

**Resource Rents, Redistribution, and Halving Global Poverty:  
The Resource Dividend**

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## **Abstract**

This paper considers the proposal that each country distribute its resource rents directly to citizens as a universal and unconditional cash transfer, or *Resource Dividend*, and estimates its potential impact on global poverty for the years 2000 - 2006. Using a global dataset on resource rents and the distribution of income, I find that if every developing country implemented the policy then the number of people living below \$1-a-day would be cut by between 27 and 66 percent, depending on the year and the assumptions made. Looking ahead, poverty could be better than halved as long as commodity prices do not drop below their 2004 level.

**Keywords:** global poverty; inequality; redistribution; natural resource curse; resource wealth; income distribution

“The meek shall inherit the Earth, but not its mineral rights”

J. Paul Getty

## 1. INTRODUCTION<sup>1</sup>

In this paper I ask what would happen if, contrary to J. Paul Getty’s prediction, mineral rights were in fact distributed more equitably. In particular, I consider the scheme under which each country taxes the rents due to their natural resources, and distributes the proceeds directly and unconditionally back to every adult citizen on an equal basis. I call this scheme the Resource Dividend (RD). Versions of it have appeared in different literatures going back to Thomas Paine in 1795, with recent proposals including the distribution of oil revenues in Iraq. But two developments make its more general application particularly relevant today. First, resource nationalism and resource ownership rose in importance amid the dramatic rise in resource prices up to mid-2008. Despite the global recession resource prices have remained at historically-high levels. Second, the first Millennium Development Goal, adopted by the United Nations in 2000, is to halve global poverty at the \$1 a day line from its 1990 level by 2015.<sup>2</sup> I estimate the global impact of the policy on poverty and find that if enough poor countries were to adopt the RD then it would be sufficient to achieve the first Millennium Development Goal: extreme global poverty would be cut by half.

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<sup>2</sup> The “\$1” global poverty line was in fact \$1.08 in 1993 PPP international dollars. Using data from the 2005 International Comparison Program this has been updated to \$1.25 in 2005 PPP international dollars (Chen and Ravallion 2008). When I refer to the \$1 a day poverty line I will be referring to this line of \$1.25 at 2005 prices.

While I estimate its global impact, the RD is a national, not international policy, and in recent years versions have been proposed for Iraq (Palley 2003, Birdsall and Subramanian 2004), Nigeria (Sala-i-Martin and Subramanian 2003), and Bolivia (Durán et al. 2007); Iran is in the process of adopting a version of the policy (Tabatabai 2010). Sandbu (2006) discusses the scheme in detail for resource-rich countries in general. These authors cite the possible advantages of the policy in the context of substantial resource wealth, where direct distribution of revenues may help to alleviate the resource curse. In addition to this argument I discuss potential advantages for all countries, including those with modest resource wealth. First, as already mentioned, it would substantially reduce poverty. Second, by being levied only on rents, the scheme implies none of the economic distortions or efficiency loss that other redistributive schemes may risk. Third, it provides an incentive to informal workers and individuals with little or no formal interaction with the state to register with the fiscal system. Finally, there is a moral and legal argument that by the nature of rents, no individual has a special claim to them, so the only morally defensible distribution is an equal distribution.

The policy may appear radical, and its global implementation would indeed have a dramatic effect. But as a redistributive policy it is relatively modest in magnitude compared with existing policies in Europe. I show that cash benefits in the EU15 comprise 6.6 percent of GDP, while resource rents comprise under 6 percent of GDP in most countries, including those that account for most of the global poverty reduction under the Resource Dividend.

The calculations presented here engage with broader debates on poverty reduction. The finding that the RD can halve global poverty challenges the widespread view that efforts to reduce poverty must focus exclusively on aggregate growth. Kraay (2006, p. 61) explicitly states that “sustained poverty reduction is impossible without sustained growth,” and versions of this view are to be found in Dollar and Kraay (2002), Collier (2007), and others, in addition to much

of the popular press. I do not dispute the view that growth is important and can reduce poverty, but my findings demonstrate that even a moderate and non-distortionary redistributive scheme can have a major impact on poverty, independently of aggregate growth.

This is important for two reasons. First, the scheme offers hope to those countries that have struggled to grow. While many countries have found growth to be an “elusive quest” (Easterly 2001) and face a variety of traps and challenges to growth (Collier 2007), the RD is in principle a simple policy choice, and the challenge of implementing it would be minimal compared with that of raising a country’s growth rate. Second, it also offers hope to those countries in which growth has had little or no impact on poverty. For instance, in India, according to the World Bank (Chen and Ravallion 2008), there were 421 million people living below the international “\$1-a-day” poverty line in 1981, and 456 million in 2005 – one third of the global total – despite per capita incomes in India growing by 135 percent over the period.<sup>3</sup> Given population growth, this represents a decline in the poverty headcount from 60 percent to 42 percent, but the failure of growth to reach 450 million people has to be of great concern. For these poor people growth has not been the solution to poverty, and additional measures are required. I find that the RD in India, using average resource rents over 2002-06, would reduce poverty from 42 percent to between 18 and 23 percent, a dramatic drop despite India’s relatively modest natural resource base.

I do not ask whether the RD is the optimal way to spend resource revenues. Van der Ploeg and Venables (2008) estimate the optimal spending of a windfall when citizens are credit-constrained and the interest rate is increasing in the amount of foreign debt. While I do not

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<sup>3</sup> There is some debate on levels of poverty in India (see Deaton and Kozel, 2005). Using a different poverty line, Sundaram and Tendulkar (2010) estimate the number of poor to stay constant over 1983 to 1993/94, but to decline from 287 million to 274 million over 1993/1994 to 1999/2000 (the data collection procedure changes in 1993/94 making the estimates for 1983 and 1999/2000 not directly comparable). A decline this modest would not undermine the proposition that growth has had an unacceptably small impact on poverty.

systematically consider alternative ways of spending resource revenues, the poverty-reduction benefits described here set a threshold for other policies in the sense that other expenditures can be optimal only if they improve social welfare by more than the RD. The RD itself would be expected to raise social welfare as long as the social welfare function is concave in individual incomes, or poverty reduction is valued as a goal in itself.

In the next section I discuss the idea of the Resource Dividend in more detail, including its history. Section three presents the data and results. Section four discusses the feasibility of the policy and how it might be administered, and some possible effects beyond poverty reduction. Section five concludes.

## **2. ON THE IDEA OF THE RESOURCE DIVIDEND**

### *2.1 Antecedents*

The idea that natural resources belong to all the citizens of a nation, and that no individual or exclusive group of individuals should have the exclusive right to enjoy rents from natural resources, has a long pedigree. An early and important contribution to the debate is Thomas Paine's pamphlet *Agrarian Justice*, written in 1795 and frequently cited today by advocates of a basic income (e.g. van Parijs 2004). Paine started from the premise that "the earth, in its natural, cultivated state was, and ever would have continued to be, *the common property of the human race*. In that state every man would have been born to property" (emphasis in original). Paine argues that the institution of private property, while leading to massive increases in the productivity of land, at the same time "has dispossessed more than half the inhabitants of every nation of their natural inheritance, without providing for them, as ought to have been done, an indemnification for that loss." He accepts that land owners should enjoy the benefits of the investments they have made in productivity improvements, but argues that they owe a *ground rent* on the land to indemnify non-land owners for their loss of the use of the land. But in contrast

to the prevailing fate of resource revenues today, his conclusion is not that the government should receive this rent. Instead, he argued that the ground rent paid by land owners be used to fund a payment of a lump sum to every individual when they reach age 21, and an annual pension for everyone from the age of 50, in recognition of their loss of property.

The idea that natural resources belong to all citizens of a nation has been behind the battles for nationalisation of oil and gas resources in numerous countries and, more widely, the fact that in almost all countries' national governments own subsoil resources (Mommer 2002).<sup>4</sup> It is also codified in numerous international human rights treaties (Wenar 2007, p. 14). Both the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social, and Cultural Rights state in their Article 1 that "All peoples may, for their own ends, freely dispose of their natural wealth and resources." Of 192 UN member, 151 have adopted at least one of these treaties. The African Charter on Human and Peoples' Rights and the (US-approved) Iraqi constitution of 2005 also include comparable articles assigning ownership of natural resources to "the people".

The first proposal I have come across for a scheme like the RD for oil revenues was made by the Financial Times journalists Samuel Brittan and Barry Riley (1978, 1980), responding to the discovery of British North Sea oil. They wrote, "The simplest and also the wisest answer to the question 'What should we do with the state's oil revenues?' is 'Give them to the people'" (1980, p. 1). Brittan and Riley's proposal, which they called the *people's stake*, was to offer each British citizen an equal share in oil revenues. The rights to this share in the income stream would be transferable, and therefore capitalizable on the stock market.

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<sup>4</sup> The only major exception is the US, where subsoil resources on private land belong to the landowner. Even in the US, subsoil resources on federal land and offshore belong to the federal government.

