WHAT TURNS A BLESSING INTO A CURSE? THE POLITICAL ECONOMY OF NATURAL RESOURCE WEALTH

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ABSTRACT

I review the relationship between natural resource endowment type and economic growth in developing countries. Certain types of natural resources such as oil and minerals tend to exhibit concentrated production and revenue patterns, while revenue flows from other resources such as agriculture are more diffused. Most developing countries that export products from the first group are prone to growth failure in recent times. The most important channels are political economy mechanisms, where there are negative relationships between natural resource rents and institutional development. An explicit model of growth collapse with micro-foundations in rent-seeking contests that have increasing returns in rent seeking outlays is presented.

Key words: *endowment type, growth, institutions.*

JEL classifications: O13, O40, Q 33

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1   Introduction

The object of this paper is to critically review the resource curse thesis. The idea is that countries which rely heavily on natural resource based products do badly in terms of economic performance. More generally, reliance on exports of all primary (non-manufactured agricultural, mineral, fuel and forest based) goods was criticized a long time ago by Prebisch (1950) and Singer (1950). Essentially, this was for two reasons. The first was to do with the fact that in the longer run demand for (unprocessed) primary goods is income inelastic. Primary goods are either food items or inputs for production, and as income rises, the propensity to spend on these (expenditure shares) decline. The second criticism of a development strategy based on the export of natural resource products is to do with the fact that their prices are notoriously volatile. Indeed, a great part of Hans Singer's distinguished career was devoted to demonstrating that there was a secular (long-term) tendency for primary goods prices relative to manufactured goods prices (the terms of trade) to decline. Be that as it may, reliance on natural resource or primary goods exports exposes developing economies to a boom and bust cycle, as revenues from these exports fluctuate over time. Perhaps, the problem does not lie with endowments of natural resources *per se*, but a heavy reliance on unprocessed exports of these in an undiversified economic setting, something that has been described as the 'staple trap' by authors such as Auty (1997). A strategy of development based on manufactures has long been encouraged; see Hirschman (1958) for example, who advocated the fostering of manufactures on account of the forward and backward linkages this sector exerted on the rest of the economy.

Table 1 presents a list of 42 developing countries that are growth failures with a real per-capita income level in 1998 achieved much earlier. Here we are looking at average growth rates over a long period. Catastrophic growth failure is considered to have occurred in economies which attained their contemporary real per capita income level sometime during the 1960s or before. Severe growth failure, in turn, is considered to have occurred in those countries that have had more than a decade of stagnation, achieving their current real per capita income level either during 1970s or 1980s. All but 6 of these countries can be described as having point-sourced or mineral/fuel natural resource endowments, as measured by their principal exports. The diffuse economies are Honduras, Mali, Philippines, Senegal, Somalia and Zimbabwe. Table 1 is constructed on the basis of data

availability on growth rates extending back to 1960 and earlier, a total of 98 countries. If we look into the picture after 1965, we could add, *at least*, Angola, Iraq and Ethiopia to the list of growth failures, based on a negative growth.

More importantly, only six (or 7 if we include Oman) mineral or fuel exporting, point-sourced economies have real per-capita income growth rates that exceed 2.5 per cent per annum on an average in the 1965-99 period; see Murshed (2004) These are Botswana, Chile, the Dominican Republic, Indonesia, Egypt and Tunisia. Of these only two, Botswana and Indonesia have high growth rates of over 4 per cent. We may wish to consider Malaysia as point-sourced as well. Therefore, in the developing world we have three point-sourced success stories, and we have an empirical *prima facie* case for a resource curse.

The rest of the paper is organised as follows: section 2 describes the adverse economic effects of resource booms, while section 3 focuses on the political economy of resource booms and a large resource endowment, and section 4 concludes.

Table 1. Countries with growth failure

Catastrophic			Severe
1960 or before	During 1960s	During 1970s	During 1980s
Central African Republic	Cote D'Ivoire	Burundi	Kenya
Chad	Mauritania	Cameroon	Republic of Congo
Democratic Republic of Congo[3]	Togo	Gabon	
Ghana		Malawi	Ecuador
Liberia	Bolivia	Mali	Paraguay
Madagascar	Jamaica	Zimbabwe	Trinidad and Tobago
Niger			
Nigeria[1]		El Salvador	Jordan
Rwanda		Guatemala	
Senegal		Guyana	
Sierra Leone		Honduras	
Somalia		Peru	
Zambia			
		Algeria[1]	
Haiti		Iran[2]	
Nicaragua		Saudi Arabia	
Venezuela			
		Philippines[1]	

Note: Adopted by Perälä (2000) from Human Development Report 1996. The sample includes a total of 98 economies with available statistics.

[1] Economy considered large, 1960 population clearly above 25 million.

[2] Economy considered large, 1960 population clearly above 20 million.

[3] Economy considered large, 1960 population clearly above 15 million.

2   Economic Effects of Resource Booms

A   The Dutch Disease

The most common macroeconomic effect associated with natural resource booms is known in the literature as 'Dutch Disease'[1], see Neary and Wijnbergen (1986), and Murshed (1997, chapter 6) for example. Irrespective of the cause, a resource boom crowds out the

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[1] An expression coined by the Economist magazine in 1977. This is because the discovery of gas in the North Sea was said to have contributed to de-industrialisation in the Netherlands. Alternatively, we could employ the French term, *syndrome Hollandais*. It is therefore not confined to developing countries.

other leading sector of the economy. So in countries that previously exported manufactured goods (UK after North Sea oil, for example), that sector contracts; in developing countries it could be the agricultural sector. In an open economy a substantial current account surplus appears, leading to currency appreciation under a regime of flexible exchange rates. This makes existing (non-resource boom) exports uncompetitive in world markets. Under fixed exchange rates the price of non-traded domestically produced goods and services increases. Either way, there is real exchange rate appreciation. One of the policy implications of resource booms is to avoid excessive and persistent real exchange rate appreciation.

