framework that regulates the use of public funds. Leite and Weidmann (1999) show how a windfall gain creates this effect in a theoretical model, and recent econometric evidence suggests that institutions are indeed negatively affected by natural resource dependence. Sala-i-Martin and Subramanian (2003) reproduce the Sachs and Warner results, and then include the share of primary commodities in exports in a first-stage regression so that resource dependence can affect economic growth in two ways: directly, or through its impact on institutions. They find a strong negative effect of fuel (oil and gas) and mineral resource dependence on institutional quality.^{iv} Interestingly, the direct effect on growth *disappears* if the curse is allowed to work through the institutional mechanism.^v These results lend support to the view that the nefarious consequences of natural resource abundance work through its deteriorating effects on the governing institutions of the country, and not in the main through Dutch disease.

(c) The role of taxes

Why, as Leite and Weidmann (1999) put it, does Mother Nature corrupt? What explains the finding that natural resource abundance reduces economic growth by undermining institutional quality and fostering corruption? A simple answer would simply be that with more natural resource income, more is “up for grabs.” This, however, begs the question of

why the same incentives do not occur in resource-poor but otherwise rich countries. One might reply to this that it is easier to divert (or to waste) natural resource income than other government revenues, but it is not clear why this would be the case. In a purely logistical sense, it is as easy for a government to misuse tax revenues as natural resource revenues. Nor can the share of the government in economic activity explain the relationship. It is true that natural resource-rich countries often have bloated governments which control a large share of the economy, but this does not as a rule lead to worse institutions than the alternative. The Scandinavian countries rank among the highest countries in the world in terms of both government share in GDP *and* transparency and quality of government. Many scholars instead claim that the explanation lies in the *source* of public revenues, which differentially affect the incentives of policy-makers. For Terry Lynn Karl (1997), “[w]hether states are predatory or developmental depends ... on the origins of their chief revenues.” The characteristic factor of fuel and mineral resources is that they are geographically concentrated and almost always government-owned. It follows that they generate high economic rents, which Sala-i-Martin and Subramanian (2003) claim “are regarded as manna from heaven which tends to corrupt institutions and lower the long-term growth prospects.” If “manna from heaven” is corrupting relative to revenues raised by taxation, then the converse must also be true: Depending on taxes for government revenue is especially conducive to government that is accountable to the population. This is a claim that appeals to common sense and lay perceptions of political history; the dictum of “no taxation without representation” illustrates the idea that taxation generates pressure for more accountable government.^{vi} This idea is central in many accounts of the growth of representative institutions in Europe (see Herb, 2003, and Ross, 2004, for two recent treatments, and the references cited therein) and in “rentier state” case studies of Middle Eastern countries (see

Ross, 2001a, and the references cited therein). Several recent empirical studies show that a larger share of tax revenues in total government revenues—in particular direct tax revenues—is associated with more democratic institutions (Ross, 2004; Mahon, 2005).

Which mechanisms generate such pressures is an underexplored question. We need a better understanding of the micro-decisional level that is affected by taxation, as well as the exact nature of the incentives that are created for governments to provide better governance. In section 4 I show how the research on individual decision-making in social psychology and behavioral economics gives answers to these questions. If we can establish how tax revenues discipline governments, we may be able to devise institutional designs that replicate those disciplines even in cases where natural resource rents remove the need for broad taxation. The proposal for “Natural Wealth Accounts,” which I shall now describe in detail, is such an attempt to “mimic” the discipline of taxation for better governance in natural resource-dependent countries.

3. NATURAL WEALTH ACCOUNTS

This section outlines a system of taxable *Natural Wealth Accounts* that aims at converting resource rents into tax revenues. The basic mechanics of the proposal are as follows. NWAs are set up for every eligible citizen (below I discuss who should be eligible). Instead of going to the government treasury, all of a country’s revenues from natural resource extraction are distributed on a *per capita* basis to the NWAs at regular intervals. The distribution should be done by an independent agency—call it the National Wealth Office.^{vii} Prior to distribution, the revenues are kept in a separate account controlled by the National Wealth Office, and not by the Ministry of Finance.^{viii} At a fixed time interval, the Ministry of Finance levies a tax on whatever has been paid into the NWAs in the preceding period. The tax is determined

through the government's regular fiscal and tax policy processes. Once levied, the tax proceeds enter the revenue side of government budget like any other tax revenue. Since the government is free to tax the NWA receipts at 100% if it wants to, the ultimate public/private allocation of resources could exactly replicate that which would have taken place if natural resource revenues flowed straight to the treasury (but there are good reasons why the tax rate should be well below 100%, and I discuss this in the next section). The point of the roundabout flow of funds is to have the country's natural resource revenues be viewed (by the government and by the population) as belonging to individual citizens, just like other types of income, which can only finance government spending after being collected as taxes. This both educates the citizenry of the magnitude and volatile nature of resource revenues, and motivates them to pressure the government to be a good steward of the money it retains.

Within this very general framework, the details may vary. In particular, there are a range of options for eligibility rules, modalities of payment and taxation, conditionalities on NWA payments, stabilization mechanisms, and the regional allocation of the power to tax the NWAs. Clearly, the appropriate choice of options should depend on the local context.

(a) Eligibility

The moral principle underlying direct distribution policies is that natural resource wealth belongs equally to all the individuals in the community. A benchmark case is the state of Alaska, which pays its "dividend" to all residents (but does not tax it, unlike what I am proposing). In a sovereign country, the benchmark would presumably be all citizens.^{ix} One may consider several modifications:

- One could limit NWAs to *resident* citizens. (One might also decide to make long-term foreign residents eligible, like some countries give them a limited right to vote.)
- One could limit NWA payments to *adult* citizens. While Alaska pays its permanent fund dividends to children (or rather their parents or trustees) as well as adults, developing countries may not want to provide incentives to increase an already high fertility rate.
- The NWAs could be given to *households* rather than individuals. In Mexico, for example, the PROGRESA and OPORTUNIDADES programs pay cash transfers to female heads of households. Those with more children (and with more girls) receive more money as long as the children are in school, up to a cap. If NWAs were set up for households, incentives for fertility choices would have to be considered in the many resource-rich developing countries with excessive population growth. Giving the same amount to every household regardless of the number of children would likely be judged inequitable; on the other hand, incentive considerations suggest that there should be a limit on how much more households with more children should receive.