The RD considered here differs from Brittan and Riley's *people's stake* in that the rights to the revenue stream are not saleable, and they end when a person dies. While one would presumably be able to borrow on the strength of the revenue stream, its termination at death ensures that future generations receive a share as long as the revenues last. It is thus a basic income, an unconditional regular cash transfer, funded by resource revenues. The policy has been proposed for Nigeria by Sala-i-Martin and Subramanian (2003) and for Iraq by Birdsall and Subramanian (2004), while a scheme to distribute one third of gas revenues has been proposed for Bolivia by a group of Bolivian economists and policy makers (Durán et al. 2007). Libya's Colonel Qaddafi has recently proposed that oil revenues be given directly to families (Slackman, 2009). Most strikingly, Iran appears to be in the process of adopting a policy like the RD: in January 2010 Iran's Parliament adopted a law to phase out price subsidies and replace them with universal cash transfers to the population, phased in over 5 years (Tabatabai 2010). The closest existing scheme is Alaska's Permanent Fund Dividend. The Permanent Fund receives at least 25 percent of all revenues received by the state government from mineral extraction in Alaska, and a dividend from this fund is given to all those have resided in the state for at least one calendar year. The dividend is calculated as half of the Fund's income averaged over five years, divided by the number of eligible recipients. In most years it has lain between \$600 and \$1,500.<sup>5</sup> I have not found any research that relates the Dividend to poverty rates in the state, but in 2007 Alaska

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<sup>5</sup> Alaska Permanent Fund Corporation website: see <http://www.apfc.org/home/Content/aboutFund/aboutPermFund.cfm> and <http://www.apfc.org/home/Content/dividend/dividend.cfm> .

had the joint second lowest poverty rate (with Hawaii) of all the states of the US, behind only New Hampshire, despite having only the 19<sup>th</sup> highest per capita personal income.<sup>6</sup>

A related, but far more radical, idea is Pogge's (2001) *Global Resource Dividend* (GRD). Under the GRD a small (and unspecified) share of the value of natural resources *globally* is taxed in order to fund a targeted program of redistribution towards the global poor. The idea behind the scheme is that "those who make more extensive use of our planet's [limited natural] resources should compensate those who, involuntarily, use very little" (p. 66). In contrast, the RD that I consider here is strictly a national policy, although the hope is that many countries would adopt it. Compared with the present scheme, Pogge's GRD has three drawbacks. First, since it is intended to target the poor, it would face enormous administrative challenges in determining who the poor are. Later I discuss the relative merits of universal and targeted transfers. Second, it would require international coordination, which is also administratively very difficult. Third, and perhaps most importantly, it faces the political challenge of persuading countries to give up ownership rights of the natural resources on their territory, which rights, as we have seen, are enshrined in numerous international human rights treaties.

## 2.2 What are resource rents?

The pertinent feature of natural resources is that they provide *rents*. Ricardo famously argued that "Rent is that portion of the produce of the earth, which is paid to the landlord for the use of the original and indestructible powers of the soil." (Ricardo, 1821, 2.2). Based on Ricardo's original discussion, a standard modern definition of rents is the payment to a factor of production over and above the sum necessary to induce it to do its work (Wessel, 1967, p. 1222).

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<sup>6</sup> Poverty data from US Census Bureau, "Poverty 2007" [[www.census.gov/hhes/www/poverty/poverty07/state.html](http://www.census.gov/hhes/www/poverty/poverty07/state.html)]. State personal income from Bureau of Economic Analysis, State Annual Personal Income [[www.bea.gov/regional/spi/](http://www.bea.gov/regional/spi/)].

In the case of a natural resource, this implies that rents are those payments to the resource owner that remain after costs of extraction have been paid: since the resource will typically have no value left in the ground, any value received by the resource owner is rent. Costs of extraction arise from the employment of labour and capital (embodying human capital and technology), typically in the form of a mining company that is contracted by the resource owner (or, in the case of national mining companies, may itself be owned by the resource owner). As I discuss later, costs today are typically determined competitively as mining companies compete for concessions.

There is no thus conflict between the view that natural resources belong to all citizens of a country and the view that private actors who realize the value of natural resources, through exploration, extraction and processing, should be paid for their efforts. It is not the *revenues* from the natural resources that properly accrue to all citizens, but the *rents* (although resource rents accruing to the government are often referred to as “resource revenues”). In the data I use below on resource rents the cost of extraction and a normal return to capital employed are subtracted from total revenues. As I discuss later, different forms of taxes, bonuses, concession fees, royalties, equity shares and other mechanisms for splitting revenues are possible.

The special nature of rents leads to both an ethical argument and an efficiency argument for the Resource Dividend. The definition of rents implies that no individual has a special moral claim to them, since those whose input is required to produce the rents have already been paid their market rate. It is therefore plausible that the only fair distribution of resource rents is an equal distribution between all owners of the resource, which is to say all citizens of the owning country. But the nature of rents also implies an efficiency argument: taxing rents has no impact on behaviour, and is therefore non-distortionary, unlike most forms of taxation. Taxing rents is therefore an efficient means of raising revenue.

Unlike in Ricardo's formulation, the powers of exhaustible resources such as those included in the present analysis are not "indestructible" (and, of course, even land can lose fertility through overuse). However, new technologies and new discoveries tend to imply a net rise in extractible resources over time (Wright and Czelusta 2007). Proven reserves of oil, for example, have risen every year but two over 1980-2008 (BP 2009). Locations of resource extraction are likely to change over time, but there is no sign of total resource rents declining.<sup>7</sup>

### *2.3 Redistribution and the politics of the Resource Dividend*

The RD is a redistribution of income, in the first instance from the government to individuals. If it is compensated by non-regressive tax increases then it effectively becomes a transfer from those with income above the mean to those with income below the mean, which are necessarily in the majority (given non-zero initial inequality). If it is not compensated by tax increases then it is a transfer from whoever received the benefits of government spending to everyone else, and in most developing countries such benefits accrue disproportionately to those higher in the income distribution. The scheme will fail to benefit a majority only in the unlikely case that the majority are already benefiting from government expenditures by more than they would benefit from the RD, and the RD causes these expenditures to be cut. This is a reason to expect the policy to be politically popular. While a full discussion of the political economy of such a policy is beyond the scope of this paper, some brief comments may be made.

Even if the policy would be politically popular, it does not follow, of course, that it will be implemented. Incumbent governments are likely to be reluctant to give up an easy-to-collect source of revenue. One can imagine it being proposed in a democracy by an opposition party in order to get elected, or by a government (democratic or not) that decided that such a popular

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<sup>7</sup> Moreover, were stocks to decline significantly, one would expect prices to rise, implying an ambiguous impact on rents.

measure may increase its chance of political survival. As already mentioned, Libya's Colonel Qaddafi, for instance, whose leadership is not subject to popular vote, has declared his government to be inadequate and suggested that oil revenues should be distributed directly to citizens (Slackman, 2009).

The RD may be particularly popular in resource-rich countries (discussed further below) in which the people often have a strong sense of resource nationalism. Most oil exporters, for instance, have experienced conflicts with foreign oil companies (and their home governments in rich countries) over control of oil reserves in the process of nationalisation, and their people thus feel a strong sense of ownership. The sentiment that it is "our" oil leads many oil-rich countries to give regressive and inefficient subsidies to petroleum products, and the withdrawal of such subsidies is often met with violent popular resistance, sometimes including riots (Bacon and Kojima, 2006). The RD, as a transparent way to distribute revenues to everyone, could satisfy this sense of entitlement. Indeed, if it makes it politically easier for governments to withdraw fuel subsidies then this would be a further argument in favour of the RD.<sup>8</sup> This appears to be an important motivation behind Iran's move towards direct cash transfers, which are to be paid for out of savings from the removal of fuel and other subsidies. Under the government's plan, transfers totalling US\$50 billion annually, or nearly US\$60 per person per month,<sup>9</sup> are "justified and perceived as a means of compensating the population for the removal of subsidies to which they have become accustomed. Many view cheap oil as a benefit to which they are entitled as a

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<sup>8</sup> In Bolivia, for instance, Requena et al. (2004, p. vi) write that "the elimination of hydrocarbons subsidies is one of the policies that has met with the fiercest opposition from society and is therefore avoided by the government, in view of the repercussions this may have on the population and productive sectors." Coady et al. (2006) show that fuel subsidies are typically regressive; they and Bacon and Kojima (2006) discuss the politics of removing fuel subsidies more generally.

<sup>9</sup> In my calculations below I use World Bank estimates of resource rents to estimate the RD, rather than these figures, in order to retain consistency across countries.

major oil producing nation, and the metamorphosis from price subsidies to cash transfers is seen as merely a change of form in that entitlement.” (Tabatabai 2010, p. 7).

#### *2.4 Targeted versus universal benefits*

We have seen that poverty reduction is one of several justifications for the Resource Dividend. But if poverty reduction were the primary goal, then the obvious alternative to a universal and equal payment is a benefit targeted at the poor. Here I briefly describe the main issues and the practical arguments in favour of universal schemes, purely from the point of view of poverty reduction.

Two types of error are usually considered in evaluations of benefits: errors of *exclusion* are the failure to reach intended beneficiaries; in errors of *inclusion*, unintended individuals receive the benefit. There is a trade off between the two types of error, as more rigorous testing will in general reduce errors of inclusion and increase errors of exclusion. At two extremes, errors of inclusion can be maximally avoided by giving no one the benefit, while errors of exclusion can be maximally avoided by giving everyone the benefit, i.e. through a universal scheme.