There is a shift in the composition of domestic output from tradeables towards non-traded goods and services. The resource boom has an expenditure effect, as incomes rise, and it has a resource allocation impact, as domestic production switches to non-traded goods and services, like construction and other forms of public expenditure. In certain cases, severe unemployment may characterise the adjustment path to the new equilibrium following the resource boom because of a huge increase in the demand for financial assets relative to non-traded goods (see, Neary and Wijnbergen, 1984). The Dutch Disease is not a disease at all if it only shifts the pattern of production towards non-traded goods, as with higher incomes and more foreign exchange certain goods can be more cheaply imported from abroad. Policies of economic diversification need to be pursued to counter these developments. Atkinson and Hamilton (2003) find that resource booms do not hamper long-term growth as long as savings net of resource depletion are robust. But commodity prices tend to be unstable, and the resource boom peters out when their prices fall over the long-term business cycle, as with the case of oil, or it could be that the resource in question (say oil) is simply exhausted. Is the economy capable of returning to its pre-boom output mix? How will it cope with these medium term boom-bust cycles? All the evidence, especially for major oil exporters in the developing world, suggests that the adjustment to falling commodity prices is associated with negative growth rates, implying that the boom period is associated with some permanent form of loss of competitiveness; I return to this issue in sub-section B below.

But first, historical experience, particularly with regard to the 1870-1913 period of globalization, informs us that natural resource endowment and/or booms were not always disadvantaging. Findlay and Lundahl (1994) construct an intersectoral model with links between a natural resource sector and manufacturing, where a

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resource boom can lead to growth expansion. They distinguish between tropical subsistence economies (today's developing world) and the regions of recent settlement[2] such as Australia, Canada and the USA. Both these parts of the world interacted with an industrialised region, Europe. The tropical regions have no manufacturing, unlike the two other regions, but have a subsistence agricultural sector with a fixed wage, as well the possibility of producing traded primary goods. Manufacturing employs labour and sector specific capital. Production in the resource sector utilises labour and a sector specific land input. Land utilised in the natural resource based production sector is not just exogenous, but the land frontier (and the output of the resource sector) can be extended by the application of capital input.

Globalization in the 19th century led to a rise in the demand and prices of primary goods produced both in the tropics and the regions of recent settlement. This not only raised the rental rate on land used in primary goods production, but also extended the land frontier. It also increased the demand for labour in the new world and in tropical regions, and led to immigration into the regions of recent settlement (settled by Europeans), and a movement away from subsistence farming to cash crops or mining in tropical regions. Manufacturing, too, expanded in Europe and in the regions of recent settlement. The mechanism underlying the expansion in manufacturing was a decline in the real rate of interest. This raised manufacturing capital intensity, as well as the real wage rate. In tropical areas there was also an increase in the real wage in the primary goods sector, above subsistence sector levels. This wage premium was necessary to finance additional land clearance, allowing the resource sector to expand in the absence of foreign investment. Even with foreign investment, a wage premium may have been necessary, reflecting higher productivity. In plantation type economies (point-sourced), for example in Latin America, landlords captured the wage premium, whereas in peasant, owner-occupied diffuse type societies, the extra rent accrued to peasant entrepreneurs.

What happened later? The regions of recent settlement would be on their way to a bliss point of high per-capita incomes that we nowadays associate them with, because of the backward and forward links to manufacturing, competitive industrialisation in contemporary parlance. Many tropical regions did not industrialise, stagnating instead into a staple trap (a fixed reliance on a few commodity exports). This outcome was more likely in point-sourced economies. By contrast, it is

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[2] A term originally coined by the League of Nations.

the diffuse economies, such as in North-East Asia, where prospects of industrialising were more promising. This is because, as Baldwin (1956) points out, peasant entrepreneurs will generate demand for simple, labour intensive manufactures, which later become exportable. Further on, these economies move up the manufacturing product cycle. Moreover, peasant societies are also more likely to support publicly financed infrastructure and human capital formation, compared to countries dominated by a small elite interested in siphoning off resource rents. Also, when point-sourced or mineral/fuel based economies experiment with industrialisation, it is usually capital intensive and dependent on public subsidy. They are often non-traded as pointed out in Murshed (2001); for domestic consumption only; uncompetitive and unsustainable in the long run. Clearly, the crucial link is between the resource sector and manufacturing. If the nascent manufacturing sector is competitive, resource booms can act as the spur towards future growth and sustainable development.

B   Loss of Competitiveness

Sachs and Warner (2001) present empirical evidence suggesting that countries rich in natural resources tend to have higher price levels, and as a result their non-natural resource based goods are uncompetitive and cannot be exported. They, therefore, miss out on the benefits of export-led growth that many other developing countries poorly endowed with natural resources have gained from, say in East Asia. They also argue that a high natural resource endowment adversely effects growth even after previous growth and other factors that militate against economic growth are taken into account such as a tropical location, distance from the sea and a high disease burden.

Why should the loss of competitiveness in non-natural resource based exports be a problem for the future? Surely competitiveness in exports, say labour-intensive manufactures, may be acquired at some future date when natural resource revenues dry out. As the model in Krugman (1987) illustrates, if there are learning by doing effects, a country whose manufacturing base is eroded during a resource boom can irreversibly lose competitiveness, even when the real exchange rate reverts to its initial level after the boom has subsided. Thus, temporary resource booms cause path dependence or *hysteresis*, a permanent loss of competitiveness. For developing countries, this means that their future potential for exporting manufactured goods and diversifying the production base is stunted. If there are positive externalities from human-capital accumulation in manufacturing only, as in Matsuyama (1992), and resource booms retard the development

of the more dynamic manufacturing sector, the growth path of the economy under free trade is lower than that of more resource poor countries. The important point is that following a boom-bust cycle associated with natural resource revenues, a country might find itself devoid of these rents, yet not industrialised and unable to catch up with other developing countries that are already moderately industrialised. Also, their wages may be too high to compete with other resource poor developing nations.