(b) Repayment or withholding

The roundabout flow of resource revenues to the government through the NWAs can be engineered in different ways. A “soft” version would allow tax withholding, so that individual citizens would only receive in their NWAs the after-tax amount. A “harder” version of the system would let citizens receive their entire (pre-tax) share of that year’s natural resource revenues, and would then involve reverse transfers from the accounts at the end of the fiscal year, in the amount of the tax owed. The most extreme version would completely separate NWA payments from tax collection, so that individuals would be physically (if not legally) able not to pay their taxes. As the next section will explain in more

detail, the “harder” versions are likely to create stronger endowment effects than the “softer” ones (although even in countries where income tax withholding is the norm, the endowment effect seems quite strong). If the logistical costs of tax collection by other means are prohibitive, a country may want to choose an intermediate version rather than the “hardest” one. To maintain the information effect, a system that allows withholding must minimally ensure that NWA holders receive a regular statement of how much they would have received without withholding, as well as the percentage rate and absolute magnitude of the tax (all in *per capita* terms). The discipline imposed on the government by the NWAs, however, would be far stronger if the NWA payments were made in full before collecting taxes.

(c) Conditionality

The rationale behind NWAs is that natural resource revenue should not be accessible by the government except by taxing the incomes of the population. It is therefore undesirable to let the government set too many specific conditions on eligibility lest the NWAs in essence become a subsidy for favored activities. This would both return “manna from heaven” to the government by reducing the necessity for budget appropriations for such subsidies, while at the same time undermining the unity and transparency of the general budget process.

That said, some conditions on NWA payments could contribute to institutional and social development. Mexico’s PROGRESA and OPORTUNIDADES programs show that cash transfers conditional on school attendance and participation in health services have significant beneficial effects on health and education outcomes (Skoufias & McClafferty, 2001). One might attempt to promote institutional development by making NWA payments conditional on the acquisition of a birth certificate, participation in a national census, or

registration on the electoral rolls. It is imperative, however, that these conditions be few in number, simple to fulfill, and sufficiently universal that the entire population can reasonably be expected to comply. NWA payments should not be made conditional on individuals' work projects or specific spending plans—this should be the role of microlending, credit, or social policy, and should be financed through the regular government budget. Moreover, too much conditionality would frame NWA payments as a gift from the government rather than as the property of citizens.^x

(d) Savings and stabilization

Natural resource revenues are volatile for two reasons: The possibility of depletion and the volatility of commodity prices. There are strong macroeconomic reasons for smoothing or “sterilizing” the natural resource revenue that is allowed to flow into the domestic economy in any one year (a comprehensive recent overview of this issues is given by the various contribution to Davis, Ossowski, & Fedelino, 2003). Intergenerational justice concerns also entail a necessity to save some of the windfall for future generations. The “Hartwick rule,” for instance, requires the proceeds from depletable resource exploitation to be invested in physical capital, which under certain conditions permits a permanently sustainable level of per capita consumption (Hartwick, 1977, 1978; Solow, 1974, 1986; Asheim, Buchholz, & Withagen, 2003). The alternative to investing in capital is to save natural resource windfalls in the form of financial assets, as with the increasingly popular natural resource funds.

There are two ways in which NWAs could interact with the existence of policies for saving and stabilization. The saving and stabilization mechanisms could, on the one hand, be applied to revenues *before* they are distributed to the Natural Wealth Accounts. In this case, individuals' NWAs would receive smoothed “permanent income equivalents” of natural

resource windfalls, instead of the actual yearly *per capita* revenues from the sector. The adjustments would be deposited in a fund, and would replenish the NWAs in times of low revenue. Alternatively, the saving and stabilization mechanisms could be applied on the *taxes* the government levies on the NWAs. In this case, the transfers to the NWAs would *not* be smoothed, but the tax revenue would be, so that the government would receive a stable amount of NWA tax revenue from year to year, with the adjustments placed in or withdrawn from a fund.

Which of these two routes one chooses should depend on whether it is necessary to impose stabilization or savings policies on the private sector or not. That in turn depends on the (notoriously low) ability of the government to actually carry out the smoothing policies, and on the “income effect” of NWAs—the effect of effectively leaving resources in the hands of private individuals. In section 4(c) I cite evidence to the effect that the private sectors has proved itself *better* at smoothing windfall income over time than the public sector—which suggests that saving and stabilization is better secured by private actors than through governmental natural resource funds. Should a country, notwithstanding this, decide to smooth revenues before they are paid to individual NWAs, it is imperative that individuals are given full information of the *per capita* amount of the adjustments. This could be done by including in regular account statements how much the NWAs *would* have received without adjustments, the amount of the adjustment, and the *per capita* balance in the savings and stabilization funds (or other devices). Thus individuals would know their share of the financial wealth generated by accumulated natural resource revenues. Without this information, the stabilization and savings funds could become a conduit for the government to access natural resource rents without the disciplining effect NWAs are intended to have.

(e) Regional assignment of natural resource revenues

The allocation of resource rents between central, regional and local levels of governments is a common source of conflict. In terms of both efficiency and fairness, there are many considerations to weigh: Equity between regions, fair treatment of natural resource-producing regions, subnational governments' ability to collect taxes and to handle revenue volatility, tax competition between regions leading to inefficient allocations of resources, and an appropriate balance between central and local government revenues (Ahmad & Mottu, 2003; Brosio, 2003). In terms of political economy, there is a natural conflict of interest between resource-producing regions and the political center, and between resource-rich and resource-poor regions. The politics of "revenue sharing"^{xi} or "derivation" (Brosio, 2003; McLure, 2003) is therefore a source of continuous tension in resource-rich countries, which statistically speaking are more prone to civil war than resource-poor ones (Collier & Hoeffler, 1998; Fearon & Laitin, 2003).