The first argument in favour of universal schemes is that they minimize errors of exclusion. Cornia and Stewart (1993) survey benefit schemes in nine developing countries and find that targeted schemes such as food stamps have significantly higher errors of exclusion than universal schemes such as general food subsidies. Lindert, Skoufias and Shapiro (2006) find that in 2002 in Latin America’s four largest countries – Argentina, Brazil, Colombia and Mexico – social assistance programs reached less than half of the poorest 20 percent. Soares et al. (2007) find that Brazil’s *Bolsa Familia* reaches 41 percent of the poor while Mexico’s *Oportunidades* reaches only 30 percent. Ravallion (2007) analyses the impact of the targeted cash transfer scheme *Di Bao* across 35 cities in China. He finds that “the cities of China that are better at targeting this

program are generally not the ones where the scheme came closest to attaining its objective” of poverty reduction. Perhaps most surprisingly, he finds that better targeting is not associated with cost effectiveness in reducing poverty.

Second, universal benefits have lower administrative costs for the simple reason that no bureaucracy is needed to establish whether any conditions have been met.

Third, behavioural responses to benefits that are conditional on income levels imply high effective tax rates, leading to disincentives to increase incomes and thus creating a poverty trap (for discussion see Atkinson 1995, pp. 59-63). Unconditional benefits have an income effect, but no substitution effect on the opportunity cost of leisure, and therefore would be expected to have less of an impact on work incentives (to which I return in Section 4.3).

Fourth, universal schemes typically enjoy more political support than targeted schemes and are therefore more likely both to be successful, and to survive. As Titmuss (1968, p. 134, quoted in Jackson and Segal, 2003, p. 43) argued some decades ago in Britain, “services for poor people have always tended to be poor quality services.” Cornia and Stewart (1993, p. 473) find that “mostly, it seems that the switch [from general to targeted subsidies] also leads to reduced real value of the subsidy over time (as in Zambia, Sri Lanka). Less strong political support for the targeted schemes probably accounts for this.” In 1984 a report by the International Labour Office found that “people are more willing to contribute to a fund from which they derive benefits than to a fund going exclusively to the poor. The poor gain more from universal than from income-tested benefits” (International Labour Office 1984, cited by Atkinson 1995, p. 28). Similarly, Skocpol (1991, p. 263) argues that in the US “the most successful measures – Civil War pensions and social security – have been those that ensured entitlements to broad categories of people.” Gelbach and Pritchett (2002) formalize this with a model of the government budget where the executive chooses a universal or a targeted scheme, subject to majority voting. In equilibrium the

majority assign so little of the budget to a targeted scheme that the poor are better off under a universal scheme.

Fifth, conditional transfers are more open to corruption as they provide officials with discretionary power over those who may receive the benefit. Similarly, they increase the likelihood of clientelism, in which a benefit is given not for pecuniary gain but in return for political support. The fact that the RD is unconditional and equally distributed removes these risks. Indeed, in discussions of the Republican view of the state among political theorists it has been argued that a *basic income* more generally, including the RD, can increase individual freedom and autonomy from the state (Petit 2007, Casassas 2007).

The above does not imply that an unconditional universal benefit like the RD will indeed be the optimal benefit from the point of view of poverty reduction. But it does indicate that other types of benefits are not obviously more cost effective in terms of poverty reduction.

### **3. DATA AND RESULTS**

#### *3.1 The data*

Calculating the effect of the RD requires two types of data: for each country one needs estimates of the value of resource rents, and of the distribution of income. The World Bank provides estimates of resource rents up to 2006, covering 15 different natural resources,<sup>10</sup> where rents are calculated as price minus average extraction cost times the quantity extracted (Bolt, Matete and Clemens, 2002). These data have been used by those studying the impact of natural resources on development, including conflict (e.g. Collier and Hoeffler, 2005, De Soysa and

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<sup>10</sup> Data downloaded from the World Bank's *Adjusted Net Saving* website [<http://go.worldbank.org/3AWKN2ZOY0>]. The resources are natural gas, hard coal, lignite, oil, forestry, bauxite, copper, gold, iron ore, lead, nickel, phosphate, silver, tin and zinc.

Neumayer, 2007). While they have yielded useful insights, they do have limitations. Unlike the distributional data I use, described below, they are based not on dedicated primary research but on an ad-hoc collection of sources that is rather sparse across countries and time. To take the example of oil, most cost estimates are from 1993, which are then assumed to remain constant in real terms, while “countries which did not have cost data were assigned surrogate costs from other countries” with similar characteristics (Bolt, Matete and Clemens, 2002, p. 14).

In addition, the “costs” are of extraction, and do not include exploration.<sup>11</sup> This will imply an upward bias in estimated rents. At the same time, the list of 15 resources excludes diamonds and other, less important, resources, which will imply a downward bias in estimated rents. Given these weaknesses one should view the data, and thus any estimates based on them, as indicative rather than authoritative.

Data on distributions of per capita household income or consumption are from the World Bank’s Povcalnet website; for convenience I shall refer to both income and consumption distributions as income distributions.<sup>12</sup> This website provides distributional data for 115 developing countries, based on income groups derived from household surveys.<sup>13</sup> The website uses the software program Povcal<sup>14</sup> which estimates Lorenz curves using the Generalized Quadratic (GQ) method and the Beta method (Datt, 1998); when both estimates are valid, it chooses the curve with the better fit. For countries with fewer than 50 million inhabitants I use

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<sup>11</sup> I thank an anonymous referee for pointing this out.

<sup>12</sup> <http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp>, downloaded December 2008. The mixing of distributions produces unavoidable non-comparability; see Anand and Segal (2008) for discussion of this and other problems in global distributional data, and Anand, Segal and Stiglitz (2010, “Introduction”) for their application to global poverty measurement.

<sup>13</sup> The website states that it covers 116 countries but the list contains only 115.

<sup>14</sup> Povcal was written by Shaohua Chen, Gaurav Datt, and Martin Ravallion. It can be downloaded from <http://go.worldbank.org/YMRH2NT5V0>.

the income deciles reported by the website. For the 17 countries with populations greater than 50 million I use the estimated Lorenz curve to divide the population into 1000 income groups.<sup>15</sup> The largest income groups in the overall distribution therefore contain under 5 million people, or less than one thousandth of the total population of 5.18 billion of my sample of countries. These comprise 96 percent of the population of all low- and middle-income countries in 2005.

I use the World Bank's "\$1-a-day" poverty line, which is PPP\$1.25 at 2005 PPP prices, or PPP\$38 per month (Chen and Ravallion 2008).<sup>16</sup> Chen and Ravallion estimate that 25.2 percent of the population of the developing world lives below this poverty line in 2005. The data I use from Povcalnet are based on the same sources as Chen and Ravallion, but while Chen and Ravallion are able to use unit record data, the Povcalnet data are based on the coarser aggregations of income groups described above. On the basis of the Povcalnet data I find that 25.6 percent of the population are below the poverty line, suggesting that the relative coarseness of the data makes only a small difference in the aggregate.

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<sup>15</sup> The 17 countries are Bangladesh, Brazil, Democratic Republic of the Congo, China, Egypt, Ethiopia, India, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Russian Federation, Thailand, Turkey, Vietnam. China, India and Indonesia are further divided into rural and urban areas. Following Chen and Ravallion (2008), I use different PPPs for rural and urban households in these countries, calculated on the basis of price differences implicit in domestic rural and urban poverty lines.

<sup>16</sup> Chen and Ravallion (2008) choose this poverty line because it is "the mean of the national poverty lines for the poorest 15 countries in terms of consumption per capita" (p. 5), at 2005 PPP\$. Reddy and Pogge (2010) criticize it on several grounds, including the fact that it does not reflect the same capability set across countries. Deaton (2010) argues that PPP\$1.25 a day is too high as an update of the World Bank's earlier PPP\$1.08 poverty line. I do not dispute these criticisms (see Anand, Segal and Stiglitz, 2010, "Introduction," for discussion of Reddy and Pogge). However, a decline in the "PPP\$1-a-day" headcount such as produced by the RD will in general indicate a rise in real incomes of the poor, even if the poverty line implies different levels of capability poverty across countries, and even if PPP\$1.25 in 2005 prices is not equal to PPP\$1.08 in 1993 prices. Thus policy-induced changes in the headcount may still be taken as an indicator of changes in the well-being of the poor.

I use incomes in the poverty data benchmarked to 2005 (earlier benchmarks have poorer coverage), but estimates of resource rents go up to 2006. I estimate the impact of the RD using yearly resource rents for each of the years 2000-06, and average rents over the five-year periods 2000-04, 2001-05 and 2002-06, in this respect following the Alaska Permanent Fund Dividend. Thus for each year's calculation I keep individuals' incomes constant at their 2005 estimates, and just change the RD according to the value of resource rents in the year or years in question, converting it into consumption PPP\$ (as used in the World Bank's poverty estimates). This implies that changes in the impact of the RD on poverty can be wholly attributed to changes in resource rents, rather than income distribution.

