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**Beating the
Resource Curse
The Case of Botswana**

**Maria Sarraf
Moortaza Jiwanji**

October 2001



THE WORLD BANK ENVIRONMENT DEPARTMENT

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Abstract

The endowment of natural resources has often been associated with disappointing economic development. This phenomenon is referred to in the literature as the “resource curse,” which hypothesizes that economies experiencing resource booms, either through price increases or new discoveries, will experience unsustainable growth rates. There are various mechanisms through which a resource-boom can negatively impact on an economy. For instance, it can lead to excessive government expenditure during the boom period and drastic cuts when the boom ends; detrimental impacts

on non-boom tradable sectors; inefficient investment beyond the absorptive capacity of the country; and rent seeking behavior. By exploring the case of the mineral boom in Botswana, this paper will demonstrate that the resource curse is not necessarily the fate of resource abundant countries. The adoption of sound economic policies and the good management of windfall gains have allowed Botswana to continuously manage growth and to become one of the great success stories of developing countries.

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Abbreviations

BT	Booming Tradable Sector
GDP	Gross Domestic Product
GNP	Gross National Product
HCI	Heavy and Capital-Intensive Industry
NBT	Non-Boom Sector
NT	Non-Tradable Sector

1 Introduction

Let us start by asking a puzzling question: if you suddenly inherit a pot of gold, will you be better or worse off in the long run? The obvious reply is better off; few people would argue that more income is a bad thing. Standard economic theory asserts that one can never be made worse off by a positive wealth effect. The answer, however, is not always that straightforward. It depends on *how* you manage this unexpected gain. If you decide to quit your job, you might spend the money over a couple of years or even take up a loan based on your improved circumstances. Once the pot of gold runs out, you might not be able to get your old job back. If you still have to service a loan, you may then end up worse off. If you decide to invest the money wisely in assets that generate revenue each year for the rest of your life, you will probably be better off.¹

This simple example illustrates what can happen when countries experience an export boom. The discovery of new natural resources (or a sudden increase in the price of an exportable resource) may unexpectedly increase revenues. Unfortunately, many countries have been unable to properly manage these windfall gains, ending up spending too much, too quickly. This phenomenon has been referred to in the literature as the “natural resource curse.” A key question is whether the under-performance of resource-abundant

countries that experience export booms is inherently linked with the fact that they are richly endowed in natural resources. Alternatively, might the symptoms of the curse be avoided through prudent economic management?

In this paper, we will show that the natural resource curse is not necessarily the fate of resource abundant countries. By exploring the case of Botswana, we will demonstrate how sound economic policies and good management of windfall gains can lead to sustained economic growth. In the first section, we describe the main dimensions for the resource curse, based on a survey of the current literature. This discussion includes both pure economic explanations for the curse (such as effects on the non-boom tradable sectors, effects on skill accumulation, and the low linkages of the boom sector) and more political dimensions that manifest themselves via inappropriate economic management and rent seeking activities. The paper’s second section describes in detail the case of Botswana. This case study begins with a description of the economic development of Botswana since its independence, followed by a closer examination of the development of the mining sector and its contribution to economic growth. Finally, it explores the means by which the Government has managed the mineral boom.

2 The Resource Curse

"We are in part to blame, but this is the curse of being born with a copper spoon in our mouths."

— Keneth Kuanda,
former President of Zambia

Throughout the 1980s and early 1990s many resource abundant countries have suffered from low growth. This phenomenon has been termed the "Resource Curse" by Auty (1993), who argues that resource abundance is generally associated with disappointing rates of economic development. It should not be interpreted as an iron law, but rather as a strong recurrent tendency (Auty 1994a). Furthermore, it poses an interesting conceptual question as to why a "resource boom," either through an improvement in terms-of-trade or a resource discovery, does not lead to sustained economic growth. The paradox of the resource curse is that a resource boom provides valuable foreign exchange, attracts foreign investment, and provides raw material for production.

Some studies, however, find that the resource curse phenomenon is not widespread (Graham 1995 in Mikesell 1997). On balance, however, there is substantial evidence that supports the resource curse hypothesis, ranging from mineral rich to oil-exporting countries. Sachs and Warner (1995), for example, provide a substantive empirical investigation of 96 countries, and find that economies with a high ratio of natural resource exports to GDP in 1971 (the base year) tended to have low growth rates during subsequent years (1971 to 1989). Unfortunately, there is no clear

consensus on the measurement of resource abundance. The various metrics include export dependence (Sachs and Warner 1995), per capita land area (Wood and Berge 1994), export orientation, and population size (Surquin and Chenery 1989). In fact Stijns (2001) argues that the findings by Sachs and Warner (1995) are not robust when changes are made in the measure of natural resource abundance from trade-flows to reserves or production of natural resources. In contrast, Wood and Berge (1994) argue that the basic findings are not sensitive to these classifications.