Natural Wealth Accounts provide a new approach to allocating resource revenues to various levels of government. One could make the NWAs taxable by *each* level of government, and then leave it to each level to decide how much to tax its own constituents. Currently revenue sharing is done either from the stream of resource revenues flowing into the national treasury, or by diverting parts of that revenue stream directly to the treasuries of subnational governments. Under the proposed system, the subnational levels of government would have access to an equal *per capita* tax base (the NWAs), and the appropriate local government take of that tax base would be determined in the local political process.^{xii} Naturally, there would have to be a cap on the highest tax rate each level of government could charge its constituents, to avoid them from infringing on each other's tax bases. (If any subnational unit of government did not tax at its highest permissible rate, individual citizens would keep

the remainder.) It would be natural to fix the cap in the constitution, which usually sets out the mandate and authority of each level of government. Clearly the level of the caps could be subject to much dispute. Once the caps were set, however, subnational governments' revenues would no longer be determined in a contest with each other or with the central authorities, but in the political equilibrium which secures them sufficient political support among their own local constituents.^{xiii}

4. EFFECTS OF NATURAL WEALTH ACCOUNTS

(a) The endowment effect: The social psychology of taxation

That people's choices exhibit endowment effects has been amply brought out by the research in individual economic decision-making over the past three decades, both by social psychologists and behavioral economists (Kahneman, 2000; Camerer, 2003) Three well-established patterns in individual decision-making are relevant to the present topic of the social psychology of taxation:

- **Reference-dependence.** When evaluating monetary outcomes, people pay much more attention to *changes* in income levels than to those levels themselves (Kahneman & Tversky, 1979; Kahneman & Thaler, 1991). This could be due to the propensity of humans to adapt to the situation they find themselves in, or to have aspirations that are closely correlated with what they are used to (Kahneman & Thaler, 1991; Kahneman, 2000). The reference-dependence observed in choice behavior has a parallel in self-reported happiness measures. A series of studies surveyed in Frey and Stützer (2002a; 2002b) suggest that incomes are judged relative to aspiration levels. Since aspiration levels tend to track actual incomes (as you get richer, the level of wealth that you inspire

to increases as well), most longitudinal studies fail to find any effect of income on happiness over time.

- **Loss aversion.** Not only do people generally evaluate changes from a reference point, rather than levels. The evaluation is also *asymmetric*. In general, “losses loom larger than gains”: A loss of a certain size is more hurtful than a gain of the same size is beneficial, in terms of psychological satisfaction. Loss aversion implies that when people choose between two options that differ on several dimensions, dimensions along which both options involve a loss relative to the reference point will be more important than dimensions which constitute advantages.
- **Framing.** The third relevant phenomenon is that the reference points on which people base their decisions are extremely labile and susceptible to manipulation by framing. The same change can be framed as a gain (if the frame involves a reference point that is worse) or as a loss (if the frame involves a reference point that is better). Behavior has been shown to depend dramatically on the triggered frame.^{xiv}

These three phenomena go a long way to account for why the management of tax revenues is subject to a different political economy than that of natural resource rents. Taken together, reference-dependence, loss aversion, and framing imply that people feel differently about out-of-pocket losses and foregone gains. Put differently, they create an *endowment effect*:

Possession increases perceived value. Studies have found that people are generally only willing to sell something they perceive as “theirs” at a much higher price than they would be willing to pay to make it theirs in the first place—even when the object has only been in their possession for an instant (Kahneman, Knetsch, & Thaler, 1991). This endowment effect is likely also to occur with earned income. Tax payments are generally perceived as a

cost that people have to pay out of their earnings, and so people have an incentive to hold the government accountable for how it spends “their” money.^{xv} Natural resource wealth that is wasted or stolen, in contrast, is more likely to be perceived as a foregone gain, since it has never passed through the hands of the population and therefore has never been “earned” or “possessed.” The endowment effect implies that the motivation to hold the government accountable is less strong in the case of natural resource revenue than in the case of taxes. Thus, the social psychology of human decision-making provides micro-foundations to the hypothesis that taxation promotes accountability, discussed above.

The endowment effect is illustrated by the state of Alaska, where a portion of oil revenues is paid out as a dividend to each resident on a yearly basis.^{xvi} The endowment effect implies that once people come to see this money as their own (rather than the government’s) income, they will become very unwilling to give it up, and thus a policy of direct distribution is politically irreversible. Apparently this is precisely what has happened: “Any politician who even suggests considering a policy that might adversely impact the size of the annual distribution had best look for another career” (Goldsmith, 2002). The goal of Natural Wealth Accounts, then, is to change the “frame” with which the citizens view their and their governments’ money and create an endowment effect in the country’s natural resource rents. And in contrast with the Alaskan system, NWAs attempt to create an endowment effect in the *entire* amount of the rents.

(b) The information effect of taxation

There is another likely reason why tax-financed governments exhibit better governance than ones relying on resource rents. The endowment effect influences the population’s *motivation* to monitor and restrain their government’s use of public funds. For the same motivation,

however, the *capacity* of citizens to exert pressure on their government varies with the amount of information available to them. If I do not know that I am being defrauded, any incentive I may have to do something about it will not be effective. People know how much they personally pay in taxes (at least direct taxes); they normally do not know the magnitude of government revenues from natural resource rents. Moreover, the magnitude of *per capita* tax burdens is easily understood in terms of the ordinary citizen's everyday economic experience; whereas aggregate government budget numbers are much more difficult to grasp, especially by people with a low degree of numeracy or economic knowledge.