In the paper by Sachs and Warner (1999a) a role for growth enhancing human capital (or skills in the work force) is incorporated into a model with a non-traded sector, a traded good and a purely exportable natural resource sector. Human capital accumulation, in the form of an externality, takes place as a result of traded/manufacturing production only. Resource booms, in the Sachs and Warner (1999a) model retard the growth of the economy via the crowding out of production in the traded (manufactured) sector. The stock of human capital is diminished as employment in tradeables declines; this in turn hampers future production of all goods, and hence the growth of the economy. Another Sachs and Warner (1999b) paper on resource booms permits increasing returns to scale in either of the two sectors of the economy (traded or non-traded), but not in both. Increasing returns characterize the production of a range of intermediate inputs that could be employed in final production. The model then addresses whether resource booms can contribute towards 'big-push' type industrialization. A resource boom unambiguously expands the non-tradeable sector, while at the same time shrinking the traded sector. If it is the expanding (non-traded) sector that uses these intermediate inputs, it may contribute to a successful big push. If the opposite is the case, and it is the traded sector which uses the intermediate inputs, big-pushes are less likely. Also, unless expectations about the future are optimistic, even the most propitious circumstances may not trigger accelerated industrialization or the big-push. Implicitly, these expectations are related to the political system and social capital.

Clarida and Findlay (1992) present a model where absolute and comparative advantage is endogenous and policy induced. The mechanism via which this occurs is a public financed knowledge based input (non-rivalled and non-excludable) that lowers production costs, similar to the idea in Shell (1966). This input, will not be provided by the private sector, and is therefore a pure public good. One can also think of this input as human capital, or infrastructural investment. There are two sectors in the economy, one of which is akin to a resource sector where the benefit from the public financed input in

terms of lower production costs is relatively lower. The other sector may be likened to manufacturing, and it derives greater benefit from the publicly provided input. Capital is a specific factor in manufacturing, whereas land is specific to the resource sector. All sectors require labour input. In these circumstances a resource boom will induce a lower optimal supply of the publicly financed input, as the resource sector obtains a proportionately smaller benefit from this input. Consequently, over the course of time, *both* sectors will be less productive, akin to a loss in absolute advantage in international trade. The expansion of international trade will also make countries with greater capital endowments gain absolute advantage in all sectors, as exports of manufacturing increase, inducing greater provision of the cost reducing public good. If an additional, non-traded and publicly supported *consumption* sector is introduced, similar to the functioning of state owned enterprises, resource booms will retard competitiveness in both the other sectors even *further* in the presence of a strong societal or ruling class preference for this good. The reason is that the reduction of the supply of the publicly financed productive input is greater after a resource boom in the presence of a strong preference for a publicly supported non-traded consumption good. A greater desire for this public good may characterise rentier societies.

Not all, however, is doom and gloom when an economy is blessed with a boom in its natural resource based exports. Several countries, Norway, the Netherlands, Indonesia, Malaysia and Botswana among them, have coped well with these bounties in recent times. Resource booms should not automatically cause the traded sector to contract and the non-traded sector to expand, see Murshed (2001). This is partially a result of the existence of excess capacity in the economy, and also when the right policies are adopted with regard to the real exchange rate and other manufacturing subsidies.

C   Resource Rents and Public Education Expenditure

Before examining whether mineral or energy resource rich countries spend more on public education than other countries it is worthwhile dwelling on how resource intensity is measured. This is important, as the ranking amongst nations with regard to resource dependence might change, depending upon the metric utilised. Furthermore, different units of measurement may cause fluctuating statistical significance in empirical models analysing the effect of resource abundance on other economic phenomenon such as growth or education spending. One way of measuring resource dependence would be simply to look at the proportionate contribution of mining (or

mining and agriculture) in national income. This is the share of national income method. But a large mining sector does not necessarily imply economic dependence, as the economy might still be quite diversified with a large manufacturing share in national income. The country may be exporting industrially processed natural based products, such as in Chile. This brings us to the second method, which could be based on the pattern of exports. We could look at the principal exports of the economy. Alternatively, one could use the share of primary (all unprocessed exports) or mineral exports in GDP as a measure. This would be an export intensity measure. Also, one might want to look at the share of minerals or energy in total exports. A third type of measurement could look at per-capita stocks (for example, of oil reserves) and not flows (of oil exports, say) giving us a measure of national per-capita endowment of the value of these stocks. A fourth method may look at ratios of total (not per-capita) stocks of different types of capital. We could look at the ratio of natural to physical capital stocks. But, as Stijns (2006) points out, it would be problematic, if not gravely erroneous, to look at natural capital stocks as a proportion of *all types of capital stocks* (the sum of human, physical and natural capital), as in Gylfason (2001a). So, for example a country, say Norway, which successfully invested in the past in education and infrastructure would be classified as resource poor simply because it has a high stock of total capital in the denominator of the ratio! Equally, an oil-rich underdeveloped country (because of low stocks of human and physical capital) would be classified as resource rich simply because of the smallness of the denominator of the ratio relative to the numerator. A fifth metric is associated with rents. Rent refers to the difference between prices and costs, giving us a measure of 'excess' profit. This in turn can be calculated in per-capita terms, or measured as a share of national income. Rents increase when there are booms in commodity prices. Finally, if we wanted to look at agricultural potential we could look at arable land per-capita, see Auty (1997). For most purposes of measuring a country's *dependence* some sort of export based measure is most appropriate, as it conveys information about what a country is good at and its place in the world economy (comparative or competitive advantage). Alternatively as a measure of *intensity*, perhaps the ratio of natural capital to physical or human capital stocks (but not both) could be used, as it gives us an idea of how resource rents have been used to accumulate other types of capital; a low ratio indicating earlier investment in other forms of capital.

The importance of human capital in fostering economic growth and human development cannot be overemphasised. All of this is related to

educational spending, mainly public expenditure on education. Resource rents and oil windfalls should, in principle, provide governments of developing countries with extra resources to invest in education. In contrast, is the idea that in foreign exchange abundant resource rich countries there is little incentive to invest in basic skills, as there is little need to have a skilled workforce to export processed goods. A good chunk of the educational expenditure will therefore be devoted to elite tertiary education. Again, there are many ways of measuring educational variables (Stijns, 2006) such as the average years of schooling, the net secondary enrolment rate and public spending as a proportion of aggregate spending, or government spending on education as a proportion of total government expenditure.