Of the 115 countries between 11 and 15 have no resource rents in any given year in 2000-06. Of those with non-zero resource rents the median ranges from 3.3 percent of GDP in 2001 and 2002 to 5.6 percent in 2006. Taking average rents over 2002-06, 104 countries have non-zero rents and the median share is 4.3 percent. Within 2000-06 the IMF's commodity price index more than doubled: indexed to 100 in 2005, it bottoms out at 58.3 in 2001 and 2002 and then rises consistently to 120.7 in 2006. Thus the period represents a wide range of resource rents.

### *3.2 Calculations*

For each year 2000 – 2006, and each five-year average 2000-04, 2001-05 and 2002-06, I perform two exercises. First, I simply add the RD to every individual's income and count the number of people falling below the poverty line.<sup>17</sup> As I discuss below, however, if a government is already taxing resource rents then one might expect other taxes to be raised to compensate for the lost resource revenues. The first calculation therefore assumes that no extra tax is raised, or

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<sup>17</sup> A country may decide to give a different share to children, in which case dividing resource rents among all people including children is equivalent to assuming that on average the poor have the same household composition as the non-poor. If poor households have a lower adult to child ratio, and children receive less than adults, then the impact on poverty is overestimated.

all new taxes are levied on those who were above the poverty line before the policy was implemented. Since the very poorest rarely pay any taxes this is not an entirely unreasonable assumption. But as a robustness test I also perform a calculation where each person is assumed to pay taxes proportional to their post-RD incomes, at a rate equal to the share of rents in GDP. So if rents are 4 percent of GDP and this implies a RD of PPP\$10 per month, then in this second calculation I add PPP\$10 to each person's income and subtract 4 percent from the total. The global and regional results using rents for the latest five-year average, 2002-06, are presented in Table 1. Table 2 presents global estimates, including the implied poverty reduction due to the policy, for rents for all years.

[Table 1 and Table 2 about here]

I estimate that 1,327 million people, or 25.6 percent of the population of the developing world, live below the extreme poverty line in 2005. Assuming that the poor do not pay taxes, the RD reduces the number to between 8.6 percent of the population (in 2006) and 15.3 percent (in 2002), representing cuts of between 40 percent and 66 percent. If the poor pay tax proportional to income as described above then the share is reduced to between 11.2 percent and 18.7 percent of the population, cuts of respectively 56 percent and 27 percent.

How does this affect the Millennium Development Goal of halving the share of people in poverty from its 1990 level? The World Bank (Chen and Ravallion 2008) estimate global poverty in 1990 at 1,813 million, or 41.6 percent of the population; thus the least favorable assumption (the poor pay taxes) in the least favorable year (2000) implies immediately achieving the first MDG. If the poor do not pay taxes then their number is better than halved even from its lower 2005 level using rents for 2004, 2005 and 2006. If the poor do pay taxes then their number is

almost halved using rents for 2004 and 2005 (cuts of 44 and 46 percent respectively) and better than halved for 2006.

Kernel density estimates of the three global (developing country) log income distributions for 2002-06 rents are in Figure 1: the current distribution, the distribution with the RD, and the distribution with the RD and increased taxes. The vertical line indicates the poverty line so the integral of each curve to the left of the line represents the share of the population in poverty. The RD shifts the mean and the mode to the right, and also compresses the curve, indicating a reduction in inequality as well as poverty.

[Figure 1 about here]

The second peak in the global distributions with the RD is due to Iran and Russia, with almost identical RDs of respectively PPP\$285 and PPP\$284, and populations of 68 million and 143 million. Both already had near-zero poverty rates at the PPP\$1.25-a-day level so this substantial resource income does not significantly affect the global poverty estimates.

What if more recent data on resource rents were available? The poverty reduction due to the RD, and due to the RD with tax, are both very highly correlated with commodity prices (deflated by the US CPI), as shown in figure 3; in both cases the correlation coefficient is 0.95. To establish an approximate relationship I ran OLS regressions of poverty reduction due to the RD and that due to the RD with tax, with commodity prices as the regressor. The regressions are based on only 7 observations but the P value is 0.001 and the  $R^2$  is 0.90, suggesting a strong relationship over the period, and I plot the poverty reduction predicted by commodity prices for 2007-09. Predicted poverty reduction peaks in 2008 at 89 percent or 72 percent, depending on whether the poor pay increased tax. Even during the recession-induced drop in commodity prices

of 2009, predicted poverty reduction is 65 percent with the RD and 51 percent with the RD and tax. This is because real commodity prices in 2009, despite the recession, remained above their 2005 level. The relationships suggest that poverty would have been better-than halved every year since 2004 if the poor do not pay increased taxes, and every year since 2006 if they do.

These calculations also indicate that the RD has a convenient “automatic stabilizer” property. High commodity prices tend to coincide with high food prices, partly through the increased cost of inputs. High food prices tend to increase extreme poverty, and in mid-2008 the World Bank (2008a, b) estimated that increased food prices could undo seven years of poverty reduction, pushing another 100 million people into “deeper poverty”. Thus the fact that food prices rise with commodity prices implies that the RD is likely to be greatest when most needed.

Where is the poverty decline taking place? Table 1 shows poverty by region using 2002-06 rents. Among the three regions with the most poor the proportional impact of the RD is largest in East Asia and the Pacific, next in South Asia, and smallest in Sub-Saharan Africa. If the poor do not pay tax then does not change the ordering of the numbers of poor in these regions, with South Asia remaining the region with the largest number of poor, Sub-Saharan Africa that with the largest proportion. In this case South Asia sees the largest decline in absolute numbers in poverty, with 293 million people lifted above the poverty line. If the poor do pay tax then Sub-Saharan Africa overtakes South Asia in its number of poor, and East Asia and the Pacific is the region with the largest absolute decline, lifting 252 million people above the poverty line.

At the level of individual countries, ten countries reduce poverty by more than 10 million people with the RD, assuming the poor do not pay increased taxes: Bangladesh, Brazil, China, India, Indonesia, Nigeria, Pakistan, South Africa, Uzbekistan and Vietnam. Of these, Bangladesh, Brazil, China, India, Pakistan and South Africa have resource rents comprising less than 6 percent of GDP. These six countries account for 57 percent of the total population of all

developing countries and 68 percent of the poverty reduction due to the RD. Poverty reduction due to the RD is therefore not primarily due to resource-rich countries. Below I consider the three largest poverty reducers, China, India and Nigeria, in greater detail.

That such a large reduction in poverty can be produced by redistributing a relatively modest share of GDP may be surprising. However, it should not be. Consider the impact of social spending in the European Union (including benefits such as child benefit and unemployment insurance that do not have poverty reduction as a specific aim). At national poverty lines, 16 percent of the population of the EU15 were living in poverty in 2003. In the absence of social payments other than pensions (which can be considered intertemporal rather than interpersonal transfers), it would have been 25 percent; also taking out pensions, it would have been 39 percent (Guio 2005, p. 4). Cash benefits excluding pensions in these countries comprised 6.6 percent of GDP,<sup>18</sup> higher than the cost of the RD in the six countries mentioned above that account for two-thirds of the poverty decline. In terms of relative size, therefore, for most countries there is nothing particularly radical about the RD as a redistributive policy.

Table 3 provides country-specific estimates for the 17 countries with populations greater than 50 million, for which I have used smoothed Lorenz curves. The results for Congo, D. R. and Ethiopia appear paradoxical: the poverty rate for the RD with tax is higher than the current poverty rate, which should be analytically impossible. This is due to an unfortunate problem with the data: the World Bank's estimated average household income is higher than the World Bank's estimated GNI per capita! This implies that the average tax rise paid is larger than the RD received, enabling this paradoxical outcome. The problem of reconciling national accounts data

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<sup>18</sup> According to European Commission (2008), in the EU15 in 2005 total means-tested cash benefits were €40,635m and non means-tested cash benefits €1,680,355m (p.24). Old age payments (pensions) were €1,138,041m (p. 62). GDP was €10,326b (p. 142) so total cash payments comprised 17.6 percent of GDP, while non-old age cash payments comprised 6.6 percent of GDP.

with household survey data is well known and as-yet irresolvable (see Anand and Segal, 2008, pp. 66-70).

Table 3 also reports the Gini index for these countries both without and with the policy.<sup>19</sup> In nine of the 17 countries the Gini declines by at least 5 points; poverty in all nine of these countries is better-than halved (though in some cases from a very low level). Unsurprisingly the resource rich countries for which rents comprise over 10 percent of GDP—Egypt, Indonesia, Iran, Nigeria, Russia and Vietnam—see very large reductions in inequality under the RD. The smallest of these is Egypt’s drop of 9.4 Gini points, while Nigeria, Russia and Vietnam all see drops of around 20 Gini points. Egypt, Iran and Russia already have very little poverty at the PPP\$1-a-day line so the RD can raise few people out of poverty in these countries. But the RD would nonetheless have a dramatic impact on their distributions of income, cutting Egypt’s Gini to 22.7, Iran’s to 15.7 and Russia’s to 19.3, transforming them into highly egalitarian countries.

### *3.3 India, China and Nigeria*

The three countries with the largest numbers of poor are China, India and Nigeria, and figure 2 provides kernel density estimates for each them.