An immediate benefit of NWAs, then, would be citizens' improved understanding of the fiscal nature of a natural resource-based economy, since it will express all the relevant magnitudes (natural resource revenues, taxes on them, and any adjustments for stabilization or savings and the balance in any funds) in *per capita* terms. Over time, citizens are likely to understand the inherent volatility of natural resource revenues, which should reduce pressures for overspending during boom periods. Improved knowledge is also likely to create demand for more knowledge. Citizens who accurately understand how much income the country receives, and how much is captured by the government, are more likely to want to know how the government share is spent.

Citizens would have a have a strong incentive to pressure the government to counteract patronage and corruption in the oil sector, since problems show up as lower transfers to NWAs than would otherwise be possible. Likewise, a government that sets out to reduce waste and corruption will have larger NWA transfers to show for it, which the population at large can reward through political support. The effectiveness of the political process, in other words, is likely to be improved when it is easier for citizens to see the monetary effects of their government's doings.

(c) The income effect

So far I have said nothing about the optimal rate at which the government should tax inflows into the NWAs. That depends on the *income effect* of NWAs—the consequences of providing citizens with net income from natural resource rents. Other things equal, the tax rate should be set at a level that achieves the maximally beneficial income effect. One consequence of the previous discussion, however, is that *whatever* the appropriate division of rents between the public and the private sector, it is optimal to transfer everything to the NWAs, then tax some of the money back. In merely pecuniary terms, of course, a policy of distributing, say, 25% of natural resource revenues to the population^{xviii} is equivalent to a policy of distributing 100% combined with a tax on the distributions of 75%—that is, the income effect is identical. But in a system where 25% is distributed tax-free to the population, the remaining 75% still accrues to the government as “manna from heaven.” Distributing everything and taxing the NWAs at 75%, on the other hand, converts *all* the rents into tax revenues. If “manna from heaven” corrupts governing institutions, then taxable NWAs are superior to non-taxable transfers of the same net magnitude. Even if the optimal tax rate is 100%, the endowment and information effects mean that NWAs with a tax rate of 100% are preferable than simply channeling the resource rents straight into the government treasury, which is the near-universally adopted policy.

In terms of the income effect, my proposal belongs to a tradition dating back to Thomas Paine’s proposal in *Agrarian Justice* to distribute a “ground-rent” to all citizens. Paine’s argument was that since land must originally have been the common property of humanity, today’s poor are entitled to their proportionate share of rents on land—an argument easily extended to natural resource rents. “Direct distribution” proposals have had somewhat of a resurgence in recent decades. Such a system is in force in Alaska, and the province of

Alberta will make a one-time C\$400 payment to each of its residents after a larger-than-expected surplus in 2005 due to high oil prices. Alaska-based systems have been proposed for Nigeria (Sala-i-Martin & Subramanian, 2003) and Iraq (Palley, 2003a, 2003b; Birdsall & Subramanian, 2004). Alaska does not tax its “dividends,” nor do the proposals for other countries seem to envisage taxable distributions. Sala-i-Martin and Subramanian (2003) explicitly propose for Nigeria that all oil revenues should remain in private hands: “Of course one implication of our proposal would be that the government would lose revenue. In fact, if our proposal were to be implemented, the government would [lose] all the revenue that it now collects directly from the sales of oil.” These systems create an endowment effect in the rents that are distributed, but not in what the government retains, whereas NWAs attempt to create an endowment effect in the entire amount of the rents, acknowledging that some of the rents should finance government activities. Nevertheless, these different systems do have identical income effects (and presumably also a comparable information effect), so the analysis of the income effects that follows is also applicable to these other proposals. The rest of the discussion focuses on three kinds of consequences of leaving money in the hands of individuals: The consequences for resource allocation and investment, for institutions, and for income distribution.

(i) Resource allocation and investment

The immediate consequence of NWAs being taxed at less than 100% is that resource rents will partly be spent according to individuals’ preferences, which will in general allocate resources differently than the government. One may worry that the transfers will diminish the incentive for productive work and thereby reduce the labor supply. One may also fear that private individuals—especially the poor—will consume all the rents, leaving nothing for productive investment necessary for growth.^{xviii} A referee of this journal expressed this

worry, asking if in order to follow the Hartwick rule of investing all natural resource proceeds into physical capital, one would not need to retain most of the rents in the public sector.

I do not believe that the answer is clear-cut. The few scientific studies that have been done on cash payments to poor individuals suggest that private agents are quite good at investing their rents. In Mexico's PROGRESA and OPORTUNIDADES programs, which pay poor mothers cash benefits conditional on sending their children to school and to the health clinic, beneficiaries spend the money in part to buy more nutritional food, and the payments do not reduce work participation by adults (Skoufias & McClafferty, 2001). A significant share of the money (about 25%) is used on investment goods such as animals (Gertler, Martinez, & Rubio, 2005).

More importantly, what matters is not whether individuals would behave wastefully, but whether they would behave more wastefully than the government. There is evidence that opposite is the case. In their study of the Kenyan coffee boom in 1976–1979, Bevan, Collier, and Gunning (1987; 1989; 1992) find that private agents had much higher propensity to save out of windfall earnings—almost 60%—than did the government. The country case studies in Collier & Gunning (1999) show similarly high savings rates by the private sector in a number of windfall episodes (except when the windfall is mediated by the government so that the origin of the rents in commodity booms, and thereby their windfall nature, is less obvious to private agents). For the case of more regular transfers of rents to individuals, a study of consumption behavior in Alaska finds no evidence that households react to Permanent Fund dividends with consumption spikes (Hsieh, 2003). Finally, the apparent success of many microfinance projects suggests a high ability of many individuals to direct resources to productive uses.