Birdsall, Pinckney and Sabot (2001) show that resource abundance measured by cropland per-capita systematically lowers public investment in education. Similarly, Gylfason (2001a) shows that natural resource rich countries spend less on education in terms of expected years of schooling for girls, gross secondary enrolment rates and public expenditure on education as a proportion of national income. But his results are flawed because his measure of natural resource abundance is the share of natural capital as a proportion of all types of capital; as indicated above this biases downwards the resource abundance of high income and successful countries in this category simply because they have high stocks of all types of capital relative to natural capital. In contrast to Birdsall, Pinckney and Sabot (2001) and Gylfason (2001a), Stijns (2006) finds that for developing countries many of the measures of natural resource abundance can cause greater educational attainment and spending, as well as a higher life expectancy at birth. So, natural resource endowments may not be so bad for human development. There are, however, several exceptions, depending on how we measure natural resource dependence or intensity. Countries with a high share of mineral exports in total exports fare badly, as do countries with a high ratio of natural to physical capital. Similarly, nations with a high ratio of green capital (non-arable forests, pasturelands etc.) to physical capital, high agricultural export intensity and arable land per-capita are also poor performers in this regard. These nations may be described as unsuccessful resource abundant developing countries, and they include some agricultural exporters, as well as pastoralist countries in sub-Saharan Africa. A high primary or mineral export dependence means a country has not diversified or industrialised, otherwise it would have been exporting more processed manufactures as is the case with resource rich Malaysia. Also, having a high natural or green capital

endowment relative to produced capital is another sign of economic stagnation and the failure to develop, as development leads to a higher stock of physical capital via investment. Also, it appears that high proportions of cropland and timber wealth relative to physical capital stocks are worse for education and health indicators than high ratios of oil wealth to physical capital stocks. Furthermore, there are also no signs of countries systematically favouring tertiary over secondary education.

In summary, evidence for the purely economically based resource curse is mixed. It may depend upon the time period analysed, as it is a recent phenomenon. Also, it is not a universal malaise; the right policies in a good institutional setting will lead to the avoidance of the curse. We now turn to the political economy of resource rents.

3   Political Economy of Resource Rents

Good quality institutions are crucial to fostering growth in the long-term. They may be even more important than policies, whose effect is more short-term; in any case good or the right policies will be largely ineffective in a poor institutional environment. It has also been suggested that a nation's endowments may have something to do with the determination of its institutions. In this sub-section I examine political economy mechanisms underlying the resource curse.

A   Theory

In a nutshell the negative effects of resource rents from a political economy perspective arise when it leads to rent seeking and corruption which has a destructive effect on normal productive investment and hence growth. All of this depends upon the incentives that are presented to political leaders, because in certain circumstances they may choose unenlightened rent seeking policies that suit them and a narrow interest group, and in a different environment they will decide not to and be more benevolent; see Auty and Gelb (2001). In both instances their behaviour is perfectly rational, except that in the former case it is in conflict with long-term national development. There is also the further possibility that they may deliberately undermine institutions and/or institutional development, so as to further their own ends. We may organise our theoretical discussion along the lines of rent seeking induced by bad institutions, and the impact of resource rents on future institutional development. The former refers to rent seeking in an institutional environment that encourages it and is already quite corrupt; the latter

refers to either a deliberate attempt to subvert institutional restraints such that kleptocracy can flourish, or creating a set of incentives that prevent the development of good institutions. When we come to the empirical examination of these phenomenon, the theoretical distinction between the harm caused by malfunctioning institutions already present, and bad institutions created as a result of resource rents almost become observationally equivalent.

With regard to the first type of channel described above, that of rent seeking in an enabling environment for these activities, mention can be made of a theory of the optimal allocation of talent, as analysed in Murphy, Shleifer and Vishny (1991). The idea being that talent can focus either on production or predation and corruption. This decision is a function of the relative returns to these two activities; predation may be more attractive when there is a wealth of natural resource rents. Capturable resource rents can lead to rent seeking behaviour; revenues and royalties from oil or mineral resources are much more readily appropriable when compared to the income flows from agricultural commodities. Increases in the availability of resource rents following a boom in their world prices can increase the appetite for resource rents amongst certain individuals or groups within society. Lane and Tornell (1996) postulate that many societies have powerful interest groups that are coalitions formed in order to extract rents or a tribute from the rest of society. They could exist for historical reasons. Transfers to these groups are effected at the expense of others, and sometimes even the general productivity of the economy. Resource booms and windfalls increase the appetite for transfers within these powerful coalitions by a factor that is more than proportionate to the size of the boom. These groups become greedier, and demand an even larger share of national income. This is known as a voracity effect (Lane and Tornell, 1996); a similar mechanism is described as the rentier effect by Ross (2001). Furthermore, entrepreneurs may choose to become corrupt rent-seekers rather than engage in the ordinary business of production, and this constitutes a major diversion of talent away from production, see also Torvik (2002). Moreover, in some societies rent-seeking is more widespread than others, depending on the institutional environment, referred to as grabber friendly institutions by Mehlum, Moene and Torvik (2006), as opposed to producer friendly institutions. In Murshed's (2004) theoretical model, corruption or rent-seeking not only detracts from normal production, but can even diminish the availability of productive capital over time, and a lower capital stock is what causes the eventual decline in growth. Unlike recent papers in this genre, it has explicit micro-macro theoretical properties, with an explicit macroeconomic model of growth

collapse. He models an explicit rent seeking game where they can be increasing returns to scale in rent seeking, related to institutional quality. The worse the quality of institutions and the poorer the governance the more profitable it is to engage in rent seeking. Thus, not only is rent seeking made explicitly endogenous to institutional quality, but innovatively there can be increasing returns to scale in this activity. The extent of the rent seeking also depends on the available quantity of capturable resource rents, as in Torvik (2002). This encourages more players to enter this game and more wasteful consequences for the economy, including the macroeconomic growth collapse (details are given in the appendix).