[Table 3 and Figure 2 about here]

From the point of view of reducing global poverty India is the single most important country in the world. It contains the largest number of poor people – I estimate it at 455 million, or 34 percent of the world’s total – and, according to Chen and Ravallion (2008), the number of

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<sup>19</sup> I do not estimate the impact of the RD on global inequality because the income distribution data cover developing countries only. Also note that with the RD the Gini, like any relative inequality measure, is the same whether no one pays increased tax or everyone pays the same proportional income tax.

poor people in 2005 was slightly higher than in 1981. This is all the more surprising given that per capita incomes in India grew by 135 percent over the period.

India is not a resource-rich country. The World Bank estimates that resource rents comprised an average of 4.9 percent of GDP over 2002-06, due mainly to coal, oil, iron ore, forestry and gas in descending order. This amounts to a RD of only US\$2.9 per person per month. Yet even at this very modest level I find that the RD reduces poverty by 56 percent, from 41.6 percent of the population to 18.2 percent. If the poor pay increased tax, poverty drops by 45.6 percent to 22.6 percent of the population. For the individual years 2000-06 poverty reduction ranges between 37 percent (in 2002) and 75 percent (in 2006) without taxing the poor, and between 29 percent (in 2000 and 2002) and 64 percent (in 2006) with taxes on the poor. Poverty is better than halved each year 2004-06 without taxes and 2005-06 with taxes. Resource rents as a share of GNI range between 3.7 percent (in 2003) and 6.0 percent (in 2006).

The dramatic impact of the RD despite its very low US\$ value is due to its much greater value in real terms when spent in India, where the 2002-06 RD of US\$2.9 is equivalent to PPP\$11.1 in rural areas and PPP\$7.3 in urban areas. Thus this modest redistributive measure would achieve far more in terms of poverty reduction than 24 years of rapid growth. This also illustrates the point that the poor, while being lifted above the poverty line, do of course remain very poor: the income of someone living just below PPP\$1.25 per day will rise to only PPP\$1.62 per day. This does, however, represent a 30 percent rise in income, which is likely to make a significant difference to living standards at any income level.

China is the most populous country in the world and the country with the second largest number of poor. Rents are dominated by oil, with modest amounts of coal and gas, and in all they average 5.2 percent of GDP over 2002-06. Like India, China is not a resource rich country. Yet whether the poor pay increased taxes or not, the RD reduces extreme poverty to 1 to 2 percent,

down from my estimate of 16.2 percent in 2005. For the individual years poverty reduction ranges between 46 percent (in 2002) and 100 percent (in 2006) without taxing the poor, and between 38 percent (in 2000) and 100 percent (in 2006) with taxes on the poor. Poverty is better than halved every year but 2002 without taxes, and each year 2004-06 with taxes. Rents as a share of GNI range between 3.0 percent (in 2003) and 7.5 percent (in 2006).

Turning to Nigeria, rents comprise 51 percent of GDP in 2002-06 because Nigeria is both a large oil producer and a very poor country, with a poverty rate of 64.4 percent. Resource rents in this period amount to PPP\$49 per person per month, which is more than enough to eliminate extreme poverty. However, when I simulate the RD being recouped by the government in tax then the poverty rate rises to 48.8 percent. This is because the simulation implies a 51 percent income tax. In practice, it is not plausible that the Nigerian government either could or should take such a large share of GDP in tax. Reliable data on the value of Nigerian oil output, and the quantity and composition of actual government expenditure, are not available, so one cannot be sure how much of this estimated 51 percent rents is currently going to the government, or how it is spending it. But if Nigeria were to implement the RD and to raise some quantity of taxes from the economy, one would expect it to raise less than 51 percent of GDP. I calculate that if the tax were no more than 31 percent of income then the RD with tax would also result in the elimination of extreme poverty. The calculations I present in all the tables and figures, however, treat Nigeria in the same manner as other countries.

## 4. IMPLEMENTATION AND FURTHER EFFECTS OF THE RESOURCE

### DIVIDEND

#### *4.1 Administering the Resource Dividend*

While the Resource Dividend may be attractive in the abstract, its implementation would involve a number of challenges. Sandbu (2006) discusses alternative forms of implementation so I do not cover the variety of possibilities here. Instead I describe some basic features of the policy and address some points of concern that have been raised. Ross (2007) expresses scepticism regarding “direct distribution” proposals such as the RD, stating that (p. 243-4) “a direct distribution plan would work only if it were managed in ways that are uncharacteristic of most oil-rich developing country governments: with strict adherence to the law, intertemporal stability, and immunity from political and rent-seeking pressures.” The Resource Dividend is not intended specifically for the oil-rich developing countries referred to by Ross so his argument would not apply in the majority of cases. However, I argue that, contrary to Ross’s view, the policy would be relatively easy to implement even for oil-rich countries and, moreover, may itself help to overcome the difficulties highlighted by Ross.

Implementing the policy would involve both collecting resource rents and distributing them, which I envisage being managed by an independent government agency. It should be stressed that the RD is a policy of rent *distribution*, not of rent *extraction*, and I do not propose any new policy on the latter front. So I discuss current practices of rent extraction and, more hypothetically, possible means of rent distribution.

So how are rents typically extracted from natural resources? Some resource-rich countries have national mining companies that manage exploration, extraction and processing. But in most cases these companies act in partnerships with foreign companies, which provide technology, management capacity, and risk sharing. The extraction of resource rents thus involves some form

of taxation of these companies, with terms typically agreed through open and competitive bidding for concessions (see Winer and Roule, 2003, p. 166 for a discussion). The costs of technology, human capital, and the “geological risk” that the stock of the resource is lower than expected are all taken into account by mining companies when making their bids. If the process is fully competitive then taxes, bonuses, concession fees, royalties, equity shares and other mechanisms will ensure that rents remain with the owner of the resource, i.e. the state. While in many cases bidding processes are not fully competitive, in practice most international oil and mining companies make no more than normal profits, suggesting that in most cases countries are successful in retaining risk-adjusted rents.

There are, of course, cases where developing country governments lack the capacity to set up such a process and to bargain effectively with large international companies. Countries with very weak governments may therefore require external assistance, but these are in the minority.

The disbursement of the Dividend is potentially more challenging. Many developing countries lack administrative capacity across much of their territory; these “Swiss-cheese states” have little or no legal or bureaucratic presence in certain areas (the holes in the cheese).

O’Donnell (1993, p. 1359) cites examples in Latin America including the highlands in Peru, Amazonia in Brazil, and parts of the centre and northwest of Argentina, where prevailing rules and institutions have little connection with the national government. UNDP (2007, p. 34) similarly argues that the Bolivian state has “holes” in which the state “negotiates legal authority with social, indigenous, local and regional organizations.”<sup>20</sup>

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<sup>20</sup> In the cases of Bolivia and Peru the division between the national state and the “holes” is associated with ethnic divisions, but this is less clear-cut in Brazil, and is certainly not the case in Argentina. Thus ethnic divisions may help to fragment the state, but they are not necessary.

The first challenge, then, would be reaching those currently beyond the administrative reach of the state. Birdsall and Subramanian (2004) suggest the use of “coupon-like vouchers”. Another option is suggested by the rising use in some very poor countries of inexpensive cell phones to manage bank accounts, particularly for remittances from relatives abroad. As Ratha et al. (2007, p. 5) report in a World Bank study, “mobile banking and partnerships with cell phone companies can potentially extend remittance services to millions of people in remote, rural areas,” where they cite cases in the Philippines, Kenya, and India. With this technology it would be cheap and uncomplicated to give citizens bank accounts into which their Dividend could be deposited. Beyond this infrastructure, all that is required is a secure list of citizens, such as an electoral roll. Most countries, including many undemocratic countries, have such a roll. As Birdsall and Subramanian point out, the challenge “would not be qualitatively different from that of immunizing children, which many poor countries have managed.” Moreover, individuals have a strong incentive to register with the government in order to receive their RD, which may have the secondary benefit of reducing informality. In Iran – a middle-income country, but with significant informality – the promise of receiving cash benefits led to 90 percent of households providing details of income and assets to the government (Tabatabai 2010, p. 12).

The second challenge would be to minimize leakage due to corruption. Management by an independent agency would imply that resource rents would be kept separate from government expenditure budgets. They would therefore not be subject to many of the usual mechanisms of corruption, such as over-bidding for government contracts. But more importantly, the RD is very easy to make transparent: as long as resource income is accurately reported then citizens will know how much their RD should be, and will be able to object should they receive less.

Here an experiment in Uganda gives reason for optimism.<sup>21</sup> The Ugandan government found that only 20 percent of the money that was being sent to primary schools, other than for teachers' salaries, was reaching the schools. They came up with a novel plan: when the government released money for schools it informed the local media and sent a poster to each school stating what it should receive. Three years on they found that 90 percent of the money was getting through. It appears that when people know what they are due, it is much harder for corrupt individuals to keep it from them. This is one argument for the current wave of transparency initiatives, including the Extractive Industries Transparency Initiative. The RD ties in with this trend well: the quantity of the RD would be public knowledge, published in the popular press, and individuals would know if they were being short-changed.