Nevertheless, the public goods-nature of some of the most productive investment goods (infrastructure and health are natural examples) means that even if individuals save more than the government, growth could be lower than if the government invested the resources. *Ceteris paribus*, lower NWA tax rates would reduce the amount of public funds available for such investment goods, and the private sector would not substitute for them. Whether this makes the income effect of NWAs less attractive, however, depends less on what the government *could* do than what it *would* do if it kept a higher share of the rents. Developing country governments have an awful record of financing “white elephants”—visionary, large-scale, but ultimately tremendously wasteful development projects. This can be due to political economy effects (Robinson & Torvik, 2005) or the difficulty even for competent government agencies of possessing the necessary information to choose the highest-return projects (Hayek, 1945). While tragic, in such situations the least bad option may be to leave rents in the hands of individuals through low NWA taxes.

The main point of this subsection has been to question the common preconception that the income effect of NWAs would be negative because private individuals would waste their rent incomes. A lot more research is needed on this question, and the effect will of course vary from country to country. Pending better knowledge, the considerations given here suggest that leaving *some* rents for individuals may improve resource allocation.

(ii) Institutional consequences

Another consequence of NWAs would be a deepening of financial systems that in many developing countries are shallow or non-existent. Regular payments to all individuals could make it profitable to expand rudimentary banking services to segments of the population that otherwise have no access to them and therefore no reliable way of accumulating

financial savings.^{xix} A more efficient financial system would deepen the credit market, especially as some recipients would choose to save part of their NWA income. The assurance of a regular minimum income may also make it easier for the poor to access credit. Parallel to the development of a financial system, NWAs would introduce cash transactions in areas where most economic activity is based on barter and informal exchange. Remote rural areas of resource-rich developing countries could in this fashion be monetized almost overnight. A cash economy would significantly reduce transactions costs relative to a barter or gift exchange economy, and might therefore contribute to the growth of markets and faster economic development through the deeper division of labor it would enable.^{xx}

(iii) Distributive and poverty reduction consequences

Finally, the distributive effects of revenue distributions should not be underestimated. Since natural resource rents are to be paid lump-sum on a *per capita* basis, a tax on NWAs is regressive.^{xxi} Conversely, the effect of lowering the NWA tax is *progressive*. A lower NWA tax will therefore lead to a more egalitarian income distribution. Developing countries in general, and natural resource-rich countries in particular, are marred with highly unequal economies, and NWAs are arguably the simplest and quickest way of addressing those inequalities.^{xxii} This would be of great benefit for the poorest of the poor, who would see their disposable incomes increase dramatically almost overnight—indeed it is difficult to think of a more efficient poverty reduction policy, as Thomas Paine pointed out more than 200 years ago.

(d) Consequences of NWAs for government's incentives

The effects of NWAs on individual behavior will have repercussions on the political economy within which the government makes its choices. This subsection shows how the

endowment, information, and income effects are likely to generate incentives for governments to increase transparency, improve governance, and not undermine the NWA system itself.

(i) Incentives for transparency

As part of the information effect of NWAs, people will understand the opportunity costs of NWA taxes. The income effect reinforces the information effect, since it gives citizens experience of managing the rents themselves. Thus NWAs gives citizens a simple benchmark for government performance. Do they think the government provides them with services worth the taxes they have to pay? Or do they think they would spend the money better themselves? The existence of the benchmark, by reducing the cognitive and logistical obstacles of assessing the government's management of public funds, in effect reduces the cost of information about government performance. This should increase the demand for such information, and make it easier for the population to pressure the government to provide it. Taxable NWAs will therefore generate incentives for *transparency* of public financial management.

(ii) Incentives for governance

A government that performs badly will be under more pressure to change its behavior the more the population knows about its performance.^{xxiii} With transparency of government activity, therefore, come increased incentives for the government to show that it is performing well. This effect can occur through several mechanisms:

- When people are more aware of the opportunity cost of public spending, they will be better judges of how that money is spent. This increases the need for the government to justify its spending decisions, which makes waste and corruption politically more costly

to the government, other things being equal. At the same time, rival contestants for government power will have a stronger incentive and a greater ability to expose government mismanagement, and to seek political support based on how it would spend the tax revenues better.

- The tax rate itself will be a political question, so that the government must justify why the tax rate is not lower. This increases the incentive for the government to show that it is using the money well.
- If citizens are dissatisfied with how the government uses the resource revenue distribution taxes, they will be more supportive of political leaders or movements that advocate a lower tax rate. Thus the ultimate check on bad governance is a reduction of the amount of tax revenues the government can mismanage.

(iii) Sustainability of the system

Finally, the NWA system generates incentives for its own maintenance. To the extent that the tax rate is below 100%, the endowment effect predicts a high political cost of reducing the amount people are accustomed to receiving. The quote from Goldsmith (2002) above shows this to be the case in Alaska. Of course it would be *possible* to raise the NWA tax, just as it is possible to raise ordinary taxes. But even if the tax rate were 100%, it would be difficult for a government to scrap NWAs altogether. Such a move would be seen as the government's attempt at hiding what it wants to do with the citizens' money. Even with a 100% tax, therefore, the government has an incentive to keep intact the roundabout flow of resource. This incentive makes it likely that once the NWAs were in place, the predicted beneficial effects on transparency and governance would be sustained.

5. CHALLENGES

In this section I address possible objections to NWAs. The first set of challenges ask how such a system could be put in place, considering both practical obstacles and political economy challenges. I then turn to doubts about whether NWAs would be a good thing, even if they can be established.

(a) How could NWAs be established?