Anderson and Askalen (2007) find that there is no resource curse for parliamentary democracies in contrast to presidential systems. Although the result is an empirical finding, it also has theoretical overtones. Essentially, it is related to the fact that Presidential systems concentrate more power in one person, and are therefore more factional and rent-seeking. The Presidential system implies more rent extraction by politicians, a larger public sector, and public spending targeted towards powerful minorities rather than broad-based spending programmes. The problem with this work is that many so-called Westminster style Prime Ministerial systems in the developing world are actually quite Presidential in practice, as there is a weak separation of powers, combined with clientelism and factionalism. Robinson and Torvik (2005) also argue that increased resource rents encourage politicians in factional (such as those driven by tribal allegiances) or clientelist (patronage politics) societies to invest in 'White Elephant' projects. These are projects that are inherently loss making, but once the sunk cost is incurred, the project is implemented. Despite the fact that they are loss making and actually may be growth retarding long-term, they are nevertheless adopted because they act as a commitment device with the faction or support group essential to the politician's political survival. Obviously, it is this client group who benefit from the White Elephants, so costly to the national exchequer.

Caselli and Cunningham (2007) outline a taxonomy of possible situations that shape rulers incentives. It is based on (a) countries or institutional settings that are relatively more centralized (ruled by a dictator or small elite) compared to decentralized cases (with wider political participation; (b) where there is a budget constraint, in contrast to situations there are no limits to resources to be spent; they

also characterise situations where a public good needs to be provided (akin to Findlay and Clarida, 1994) to increase the productivity of the non-resource productive sector; situations where there is an effort (creating moral hazard problems) that needs to be exercised by leaders; and, also leaders who want to maximise revenue accruing to themselves and not national welfare, whose probability of staying in power is limited. A sudden natural resource windfall increases the value of staying in power indefinitely as there is more to loot at present and in the future. What happens then depends upon the leaders incentives; consider for example:

The Busy Leader: this is a constrained leader in a centralised system, who has to allocate effort in the sense of moral hazard into actions that lead to economic development and efforts to stay in power, which could include spending resources on political repression. An increase in natural resource revenues will detract from development effort, and cause a decline in per-capita income. If the leader is unconstrained it raises the value of staying in power, and a resource boom will cause him to engage in more repression, although spending resources and effort on development also has a chance of increasing if both activities (repression and development) are complements. Similarly, political support and aid from the West during the cold war and the present-day war on terror could tip the balance in favour of more repression relative to development effort. Note, that political patronage in relatively decentralized and partially democratic systems can be a substitute both for repression and broad-based economic development. The question is what cements relationships between the patron and client---a common ethnicity based on religion, language or tribal affinity, or other forms of commitment devices such as inefficient projects, as in Robinson and Torvik (2005).

The Visionary Leader: this person may spend more resources on development if it increases his chances of survival, as in the case of Suharto in Indonesia, but may do the opposite if it lowers the perceived probability of his survival, as in the case of Zaire's Mobutu.

A Resigned Leader: this leader may see that following a resource boom his chances of future survival are low because others will try to overthrow him, so that he becomes resigned. In effect it has raised his discount rate for the future, and he will do less productive investment in development in order to survive.

The Lazy Leader: Large windfalls, as in the Gulf, can give leaders enough resources to do everything. They may spend less time

governing and more on leisure. Alternatively, in poorer countries they could let the rest of the country languish in poverty as long as they enjoy a lavish lifestyle.

In connection with the second theoretical mechanism, where resource rents explicitly hamper institutional development, authors such as Karl (1999) have described the spending behaviour of oil rich economies as 'petromania', referring to irresponsible consumption following oil booms. For example, it has been suggested that in Angola more than US$ 1 billion of oil revenues vanished per year through corruption in the 1996 to 2001 period. More generally, a wealth of mineral resources or plantation-based production can spawn extractive and non-developmental institutions that eventually become entrenched (Sokoloff and Engerman, 2000). Ross (2001) argues that resource rents, particularly oil revenues, could retard democratic development. A recent empirical study by the IMF (2005) also suggests that institutional quality could be damaged by the presence of fuel exports.

Acemoglu and Robinson (2006) model underdevelopment as the result of political elites blocking technological and institutional development because such developments may erode the elites' incumbency advantage. This is more likely when rents from maintaining power are high, such as where public income is derived from natural resources. Robinson et al. (2006) show how politicians have a short time horizon because they discount the future by the probability that they remain in power, which is damaging from a social perspective. With more resources, the future utility of having political power will increase, and as a result politicians will change policies so that the probability they remain in power increases. To do so they invest in a bloated public sector, rather like the White Elephants in Robinson and Torvik (2005).

B   Cross-Sectional Evidence

Mehlum, Moene and Torvik (2006) find that when they interact natural resource abundance with the quality of institutions in a growth regression, the resultant coefficient is significant. This means that natural resource abundance has adverse effects *only* in the presence of poor institutions. Their analysis, however, is purely cross-sectional, and they do not take into account the potential reverse causality between institutional quality and growth (both of which have a causal effect on the other). Collier and Goderis (2007) use an error correction panel data regression model, which is both dynamic and addresses reverse causality, to differentiate long-run and short-run effects of commodity price booms on economic growth. They find that

commodity booms have a positive short-term effect on output, but adverse long-term effects. The long-term effects are confined to "high-rent", non-agricultural commodities, by differentiating commodity prices between agricultural (diffuse) and non-agricultural (point) goods. Within the latter group, they also find that the resource curse is avoided by countries with sufficiently good institutions, by (a) including an interaction term between the commodity price index and a dummy for good institutions (with Portugal as the benchmark), and (b) separating the regressions into two groups that differentiate countries with bad and good governance.

Collier and Hoeffler (2007) unpack democracy into (i) electoral competition and (ii) checks and balances, and examine their interaction with natural resource rents (as a share of GDP) in determining GDP growth. The blend between resource rents and strong electoral competition is growth reducing; while the mix of resource rents and strong checks and balances yield growth enhancing outcomes. They argue that while the 'Neocon' agenda is to promote democracy through electoral competition, in fact what is needed are checks and balances on the executive. Democracy without constraints on the executive could be harmful.