A further challenge for resource revenues concerns their high volatility, as reflected in the variability of the RD across years. For countries with large resource revenues this volatility often proves a challenge to rational expenditure policies, as expenditures planned during periods of high prices become difficult to reverse when prices and revenues fall. Revenue volatility is difficult to manage for both the public and private sectors, but Collier and Gunning (1996, 1999, 2000) argue that the private sector deals with price volatility better than governments. They find that households and businesses save out of windfalls as much as governments, while governments are prone to the additional risk of making very low-return investments, and committing themselves to unsustainable expenditures. Allowing households to manage price volatility does not, of course, mean that the government can wash its hands of the affair: macroeconomic policy will still have to take account of fluctuating private incomes and the resulting tax receipts (for discussion see Collier and Gunning, 1999, pp. 37-42).

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<sup>21</sup> The author heard this anecdote from Emmanuel Tumusiime-Mutebile, the Governor of the Bank of Uganda, at a UNDP meeting in Morocco in 2002; it is also described in Collier (2007, p. 150).

One potential difficulty for the RD must be acknowledged. The discussion has assumed that governments would be able to recoup lost resource revenues through other taxes. But raising taxes is difficult. Baunsgaard and Keen (2005) examine countries that have lost tax revenues by liberalizing trade and ask how much of the lost tax has been recouped through other sources of government revenue. They find that middle-income countries typically recoup 45–60 cents for each dollar of lost trade tax revenue, while low-income countries typically recoup no more than about 30 cents per dollar. This would be a challenge for a government that relied substantially on resource revenues. If policy makers in a given country were sure that recouping lost revenues were impossible, and that moreover this would necessarily imply cuts in essential government expenditures such as health and education, then this would count against the RD in that particular country. However, given the benefits of the RD, and the incentives noted above that incumbent governments have to avoid the policy, one would not want to accept such an argument without a very strong case behind it.

#### *4.2 The Resource Dividend and the Resource Curse*

The RD is not intended solely for resource rich countries, but it is of obvious applicability to them. Several authors have argued that in such countries a policy like the RD may eliminate some of the mechanisms behind the “resource curse” (Palley 2003, Sala-i-Martin and Subramanian 2003, Birdsall and Subramanian 2004, Sandbu 2006), the thesis that natural resource wealth causes poor rates of growth (e.g. Sachs and Warner 1995, 1997, Sala-i-Martin and Subramanian 2003). There are two dominant explanations for the thesis, one economic in the traditional sense, and the other ‘institutional’. The first is that resource wealth causes “Dutch disease,” or a rise in the real exchange rate that causes deindustrialization. If the manufacturing

sector has a higher rate of growth than the resource sector then deindustrialization will imply a lower rate of aggregate growth (van Wijnbergen 1984, Sachs and Warner 1995, 1997).<sup>22</sup>

The institutional explanation is that resource wealth leads to low-quality government institutions because the ready availability of resource revenues implies that governments do not need to do the hard work of creating bureaucracies, administrative capacity, and systems of conflict resolution that are required to collect taxes from the non-resource economy (Karl 1997). This follows the historical argument of Tilly (1975, 1990) that state formation in Europe was driven by the need to raise taxes to fund wars. According to this view, resource-rich countries are thus likely to be extreme cases of the Swiss-cheese state discussed above.

In addition, the lack of taxation may help to sustain non-democratic and rent-seeking governments because untaxed citizens are less likely to demand government accountability (Ross, 2004, Prichard, 2010). The two elements combine in slowing economic development: with poor institutional capacity, governments are unable to provide the public goods required for development; without healthy accountability, they have little incentive to do so.

The resource curse thesis has been both qualified and challenged in the more recent literature. Wright and Czelusta (2004, 2007) argue that it is “the manner in which policymakers and businesses *view* minerals that determines the outcome” (2004, p. 36, emphasis in original). Relatedly, Mehlum, Moene and Torvik (2006) and Boschini, Pettersson and Roine (2007) argue that natural resources are good for growth in the context of “producer-friendly” institutions and bad for growth in the context of “grabber-friendly,” i.e. rent-seeker-friendly, institutions.

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<sup>22</sup> The RD may have some effect on Dutch Disease if its distributional impact—both among households, and between households and the government—changes the composition of demand in a way that changes the real exchange rate. The magnitude and direction of this effect would be likely to vary across countries.

Other papers have disputed the existence of a resource curse at all. Several papers have used measures of resource endowments, as opposed to production, and found no negative impact on economic growth, including when one accounts for institutional quality (Ding and Field 2005, Stijns 2005, Brunnschweiler 2007, Brunnschweiler and Bulte 2008). Haber and Menaldo (2009), using a new longitudinal dataset, find that natural resource wealth is not associated with authoritarianism. They point out that Tilly's argument regarding taxation and democratisation may historically be true only of Western Europe, and is not generalizable to other democracies.

The existence of a resource curse thus remains in dispute. However, just as correlation does not imply causation, it is also true that causation need not imply correlation: natural resources may have sabotaged development paths or undermined institutions in certain countries even if there is no statistical association in the data across countries. The Venezuelan founder of OPEC, Juan Pablo Pérez Alfonzo, famously described oil as "the devil's excrement" on the basis of his observation of its effect on his country, independently of any comparison with other countries.

If resource wealth is having a negative impact on a country's institutions then the RD may ameliorate it. The requirement to collect taxes would provide an incentive to develop institutional capacity, and taxed citizens may be more likely to hold the government to account. Regarding rent-seeking, I argued above that disbursement of the RD would be particularly easy to make transparent. The simple fact that income is not focused on any single recipient (e.g. the government) is likely to reduce the scope for corruption: Gelb et al. (1988, p. 17) write that "a large rent component in national income, if not rapidly and widely dispersed across the population, is liable to divert scarce entrepreneurial talent away from commodity production into 'rent-seeking' activities." The RD is the most direct way to disperse rents rapidly and widely across the population.

### 4.3 General equilibrium: economic effects on households and the economy

We saw that unconditional benefits produce less of a disincentive to work than conditional benefits, as they do not have a substitution effect on the opportunity cost of leisure. But they still have an income effect: if you are richer, consumer theory predicts that you may choose to spend more on leisure, i.e. to work less. Could this be a problem?

Three points should be made about this argument. First, any behavioural response to an increase in income signals an increase in welfare or well-being. If people choose to work less then it is because it makes them better off. It may of course affect the poverty estimates, but it would not diminish the impact of the RD in terms of welfare.<sup>23</sup> Second, consumer theory predicts that the labor supply effect will be largest for those with the lowest opportunity cost of leisure – i.e., the least productive members of the workforce. The smaller the RD is relative to your wage, the less likely it is to reduce your desired work hours. Thus the effect on national product will be smaller than the effect on total hours of labor supplied.<sup>24</sup> Third, standard static efficiency wages arguments, such as the observation that workers who are undernourished are less productive, work in the opposite direction, implying an increase in productivity.

At the micro level there is limited evidence on the effect of benefits like the RD because few exist (I have found no such research on the Alaska Permanent Fund Dividend). Skoufias and Maro (2006) find that *Oportunidades* in Mexico has had no significant impact on labor supply. Standing (2008) surveys cash transfer schemes in developing countries and argues that “far from breeding dependency and passivity, they foster independence and activity.” For instance, US government relief operation in Ethiopia in 2003 gave cash grants to households, and found that

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<sup>23</sup> In fact the poverty reduction of the RD estimated here would represent a lower bound on the increase in welfare because substitution of income for leisure would imply an increase in utility.

<sup>24</sup> Lindert (2004) makes the analogous argument that the effect of high unemployment on European GDP is very low because it is typically the least productive who are unemployed.

“Cash grants also proved to be an important component in promoting linkages between relief and development, as a majority of beneficiaries invested a portion of their money in productive assets” (USAID 2004)

However, emergency relief and price shocks are both temporary windfalls that, according to standard consumption theory, one would expect to be saved. They give reason to be optimistic about the capacity of households to smooth volatile incomes (also supported by Collier and Gunning 1996, 1999, 2000), but they do not tell us what to expect as a response to a permanent increase in income, such as that due to the permanent component of the RD.

Thus one cannot predict the effect of the RD on output with confidence. Static consumer theory predicts a decline in labor supply, but efficiency wage arguments and household investment models predict a rise in productivity; there is some empirical support for the latter.

More important than the static impact on the level of income, however, is any effect the policy may have on economic growth. Through its effect on the incomes of the poor there are reasons to believe that the RD may increase the rate of growth. First, the poor cannot make high risk, high reward investments for fear of falling below subsistence. Second, credit constraints can imply that even low risk, high reward investments such as schooling are impossible for the poor because they cannot afford not to send their children to work. Such arguments are developed in the literature on the relationship between growth and inequality, but it is the level of income or wealth of the poor and the credit constraints they face, rather than inequality per se, that lead to the inefficiencies (e.g. Banerjee and Duflo, 2003, and Ravallion, 2003). Empirically, Ravallion (2009) finds that the poverty rate (at a PPP\$2 poverty line) has a significantly negative partial correlation with subsequent growth, supporting these theoretical arguments.

The RD may also have an impact on growth through macroeconomic and fiscal channels. First, a rise in taxation to recoup lost government resource revenues may affect growth: while

taxing rents is non-distortionary, the taxes raised in order to substitute for resource revenues will in general be distortionary and may reduce growth, depending on what is taxed. On the other hand, we saw above that there are political economy reasons to believe that higher taxes (within reasonable bounds) may improve the effectiveness of government, and therefore increase growth. What is the net impact of taxes on growth, beyond the specific context of resource-rich countries? A survey by Myles (2000, p. 141) concludes that “the empirical evidence points very strongly to the conclusion that the tax effect is very weak.”