(i) Practical difficulties

NWAs necessarily run up against logistical challenges that are greater the less developed is the country's infrastructure. The obstacles include registering and keeping track of all eligible individuals; actually distributing the money; collecting NWA taxes; and avoiding fraud, corruption, and abuse. Is it realistic to expect NWAs to be a feasible institution for poor resource exporters? The answer will depend on the exact form of the NWA system. For countries with working banking system, one can set up actual bank accounts. An alternative when the banking sector is too rudimentary is a "Natural Wealth Checks" (NWC) system. With NWCs each eligible recipient receives a regular check that can be redeemed for cash at the nearest post office, together with a statement of the period's revenues, taxes on the NWC payments, any adjustments for savings or stabilizations funds and the amount in such funds—all in *per capita* terms. The feasibility of the system will vary between countries. In general, the middle-income resource-exporting countries in Latin America, the Middle East, and Central and South East Asia should have the logistical wherewithal to establish a workable NWA (or NWC) system. Among poorer states, the task may be manageable when the population is very small. São Tomé e Príncipe, for instance, has impressively thorough electoral rolls, and could use those as a basis for registering NWA recipients. For the

majority of resource exporters in Sub-Saharan Africa, and in other countries without an adequate census or a functioning postal system throughout their territories, the logistical problems remain overwhelming.

Even for these countries there are some reasons for hope. The institutional infrastructure that Natural Wealth Accounts/Checks require is largely complementary to other prerequisites for social and economic progress. A basic census, for example, is necessary for electoral democracy, and postal communication and financial institutions that reach the entire country are necessary to reach a certain level of economic development. This complementarity increases the gain from building the NWA infrastructure, and may therefore improve its attractiveness to local decision-makers and foreign development agencies and institutions. A final important feature of the proposal is that every citizen will have a monetary incentive to facilitate their own participation—if the tax rate is expected to be less than 100%—since the opportunity cost of not being registered is missing out on the regular cash transfer. This may go some way to reduce the challenge of finding and registering recipients. The problem is more likely to be preventing fraudulent registration by ineligible individuals or several registrations for the same persons.

(ii) Political economy difficulties

The natural resource curse, we have said, works through the corrosive effects that large rents have on governing institutions. NWAs, I have conjectured, can have a long-term remedying effect on institutions, but that presupposes that an NWA system would be set up in an adverse institutional context. If my conjectures are right, NWAs would be a threat to vested interests—those who benefit from the natural resource curse by controlling or appropriating

rents would lose their advantage. We must therefore ask why any government would ever set up the NWA system?

Clearly there is a constituency for NWAs—it includes those parts of the population that are left in misery by the natural resource curse. The question is how this constituency could ever prevail against vested interests. In addition to external pressure, I can envisage four types of circumstances under which this could happen:

- *New order.* Countries sometimes face moments of deep constitutional change—*e.g.* wars and revolutions. These moments involve two particularly relevant factors—prior vested interests are weak if they have been defeated, and a new political and socio-economic order has to be built. Until new coalitions settle, the choice between different options for the new order is open. In such cases NWAs could be on the table, perhaps as a bargaining chip to be offered to those who would benefit most from it, against some other concessions. The most relevant cases today may be Iraq, East Timor, and perhaps post-coup Mauritania.
- *Innocence.* Vested interests against NWAs are also weak in countries that are newcomers to natural resource exploitation. These are countries in which rents are expected but have not in fact yet appeared (or have appeared recently enough that rent-seizing has not solidified). While expected rents can and do give rise to rent-seeking and rent-seizing behavior, emerging interests are a less formidable obstacle to NWAs than the entrenched interests in mature natural resource exporters. An example is São Tomé e Príncipe, which has only just received its first signature bonus from oil concessions, and which is often cited as establishing best practice in the governance of oil revenues (Bell & Faria, 2005).^{xxiv}

- *Overthrow.* NWAs have all the marks of populist policies—they involve giving money to poor individuals, and can be presented as a fight against corruption in the establishment. This makes NWAs an attractive policy to challengers of powerful incumbents, especially challengers who do not themselves benefit greatly from rent-seeking and rent-seizing. One can therefore imagine that an outsider contestant for power could use NWAs to garner popular support in order to overthrow strong vested interests. (Whether such a challenger would want to make good on a promise after gaining power is of course a different issue.)
- *Buy-out.* Finally, the huge cost of natural resource curse in lost economic growth means that in theory, any significant alleviation of the curse is a potential Pareto-improvement. In other words, it should be possible to *buy off* the entrenched interests, so that they would accept NWAs in return for some one-off compensation. One might imagine how a new government, intent on reform but without extensive support in the élite or in the state apparatus, may consider this option.

(b) Why NWAs might fail

Even if NWAs can be set up, another set of doubts pertain to whether they will have desirable effects. I here address two objections to my proposal, which are that the effects are, respectively, too weak or too strong.

(i) NWAs might not work

The simplest skeptical objection to NWAs is to doubt the quantitative importance of the endowment and information effects. Given the massive evidence of endowment effects in other contexts, such a doubt does not seem well-founded. However, there is little empirical research on the strength of these effects in the political psychology of taxation specifically,

and any final conclusion must await further evidence. In the case, however, that the effects were indeed negligible, NWAs would be little different from simply keeping resource rents in government coffers. While NWAs would not have the positive effects predicted above, they would also not cause much harm. From a practical point of view, then, it would seem worth implementing NWAs if there is even a partial chance that they could have a beneficial effect on government incentives, given the disappointing experience of resource-exporting poor countries.

Another reason why NWAs may fail to work even if implemented is corruption. Gatekeepers such as local bank or postal officials may abuse their power and withhold or divert payments. And government agencies may fail to channel all resource revenues into the NWAs. At the local level, it is possible, if the government so desires, to set up an independent ombudsman service. Since no citizen would want to be defrauded of their NWA payments, such an ombudsman would likely be in high demand; and the simplicity of the transactions involved would make it easy to investigate whether everyone has in fact received their entitled amount. At the central level, things are much more challenging, as the central government would have to monitor itself: *Sed quis custodiet ipsos custodes?* Some safeguards could (and should) be put in place when the NWAs are first set up—in particular transparency measures such as publishing the financial details of all resource exploitation concessions, or requiring oil companies to file a record of the payments to the government with an agency independent of the one receiving the money. Ultimately, however, corruption will remain a problem unless the public outrage is sufficiently strong. The hope is that the endowment and information effects would contribute to the advance of this moment.