Aoun (2006) studies growth between 1980 and 2000 in a cross-section of countries, including developed and developing countries. A number of oil rich countries are included in her analysis, but crucially the only oil rich Middle Eastern country present in the study is Kuwait. She enters the ratio of *oil* rent (the difference between the price obtained for oil and the cost of extraction times output) over national income, as an explanatory variable for growth. In simple regressions, she finds a negative and statistically significant effect for oil rents, but this significance vanishes when data on institutional quality (corruption, bureaucratic quality, democracy) is introduced. This means that oil rents exert a negative influence *only* where institutional quality is poor. This is an interesting finding despite the fact that her econometric analysis is seriously flawed: she does not control for the endogeneity (or reverse causality) between growth and institutions, as growth impacts on the quality of institutions as well as the other way around; she utilises only a simple cross-sectional technique and not panel data methods which take the time dimension into account; she does not control for the effects of extreme cases or outliers on the sample.

Ross (2001) finds that countries rich in mineral resources, particularly oil, do not make a smooth transition to democracy, or at least their score on an index of democracy tends to be low. The reasons he

identifies are the following. There is a lack of "modernisation" as economic wealth does not translate into social and cultural change. Secondly, there is a repression effect, mineral and oil rich states can engage in higher levels of military and internal security expenditure to suppress dissent. Thirdly, public goods may be provided along side low taxes because resource rents are the main source of revenue for the state. Taxation normally results in eventual pressures from the taxed public to introduce democracy. Finally, and most importantly there is a *rentier* effect. Revenues from oil and mineral resources create rents that can be utilised to bribe the population into acquiescing to authoritarianism. By contrast, Smith (2004) finds that oil rich economies exhibit a great deal of political regime durability, arguing that the stability of the political system cannot be accounted for by repression, but that oil economies form stable domestic coalitions implying the absence of strongly negative rentier-type effects.

In their cross-sectional econometric analysis, Isham, Woolcock, Pritchett and Busby (2005) find that point-sourced economies identified as exporters of oil, mineral and plantation based crops have lower growth rates compared to diffuse (agricultural) and manufactured exporters in the 1975-97 period because of the poorer governance (based on the Kaufmann indicators mentioned above) engendered by a fuel, mineral or plantation dependent economy. The challenge is to extend the pure cross-sectional econometric analysis so that it has a time dimension, and delve deeper into the role of different types of resource endowment on institutional formation. The Mavrotas, Murshed and Torres (2007) estimation is, however, one of the few panel data analyses in this connection. As with Isham et. Al (2005) they instrument for endogeneity problems. Their results suggest that both point-source and diffuse type natural resource endowments retard the development of democracy (measured by Polity) and good governance (Fraser Institute data), which in turn hampers economic growth. So there is a more widespread resource curse, valid for both endowment types. Point sourced economies have a worse impact on governance, and governance is more important for growth compared to democracy. Diffuse economies appear to slow down democratic development fractionally more than point sourced economies; we should not be tempted into concluding that point sourced endowments are better for democratic development, because that is patently not the case. The resource curse of point-sourced endowments definitely looms large, as it is more growth retarding via even poorer governance than diffuse natural resources. Manufacturing, and manufactured goods exports, do promote better governance and democracy. This in turn helps to explain the superior growth performance of manufactured

goods exporting nations. Not only is the presence of manufactured exports an indication of a more diversified and growing economy, but this may be so because these countries have better institutions of governance and higher levels of democracy.

Brunnschweiler and Bulte (2008) challenge the notion of resource curse that relates natural resource endowment with bad economic outcomes in their cross-sectional analysis. Compared with previous empirical studies on resource curse, the paper makes a significant innovation by differentiating between resource dependence (RD) and resource abundance (RA), definitions that were used interchangeably in many previous studies. Their measure of resource dependence is resource exports to GDP and mineral exports to GDP; the per capita value of natural resource assets and sub-soil assets is their resource abundance variable. They correct for endogeneity in both resource dependence and institutions, using the following instruments: the constitution (presidential versus parliamentarian) and trade openness for resource dependence, and absolute latitude for institutions. They find that resource *dependence* (RD) has no significant effect on growth (although the sign is still negative), contrary to many earlier findings regarding the resource curse. By contrast, they find that resource *abundance* has significantly positive effects on growth either *directly* in a growth regression or *indirectly* through institutional improvements (measured by the rule of law and government effectiveness from the Kaufmann data set). In short, greater resource abundance leads to better quality institutions and more rapid growth, a counter-intuitive finding that is echoed by Smith (2004) in his findings about oil wealth and its negative relation to repression and positive relation to regime survival. In many ways the Brunnschweiler and Bulte (2008) results are understandable when one makes a distinction between resource abundance and dependence. As already indicated, a resource abundant nation may not be very resource dependent, if it has wisely chosen to, and has had time to diversify its production structure through economic growth, which also raises the living standards of the citizenry. Indeed, resource dependence may be a reflection of the failure to grow and develop good economic and political institutions, along with the associated poverty, inequality and poor human development.

4   Conclusions

What makes a resource-rich country's economy prosper or falter over the inevitable boom and bust cycle that resource rents imply? The literature reviewed above suggests that the political economy of

resource rents, and the (short to medium-term) economic policies adopted, make up the two main factors underlying success or failure.