Above we also saw that governments may struggle to recoup all their lost resource income. Would this have a negative impact on growth? If tax revenues were systematically correlated with expenditures on growth-enhancing infrastructure then one would expect a *positive* relationship between taxation and growth, which is also contradicted by Myles’ finding. This may be due to the fact that infrastructure that provides an economic return can be financed by debt, paid for using the subsequent return. In such cases reduced taxes are beside the point.<sup>25</sup>

Finally, in general equilibrium the RD would change relative prices because people at different income levels have different relative demands. Thus Engel’s Law states that poorer people spend a higher share of their incomes on food, so a transfer from richer to poorer people will increase demand for food, raising its price. In theory this could undo some of the poverty reduction of the RD. There are two points to make, however. First, for any individual country considering the policy, the impact on the price of a tradable good such as food will be negligible because the change in demand due to that single country will be so small compared to world demand. Second, even if the RD were adopted in all developing countries the effect is still likely

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<sup>25</sup> The sudden implementation of the RD from one day to the next may, of course, be felt to be too drastic. Sandbu (2006) discusses the idea of taxing individual’s resource receipts at source. If compensation mechanisms, including other raised taxes, need time to develop then the RD could be in principle be phased in gradually, starting with just some share of resource rents.

to be very small: the total amount of income distributed under the RD in the global calculations is typically 3 to 4 percent of global GDP (and since food is tradable it is this global share that matters). This is re-distributed across both rich and poor people so, for example, the poorest 20 percent of the population of RD countries receive on average only 20 percent of the 3 to 4 percent of global GDP. Thus its impact on the composition of aggregate global demand and hence global food prices is likely to be minimal.

## **5. CONCLUSION**

The intuitive idea that the patrimony of a country belongs to all citizens has a long history. Natural resources are a form of wealth that no one can claim to have produced, and it is hard to argue that any individual citizen or group of citizens should have a special claim to their country's natural endowment. By distributing a country's resource rents between all its citizens as a universal, unconditional cash transfer, the Resource Dividend is the most direct and transparent means of ensuring that all receive their share of their country's resource wealth.

Any distribution of resource wealth and its benefits is a policy choice: the distribution of resource rents is always a political decision before it is an economic outcome. Unlike the value created by most productive activities there is no one to whom these rents "naturally" accrue. Put another way, in other sectors taxes and transfers act on a pre-intervention distribution, but there is no such thing as a pre-intervention distribution of resource rents. In practice most countries have assigned ownership of resources and their rents to the government, and the distribution of these rents is carried out through fiscal policy. The impact of government expenditures may be obvious. Perhaps less obviously, rents are also distributed as tax cuts, where households benefit according to how their actual tax bill compares with the counterfactual situation of the absence of the resource. Thus the elimination of taxation of the private sector, as has occurred in some resource-rich countries, should not be mistaken for a distribution-neutral tax policy.

The primary benefit of the RD would be a dramatic reduction in poverty. I find that if all developing countries had adopted it, global poverty at the World Bank's PPP\$1-a-day poverty line would have been cut by between 44 and 66 percent each year 2004 – 2006, and by more in more recent years. In India and China, the countries with the largest populations and the largest numbers of poor people, poverty in recent years would be respectively better-than halved, and virtually eliminated.

While the impact of the RD would be dramatic, for most countries it would comprise a redistributive policy more modest, relative to GDP, than cash benefits currently paid in the European Union, which are also highly effective at reducing poverty. The findings demonstrate that progressive, inequality-reducing redistribution can play an important role in achieving the Millennium Development Goal of halving global poverty. They therefore also illustrate the point that inequality represents a wasted opportunity for poverty reduction.

The policy faces challenges in developing countries with low administrative capacity, but I argued that the universality of the RD would make it relatively easy to implement – and certainly easier than any other social benefit. However, if a government is not effective enough to be able to recoup tax revenues lost to the RD, but effective enough that the expenditures that would have to be cut are genuinely benefiting the poor, then this may count against the RD. On the other hand, the potential benefits of the policy extend beyond poverty reduction. It may provide incentives to individuals and governments to reduce informality and could help to strengthen state capacity. Through this avenue it may ameliorate the institutional causes of the resource curse. In addition, by removing resource revenues from government budgets, and by being particularly easy to make transparent, it may also help to reduce corruption. The RD is a realistic and feasible policy with a range of potential benefits, and a powerful tool against poverty.

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**Table 1: Global and regional poverty estimates, 2002-06 rents**

Region	Poverty, millions (%)					
	Current		With RD		With RD and tax	
World	1,327	(25.6%)	567	(10.9%)	729	(14.1%)
East Asia and the Pacific	307	(17.0%)	40	(2.2%)	55	(3.0%)
EAP without China	113	(22.4%)	31	(6.1%)	35	(7.0%)
Eastern Europe and Central Asia	20	(4.2%)	5	(1.1%)	6	(1.3%)
Latin American and the Caribbean	46	(8.6%)	9	(1.7%)	10	(1.8%)
Middle East and North Africa	10	(4.2%)	0	(0.1%)	0	(0.1%)
South Asia	579	(40.3%)	286	(19.9%)	345	(24.0%)
Sub-Saharan Africa	364	(52.9%)	226	(32.8%)	314	(45.6%)

Source: Author's calculations.

**Table 2: Global poverty estimates with RD and RD less tax, and reduction relative to current poverty**

Year of rents	With RD			With RD, less tax		
	Number (millions)	Share	Poverty reduction	Number (millions)	Share	Poverty reduction
2000	770	14.9%	42%	969	18.7%	27%
2001	747	14.4%	44%	922	17.8%	31%
2002	795	15.3%	40%	948	18.3%	29%
2003	753	14.5%	43%	927	17.9%	30%
2004	561	10.8%	58%	739	14.3%	44%
2005	499	9.6%	62%	723	13.9%	46%
2006	448	8.6%	66%	582	11.2%	56%
2000-04	709	13.7%	47%	883	17.0%	33%
2001-05	639	12.3%	52%	811	15.6%	39%
2002-06	567	10.9%	57%	729	14.1%	45%

Source: Author's calculations.

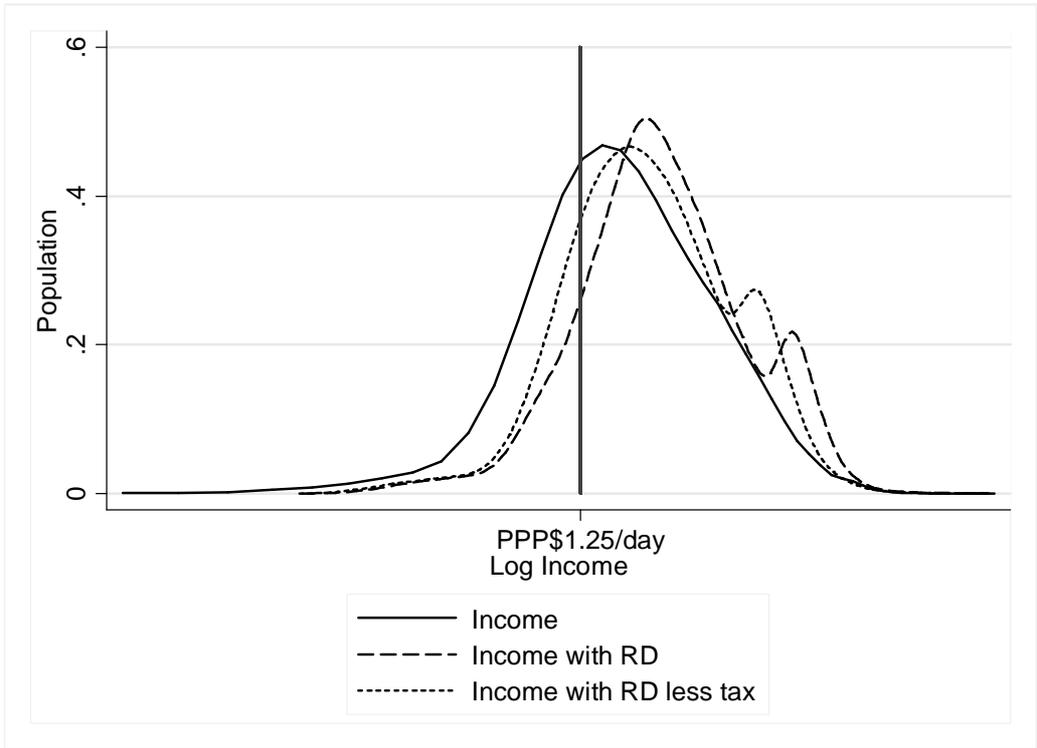
**Table 3: Estimates for 17 large countries (populations > 50m), 2002 – 06 rents**