(ii) They might work too well

One could make the opposite objection: That the effects of NWAs would be too strong.

One way in which the endowment effect creates incentives for good governance is by making the government's share of natural resource rents a matter of political debate and competition. This plays to the advantage of populist politicians. Even a government that is spending public funds wisely may find it hard to compete against a populist who promises to let citizens keep more of the cash from natural resource revenue. Thus a natural resource-rich country with NWAs may see its public treasury starved of funds and its government incapable of providing adequate public goods. (It should be noticed how different this objection is from the usual worry about natural resource exporters, which is that their governments are too bloated.) There is anecdotal evidence of this political dynamic in Alaska, where it is said to be very difficult for the government to finance essential public projects, while the dividend payments are perceived as entitlements that are politically impossible to reduce.

The Alaska example, however, is somewhat misleading. Permanent Fund dividends are not taxed by the state government. *Taxable* NWAs would not necessarily undermine the acceptance of taxation to fund public goods. Taxes on NWAs would be like taxes on any other forms of incomes: It may be politically costly, but not politically suicidal, to raise them. There is no reason to think why the populist threat of low taxes should be any graver in resource-rich countries with NWAs than anywhere else (at least if the tax revenues are spent well and perceived to be spent well).

NWAs could lead to insufficient funding for public expenditures for another reason. If the NWAs receive the country's entire current oil earnings (without savings and stabilization mechanisms), the amount transferred to the NWAs—and therefore the tax base—will shrink

as the resource is being exhausted. The incentives that I argued above would ensure the system's sustainability would also make it difficult to increase the tax rate enough to keep public spending at an appropriate level (and at depletion that would not help in any case). This problem, however, is not caused by the roundabout flow of rent income through the NWAs, but by an irresponsible time path of resource revenue spending by the government. As is well understood, the volatile and transitory nature of natural resource rents requires that their spending be smoothed over time. In the absence of urgent needs and sufficient absorptive capacity, a fund should be set up to accumulate resource revenues for the future. The real problem of Alaska is not that too much is being distributed to individuals, but that too little was saved of the (much larger) share of oil rents received by the state government when revenues were higher. Again, this is a challenge that has to be tackled regardless of whether the government receives resource rents directly or through taxes on NWAs.

6. CONCLUSION

The curse of natural resources has afflicted too many countries for too long. It is a tragedy each time we observe a country fully endowed with the bounties of nature go down a path of corruption, conflict, and underdevelopment. Recent research confirms that there is a real negative effect of natural resource abundance on institutional quality; and through it, on economic growth and poverty reduction.

I argue that Natural Wealth Accounts could remedy this problem. In such a system, the resource rents would be paid directly to the public on a *per capita* basis, and the government would then choose how much of it to tax back. This paper has drawn on insights and evidence from social psychology and political science to argue that governments that raise revenues through taxation behave differently from governments financed by natural resource

rents. Natural Wealth Accounts would cause an endowment effect, an information affect, and an income effect, all of which would give the citizenry an incentive to hold its government to account, in turn encouraging institutional developments conducive to economic growth. After so many failures in so many resource producers, and with so much international attention to the problem, the time seems ripe to give Natural Wealth Accounts a try.

ⁱ The NGOs include Catholic Relief Services (Gary & Karl, 2003; Gary & Reisch, 2005), the Open Society Institute (Open Society Institute, 2003), Global Witness (Global Witness, 2004 and many others) and Oxfam America (Ross, 2001c).

ⁱⁱ Another difference between using measures of reserves and export dependence is that reserves capture future wealth potential, whereas many possible mechanisms through which a resource curse may operate depend on past, not future revenue flows. I thank Macartan Humphreys for this observation (personal communication).

ⁱⁱⁱ Hausmann and Rigobón (2002) propose another economic mechanism for the resource curse. In a country with a diversified exportables sector, shock in commodity prices can be absorbed via resource flows between the commodity-producing sector and other exportables. When the economy is entirely specialized in commodities, however, the price volatility of commodity markets is transmitted to the domestic economy, with negative consequences for investment and growth. The curse can then exist if a resource discovery or boom creates incentives for specialization.

^{iv} Agricultural resources and land have little effect on either institutional quality or economic growth. The psychological mechanisms outlined in section 4 explain why this should not be surprising: Agriculture, land, and fishing tends to be labor-intensive and dispersed, generating individually earned incomes, rather than centrally controlled rents.

^v Isham *et al.* (2002) get similar results.

^{vi} Karl's (1997) study presents the closely related argument that tax-raising governments are also more *capable* of good governance; this is because the institutions required for tax collection facilitate the national implementation of complex policies.

^{vii} Of course a crucial question is whether institutional independence is at all possible, or why the government would set one up. We ignore this question here, but return to it below.

^{viii} To ensure that this happens, commodity extraction concessionaires such as oil companies could be required, by law and in the concession agreements, to deposit their payments owed to the government directly into the separate account. This is the case for oil under the Oil Revenue Management Laws of Chad and São Tomé e Príncipe. The latter explicitly states that a payment will not be considered paid until deposited in the designated account.

^{ix} NWAs could be used to give citizens an incentive to make sure they are on the electoral rolls, at least when the tax is less than 100%. This could be an important side benefit of NWAs in countries working to build the institutions of electoral democracy.

^x Another reason to resist conditions is that they can be used by the government to stymie political opposition, or to discriminate against disempowered groups. NWAs should therefore neither be conditioned on past choices, nor on requirements that are controversial or difficult to fulfill. I thank Kjersti Høgestøl for this point.