With regard to the political economy of development strategies, Dunning (2005) analyses choices by rulers regarding the future growth path of the economy in the context of natural resource abundance. He compares Mobutu's Zaire (1965-1997) to Suharto's Indonesia (1965-98) and Botswana during the same period. In Botswana, revenues from Kimberlite (deep mine shaft) diamonds were very stable, due to Botswana's unique relationship with the South African diamond company De Beers and its important position as a major supplier. It did not need to diversify it economy. But it chose a developmental path because of the mature nature of political elites there. In Indonesia and Zaire resource flows were volatile. In one case the dictator (Suharto) chose diversification and growth enhancing strategies, as well as policies aimed at equalisation and poverty reduction to contain political opposition. In the other case, Mobutu did not, because he felt that diversification and investment in infrastructure would loosen his grip on power and strengthen political opposition to him based on ethnicity. Both Mobutu and Suharto, in particular, owed their existence, at least initially, to the patronage of the USA and western powers. Perhaps, in East Asia greater fears of communism strengthened benevolence in dictators (South Korea, Taiwan Singapore and Indonesia), whereas in Africa a certain type of factionalism dominated policies and politics, retarding growth enhancing economic diversification and infrastructural development. The resource curse is not just confined to natural resources; a sudden increase in aid can have similar effects. In Pakistan, increased bilateral aid from the USA (late 1950s, early 1960s, 1980s and presently) have led, at least partially, to rulers adopting developmental strategies.

When we come to the political economy of resource rents itself, Snyder and Bhavnani (2005) argue that the causal mechanism between rent seeking behaviour and resource rents may lie in a government *revenue* effect. Even if a lootable sector exists it may not be as crucial to the state's coffers if other revenue sources exist side-by-side. Finally, and most importantly, how governments spend their revenue matters: if the state spends its revenues on social welfare and growth enhancing investment, conflict is less likely than if it appropriates revenues for factional and kleptocratic purposes.

It should be noted that rent-seeking, bribery and corruption are not just about the quality of domestic institutions in resource rich nations. There are always two sides to the corruption coin, the demand side

and the supply side; this principle applies also in the case of resource rents. Large bribes to governing elites, as well as the violent manipulation of governments in the global South by companies and states in the global North in order to gain commercial advantage by their extractive multi-nationals was very common during the cold war, and have not quite withered away in our uni-polar world.[3] Super-power politics during the cold war, and interference by the world's only remaining superpower (the USA) has an important part to play in determining the historical path of institutional development, whose legacy can be more negative in some cases (Zaire above), and less negative in others (Indonesia).

This leaves us with policies towards long-term growth, which have a shorter or more medium-term impact. Many of these choices are not as deliberate as we might presume; they are often accidentally adopted or are the outcome of mixed motivations on the part of those deciding on policy. Success may be more related to serendipity rather than design. It is, nevertheless, instructive to contrast cases of success such as Botswana and Malaysia after the 1970s on the one hand, against failures such as the Democratic Republic of Congo (Zaire), on the other hand. In the Malaysian case (Mahani, 2001), the government: (a) ended up redistributing income, via government expenditure policies targeting ethnic Malays, who were the poorer community, thus avoiding ethnic conflict at least after 1969; (b) invested in infrastructure and human capital; and (c) pursued policies of competitive industrialisation, based initially on foreign direct investment. Botswana avoided factionalism through political consensus. Botswana's economy is, however, considerably less diversified compared to Malaysia, providing us with one instance of a high growth, conflict free undiversified economy relying on a capital-intensive natural resource (Kimberlite diamonds). Thus, the most important policy goal involves moving away from the nation's dependence on unprocessed natural resource exports, as in the case of Malaysia and Thailand. These include investment in skills (starting with primary education and universal literacy) which take a longer time to mature, policies to acquire foreign direct investment leading to technology transfer, and above all fostering industrialisation that is internationally competitive.

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[3] Historically, multinational firms such as the British and Dutch East India companies literally established empires to further their commercial interests and profitability, even running formidable military establishments (armies and navies) to protect their trading interests.

Finland and Norway are two examples of successful European resource rich countries; the first in its timber resources, and the latter in oil. Finland's current economic success is not built on forestry, but rather revolves around high technology mobile telephony associated with Nokia. By contrast, in Norway oil continues to be the major export, and it does not have high technology manufactured goods sectors comparable to Sweden and Finland. Consequently, a few signs of Dutch Disease are discernable. The overall size of the public sector, however, is not significantly different in Norway than in neighbouring Sweden. However, all Nordic countries, which had resource dependent economies at some point, passed through transitions to fully fledged democracies and capitalist industrialisation prior to any resource booms. They, therefore, avoided rent seeking surges by special interest groups, which tend to occur in institutionally flawed situations, as pointed out by Torvik (2007). Gylfason (2001b) points out that in Norway the state has not only title to the country's oil wealth, but has had command over 80% of the resource rent since 1980. The revenue is invested in the Norwegian Petroleum Fund, akin to a trust fund for the benefit of current and future generations, but its full use is still impending. Such a policy yields a double dividend; it minimises macroeconomic problems associated with boom and bust cycles and allows consumption smoothing into the future when resource revenues dry out. A call for setting up similar trust funds is standard policy advice at present.

Thus, the jury is out on the issue of the negative effects of rich mineral/fuel endowments on institutional determination. After balancing the negative and positive effects, not all societies necessarily experience the disadvantaging political economy effects of resource rents. This will crucially depend upon the past history of institutions, its colonial heritage, and the type of incentives (benevolent or malevolent from a national perspective) faced by its leadership, including the influence of cold war and war on terror geo-politics. Resource rents may have an important part to play in determining political and economic institutions that are important in determining long-term growth and development prospects, although the causal links are far from clear cut. The consensus is that their role has been negative for most developing countries in recent times, and the resource curse was certainly absent when one looks at the economic history of countries such as the USA, Canada and Australia, perhaps because they had better institutions to begin with that helped them transform resource abundance to lower (unprocessed) resource dependence, along with a rising standard of living. It is also worthwhile reminding ourselves that most indicators of human development and

well being are highly correlated with per-capita income, which means that for poor countries growth leading to increased per-capita income may provide the necessary conditions for improved human development on all counts.