2002 - 06 Country	Rents % of GDP	Resource Dividend (monthly), 2005 prices		Poverty headcount PPP\$1.25 a day (PPP\$38 a month)							
		PPP\$	US\$	Current Number (million)	Share	RD, no taxes Number (million)	Share	RD, with taxes Number (million)	Share	Gini Current	With RD <sup>b</sup>
Bangladesh	3.9	PPP\$3.3	US\$1.3	70.4	49.6%	59.7	42.1%	65.0	45.8%	31.0	29.0
Brazil	4.6	PPP\$27.1	US\$17.5	14.5	7.8%	0.0	0.0%	0.0	0.0%	55.4	50.4
China	5.2	rural: PPP\$19.6 <sup>a</sup> urban: PPP\$14.3 <sup>a</sup>	US\$7.2	211.9	16.2%	13.8	1.1%	24.4	1.9%	41.7	35.2
Congo, D. R.	6	PPP\$0.8	US\$0.6	34.1	59.2%	33.4	58.1%	35.2	61.2%	44.4	43.6
Egypt	16.5	PPP\$47	US\$16.4	1.5	2.0%	0	0.0%	0	0.0%	32.1	22.7
Ethiopia	9.1	PPP\$3.7	US\$1.2	27.8	39.0%	21.9	30.7%	28	39.3%	29.8	27.8
India	4.9	rural: PPP\$11.1 urban: PPP\$7.3 <sup>a</sup>	US\$2.9	455.4	41.6%	198.9	18.2%	247.8	22.6%	34.9	29.8
Indonesia	11.4	rural: PPP\$32.3 <sup>a</sup> urban: PPP\$22.9 <sup>a</sup>	US\$11.6	47.3	21.5%	0.3	0.0%	1.3	0.6%	36.2	26.2
Iran	40.1	PPP\$285.3	US\$86.4	1	1.4%	0	0.0%	0	0.0%	38.4	15.7
Mexico	7.8	PPP\$73	US\$51.2	0.6	0.6%	0	0.0%	0	0.0%	48.1	39.4
Nigeria	51	PPP\$49.4	US\$29.6	91.1	64.4%	0.0	0.0%	69.0	48.8%	42.9	19.1
Pakistan	5.3	PPP\$9	US\$3.1	35.2	22.6%	11.7	7.5%	16.5	10.6%	31.2	27.4
Philippines	1.3	PPP\$3.1	US\$1.4	18.8	22.6%	15.8	19.0%	16.3	19.6%	44.0	42.7
Russia	33.9	PPP\$283.8	US\$134.4	0.3	0.2%	0	0.0%	0	0.0%	37.6	19.3
Thailand	4.2	PPP\$19.3	US\$8.4	0.3	0.4%	0	0.0%	0	0.0%	42.5	38.6
Turkey	0.4	PPP\$2.7	US\$2	1.9	2.7%	1.6	2.2%	1.7	2.3%	43.3	42.8
Vietnam	13.9	PPP\$18.6	US\$7	17.8	21.4%	2.3	2.8%	4.2	5.1%	37.8	30.8

<sup>a</sup>Rural and urban PPP\$ values for the RD differ because of price differences. Prices are generally lower in rural areas, so the real value of a given cash RD is higher.

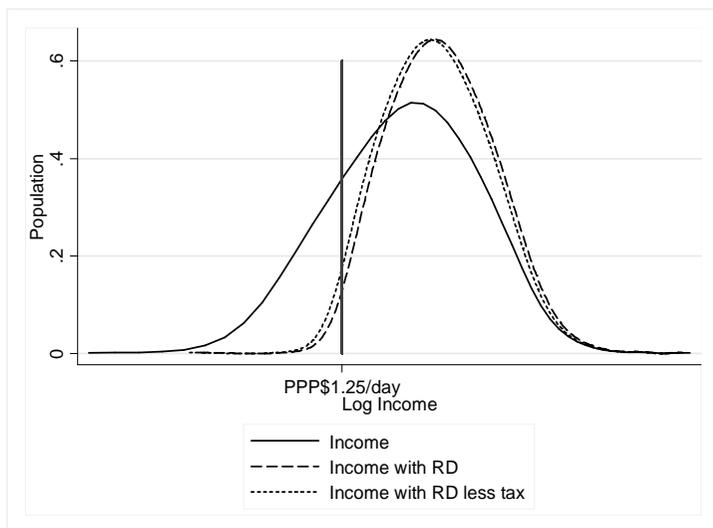
<sup>b</sup>The Gini under the RD is the same as under the RD and tax because the Gini , like all measures of relative inequality, is invariant to proportional changes in all incomes.

Source: Author's calculations.

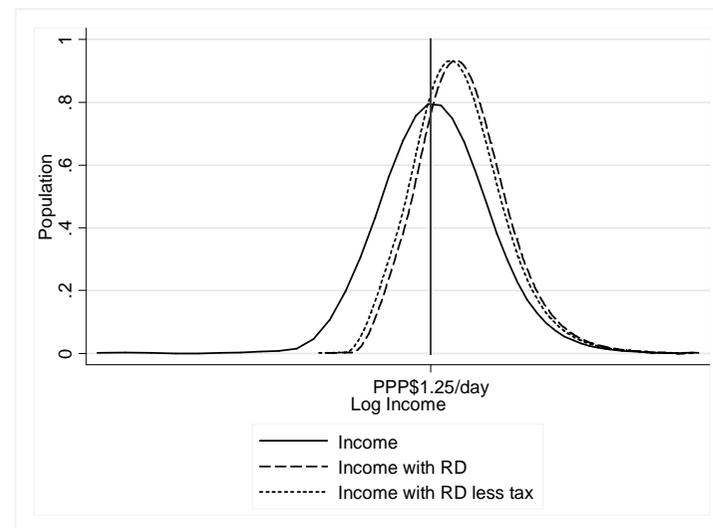


Note: Kernel density estimation using Epanechnikov kernel.

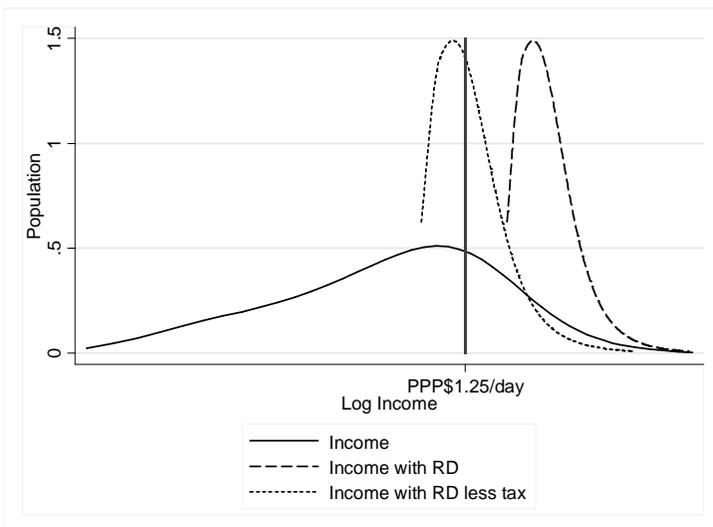
**Figure 1: Log income distributions, all developing countries, 2002 – 06 rents**



**China**



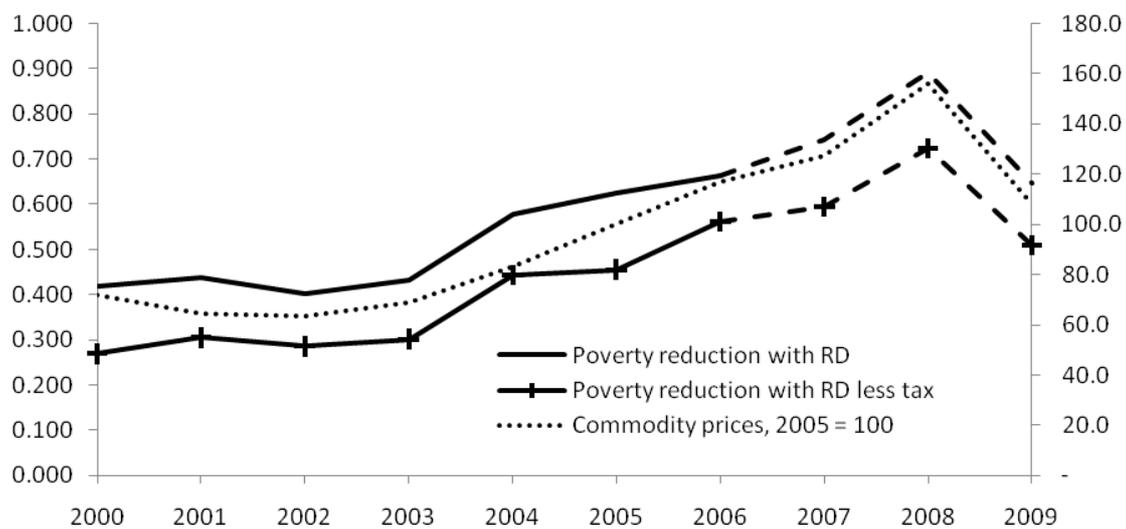
**India**



**Nigeria**

Note: Kernel density estimation using Epanechnikov kernel

**Figure 2: Log income distributions in India, China and Nigeria, 2002-06 rents**



Source: Author's calculations

Notes:

Dashed lines are imputed, as described in the text.

Commodity prices are IMF commodity price index deflated by US CPI, both indexed to 2005.

**Figure 3: Poverty reduction at different commodity prices**