^{xi} Revenue sharing involves each level of government (and each regional unit within each tier) being given a certain share of yearly revenues from natural resources, determined by a pre-agreed formula. Frequently the producing regions are given a larger share than others. In Nigeria, for example, the current revenue-sharing mechanisms returns 13% of consolidated government revenues to the producing regions, and about half of the remainder is transferred to state and local governments, while the other half is retained by the central administration. In many countries, revenue-sharing constitutes a focal point for the conflicts between regions and between regions and the center. It is not uncommon for revenue conflicts to be superimposed on, or perhaps even to cause, separatist aspirations (*e.g.* Indonesia or Sudan).

^{xii} Technically, this would be a move from revenue-sharing to a system of overlapping tax bases. This falls short of complete subnational independence in taxation matters (it does not decentralize the power to choose the tax base), but goes further than a system of “tax sharing,” where the subnational unit retains a predetermined share of the central government’s tax receipts from that unit.

^{xiii} Brosio (2003) argues that on economic grounds, subnational tax revenues should in general not be based on natural resources. He gives three main reasons. First, this would lead to large horizontal imbalances between regions. Second, subnational governments are much less well equipped to handle the volatility characteristic of natural resource rents than are national governments. Third, if the larger tax base in resource-rich regions is used to lower other taxes, this could attract labor and capital from other resources in a way that would lead to an inefficient allocation of resources across the national. Sharing the tax base of the NWAs would avoid all of these problems. It would not lead to horizontal inequality, because the tax base is simply the region’s population share of national resource rents. The volatility could be taken care of through a stabilization or savings fund before payments to the NWAs, as suggested above. And the fact that the tax base would be proportional to the population within each region would eliminate the danger that resource-rich regions would reduce income taxes more than other regions because of their larger resource-based revenues.

^{xiv} In a classic example (Tversky & Kahneman, 1981), study subjects were asked to evaluate two programs to combat the outbreak of an imaginary disease, expected to kill 600 people. In the first treatment, the programs were described as follows: “If Program A is adopted, 200 people will be saved. If Program B is adopted, there is one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved.” 72% chose program A. In a different group, the researchers changed the description to: “If Program A is adopted, 400 people will die. If program B is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die.” In this case, 78% of the subjects preferred program B! Whether a change is framed as a loss or a gain makes all the difference.

^{xv} As an introspective example, readers might consider which they find more annoying: A sales tax added to the ticketed or menu price at the time of payment (such as in the United States), or a value added tax included in the stated prices (as is common in Europe). Most people seem to find the former more irksome, even when it is much lower in percentage terms.

^{xvi} Strictly speaking, a minimum proportion of oil revenues has to be paid into a “Permanent Fund,” whose dividends, after protecting the principal against losses and inflation, are paid out to all Alaska residents on an equal *per capita* basis.

^{xvii} Very roughly, this is the Alaskan policy, which states that at least 25% of oil revenues have to be paid into the Permanent Fund. The size of the payouts, however, depends on the financial performance of the Fund, and not on yearly oil revenues. 25% is also the share of Iraq’s oil revenues which Palley (2003a) proposes should be distributed directly to Iraqi citizens.

^{xviii} Misgivings are often heard about putting money in the hands of individuals. A frequent reaction is the belief that if people, especially poor people, are given money “for free,” they will waste it in economically and socially harmful shopping sprees. There is an abundance of anecdotes concerning such behavior. *The Economist* magazine (4.12.2002), for example, recounts the following stories from Chad:

“EssoChad, a consortium led by ExxonMobil... paid \$4m to compensate those whose land had been spoiled for farming, including \$1,000 for every mango tree cut down. The farmers squandered their windfall. One celebrated by taking a bath in beer. Another left his mud hut and went to stay in a four-star hotel in the capital, Ndjamena, for a couple of weeks. Others took several more wives. Some invested wisely in windmills or cattle, but most lost the lot.”

There do not seem to exist thorough studies of the effect of such individual cash payments, however. The International Advisory Group for the Chad-Cameroon pipeline project only mentions this problem in one of their seven semi-annual reports since 2001, where they report that many people “expressed regret at the inability of certain recipients of cash compensations to properly manage their new income” (http://www.gic-iag.org/doc/IAG_Visit_Chad_June_2002.pdf). While such instances will surely always occur, the scientific evidence suggests that private individuals in general manage rents much better than governments, as I describe in the main text.

^{xix} According to the director of BISTP, the main commercial bank in São Tomé e Príncipe, annual payments of \$100 or more would make it worthwhile for BISTP to open bank accounts for every citizen (private communication, November 2003).

^{xx} These effects would depend on the cash payment being made regularly and permanently. A lump-sum cash payment in a less than fully monetized economy would be more likely to just create rampant inflation, such as has been observed after the individual compensation payouts in Chad.

^{xxi} Unless NWA payments are counted as ordinary income and subjected to an ordinary, progressive income tax (I owe this point to Kjersti Høgestøl). Most countries for whom NWA are an interesting policy, however, do not have well-developed income tax policies, although one may imagine that the financial infrastructure provided by NWAs would facilitate the building of a modern income tax system.

^{xxii} In the 1990s income inequality fell considerably in Alaska, with the incomes of the poorest quintile increasing by 28% and those of the richest quintile by only 7%. This stands in marked contrast to the United States as a whole, where the corresponding income increases were 12% for the poorest and 26% for the richest quintile (Goldsmith, 2002). Of course the special experience of Alaska could have been caused by other factors, but the Permanent Fund Dividends seem like the most obvious explanation.

^{xxiii} This statement is not restricted to electoral democracies: all societies retain ways in which the population can exert political pressure on its leaders other than through the ballot box—in the last instance, through rebellion.

^{xxiv} A related situation is that of a new resource being discovered in a country that is already a natural resource exporter—for example gas in Nigeria (after oil) and Bolivia (after mining). One would expect the entrenched rent-seeking political economy to extend itself into the new sector, but there may be a window of opportunity for different governance of the sector, assuming a government with the will to do so. It would be more difficult to establish NWAs in these countries than in the complete resource extraction novices, but it is probably easier to establish NWAs in the new sectors and leaving the existing resource sectors as they are, than to reform the latter.

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