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Appendix: Growth Collapse with Rent Seeking

The innovative feature of the model that follows is that the macroeconomic collapse that comes from a reduction of the capital stock has micro-foundations in rent seeking contests. We begin with a competitive game of rent seeking in the spirit of Tullock (1967), although our primary motivation arises from the natural resource revenue induced rentier effect described by Ross (2001). In the Tullock framework, several agents compete for rents in every period that resource revenues exist. The competition to capture this entails a cost, be that bribery, lobbying expenditure and so on. Let P represent the prize that each rent-seeking agent is attempting to seize. This prize corresponds to the contestable or appropriable revenue from resource rents, and Tullock type rent seeking contests assume a winner take all situation. This does not preclude collusive group behaviour, as long as groups compete with each other. Each agent's probability of success will depend on their own rent seeking expenditure relative to all others. The expected utility (*E*) of an agent (*i*) in a symmetrical setting can take the form:

$$E_i = \pi_i P - c_i \tag{1}$$

where *π* is the probability of winning based upon the contest success function, and *c* represents lobbying costs or expenditures. The contest success function is given by:

$$\pi_i(c_i, c_j, s) = \frac{c^s{}_i}{c^s{}_1 + c^s{}_2}; i = 1,2; j \neq i \tag{2}$$

In this example above there are only 2 agents, *i* = 1, 2. The crucial parameter *s* represents the "efficiency or productivity" of lobbying expenditure or bribery, if *s* > 1, there is increasing returns to scale in such expenditure. If that is so, under weak institutions of governance, and where the law is honoured more in the breach than in the keeping, lobbying expenditure is even more productive as far as rent-seekers are concerned. In many ways, *s* can be characterised to be negatively related to good governance and institutional quality, with *s* > 1 being a sign of very poor institutional environment. I incorporate increasing returns to scale to that activity, and the possibility of an attrition game. Other theoretical papers in the natural resource induced rent seeking genre do not model the possibility of a variable institutional environment, which may encourage further rent seeking. Thus, it is not only the total available prize (*P*) that determines rent seeking, but

also that the institutional environment may promote further knavery. This is parameterised by *s* in my model.

Substituting (2) into (1) and maximising with respect to c_i we find:

$$c_i = \frac{sP}{4}; i = 1,2.$$

(3)

Equation (3) gives us the Cournot-Nash equilibrium level of lobbying spending by each agent. The substitution of (3) into (1) yields the following expected utility:

$$E_i = \frac{P}{2} - \frac{sP}{4}$$

(4)

The above expression becomes negative if *s* > 2. If this is so, it will lead to an even more socially wasteful war of attrition game, where the object is to make one's opponents exit the rent-seeking contest because an opponent's very presence yields negative expected utility.

Lobbying or rent seeking expenditure is wasteful and detracts from the capital stock. Total lobbying expenditures may cause a decline in the capital stock, as investment in capital declines. At this juncture we introduce two definitions which we intend to utilise in the macro-model of growth collapse:

$$\sum c_i = z_0, and \cdots P = z_1$$

(5)

We now turn to the macro-model, details of which can be found in Murshed (2004). Output subject to constant returns, *Y* is a function of *k,* the capital-labour ratio:

$$Y(t) = f(k(t))$$

(6)

In order to subject the system to the effects of a resource boom we incorporate an additive and multiplicative effect to the production function in (6):

$$Y(t) = (1 - z_0)f(k(t)) + z_1$$

(7)

Here z_0 represents the diversion of a part of the capital stock from ordinary production to rent seeking activities, and z_1 is the revenue component. They are described by equation (5). The revenue component can be either positive or negative. If, as in the case of some countries, resource revenues are mainly transferred abroad via corruption and other forms of leakage, then z_1 is negative in its effect on the macroeconomy. If it generates income in the domestic economy it is positive. The additive component, z_1 has no effect on the marginal product of capital, and therefore no effect on investment and the capital stock. When positive, it immediately raises consumption, but not savings, by a proportionate amount. Conversely, consumption declines if revenues are negative. Adjustment in income is immediate and dramatic. In an open economy, however, the country might be able to borrow from abroad to smooth consumption with implications for future indebtedness and debt servicing. Note that the resource rents (z_1) are exogenous in the sense that they are like a pure transfer or manna from heaven. The costs to the economy (the multiplicative term z_0) are, however, an endogenous outcome of rent-seeking activities described above in equations (1) to (4).

I now turn to the effects of extracted resource rents on productivity, investment and the capital stock, again see Murshed (2004) for details. In figure 1 the $\dot{k} = 0$ schedule is a horizontal line. This tells us that the optimal capital stock is related to marginal productivity and not p_k. The $\dot{p_k} = 0$ line is negatively sloped as a rise in p_k increases the rate of investment, which in turn raises the capital stock (k). However, with a fixed interest rate and marginal productivity of capital, the capital stock is given at its optimal level, k^*, such that $p_k = 1$ in the steady state; hence k will decline. When there is a negative effect on the capital stock, the economy jumps from the initial equilibrium at E_1 to the new saddle-path (SS_2) at point F. The $\dot{p_k} = 0$ schedule will then shift to the left, and the final equilibrium is at E_2. There is an initial, but not steady state, fall in the shadow price of capital. This makes the rate of investment negative between F and E_2.which, in turn, causes the capital stock to decline, prompting negative growth. The economy comes to a rest with a lower steady state capital stock and growth rate at E_2. The growth collapse occurs between F and E_2. Net output declines in the new steady state due to the combined effect of the diversion of output to rent seeking and a lower capital stock. There is also a decline in consumption associated with lower net output. Rent seeking expenditure per se is greater the higher the prize, P in (1) to (4) or z_1 in (7). This implies a large amount of resource rents. But,

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more importantly, total rent seeking expenditure for any level of natural resource rents will be greater when the polity is more predatory, oligarchic and poor institutions abound. This means that z_0 is large in (7) and $s > 1$. In other situations, where natural resource revenues are more diffuse, the prize (P) could be considerably smaller (say P/n, the population being given by n). Also, in societies where many agents enter the rent-seeking contest, the benefit to each of lobbying expenditure is smaller. In either case, z_0 will be smaller, as $s < 1$, and the resultant negative growth effect is also diminished. A developmental state working with superior institutions that is democratic or benevolent would reduce lobbying and rent seeking expenditure. Rent seeking contests would not yield much to corrupt agents, who would be better off in productive entrepreneurial activities. In that case, natural resource revenues would not retard growth ($z_0 = 0$). It would also mean P or z_1 (the resource rents) in (7) would become a part of the regular production process in (6).

Figure 1

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