The theory side of the resource curse literature seeks to explain the relatively weak performance of resource-abundant economies. Several explanations have been advanced, which offer a range of *economic* factors both internal and external to the economy. These include effects on production and investment structures within the economy and the price volatility of international primary goods markets (Auty 1998, Mikesell 1997). On the other hand, some authors argue that the root of the problem is *political* in that incorrect policy choice leads to the same outcomes and that resource booms inspire rent-seeking activities (Auty 1998, McMahon 1997, Ross 1999). The fundamental question that arises from this literature is whether or not resource abundance is inherently a precondition for poor economic performance (as the above quote by President Kuanda suggests), or whether the curse could have been avoided with an appropriate set of policies?

Economic Explanations of the Resource Curse

Export booms can cause major distortions in the economies of resource-abundant countries.

These distortions tend to affect the structure of production and investment, and can persist long after the boom subsides. They increase domestic income, affect savings and investment, government expenditures, and relative prices in different sectors of the economy. An export boom will typically involve a surge in foreign exchange via increased exports of the affected products (and not other tradable sectors). This leads to an appreciation in the real exchange rate. Changes in the real exchange rate reduce the relative prices of tradable manufactured products relative to non-tradable products, such as construction and services (Mikesell 1997). For instance, in Bolivia the real exchange rate appreciated by 17 percent from 1973 to 1974, and then doubled between 1979 and 1983. As a result non-mining activity was relatively uncompetitive and its share of exports slumped to 5.2 percent of total exports in 1985 (Auty and Evia 2001). However, there is no single reason for the resource curse and not all the suggestions in the literature apply to each resource-abundant country.

The effect on non-boom tradable sectors and the Dutch Disease

Many studies seeking to explain the resource curse (such as Usui, 1997; Auty, 1998) place major emphasis on the failure of resource-abundant economies to promote a competitive *manufacturing* sector, often termed the “*Dutch Disease*.”² The case of Peru, where GDP growth rates declined from 3.5 percent in 1970–1980 to negative 0.5 percent in 1980–1993, provides an adequate illustration of the damaging consequences for the manufacturing sector. During the 1980s, Peru experienced a resource-boom through dramatic increases in the price of copper and other minerals. The resulting appreciation of the real exchange rate

increased the relative export prices of non-boom tradable goods and subsequently damaged Peru’s manufacturing and agricultural sectors (Mikesell 1997).

One way to explain the apparent difficulties experienced in the manufacturing sector is to consider *how governments reallocate windfall gains* from the booming tradable (BT) sectors to non-tradable (NT) sectors (for example, construction), and non-boom tradable (NBT) sectors (such as manufacturing). A typical response to a resource-boom is to absorb the revenues into the domestic economy (that is, the NT sector), as was the case in Bolivia after the mineral-boom of the 1970s (Auty and Evia 2001). This “*spending effect*,” as it is termed in the Dutch Disease literature (for example, Usui 1997), leads to movements of labor and capital towards the NT sectors (McMahon 1997).

One of the reasons for the movement of labor and capital away from manufacturing was that NBT goods became more expensive relative to NT goods through the appreciation in real exchange rates, as was the case in Bolivia during the early 1970s (Auty and Evia 2001). As a result, it was quite common for mineral rents to be used for the protection of the NBT sectors through subsidies and *protectionist* strategies. However, the inadequate performance of the weakened NBT sectors during post-boom downswings required levels of subsidy from the mining tradable sectors that were unsustainable. This was the case in South America (Bolivia, Guyana, pre-Pinochet Chile) and sub-Saharan Africa (Zambia, Zaire and Nigeria) according to Auty (1994b). Another reason for deficiencies in manufacturing sectors is that governments tend to “*leap-frog*” labor-intensive manufacturing industries in favor of heavy and capital-intensive (HCI) industries, as was the case in Mexico and Brazil (Auty 1994a). There is also some evidence to suggest that countries which leap-frogged the labor-intensive manufacturing sector displayed

higher inequalities of income distribution (Auty and Kiiski, 2001 referring to the experience of southeast Asian countries).

In summary, it has been proposed in the literature that the greater the natural resource endowment, the higher the demand for NT goods, and, consequently, the smaller the allocation of labor and capital to NBT sectors. The obvious question is the extent to which relative losses in NBT sectors can explain low rates of overall economic growth. In terms of the Dutch Disease effect, the evidence has been inconclusive. In a survey of several empirical investigations, McMahon (1997) finds no substantive evidence of the Dutch Disease effect. In contrast, Auty and Evia (2001) argue that the Bolivian economy in the early 1970s showed clear signs of Dutch Disease through low diversification, with a smaller than expected agricultural sector and protected manufacturing sector with uncompetitive international outputs.

Skill accumulation and the resource curse

The manufacturing sector is often regarded as the principal source of technological progress, and as a consequence there are educational externalities associated with it. This externality effect comes through the knowledge and skills that are generated through the manufacturing sector. As a result, Sachs and Warner (1995) hypothesize that a shift in labor away from manufacturing will depress growth in labor productivity. Furthermore, a deterioration in the manufacturing sector could lead to a reduction in the demand for education and learning-by-doing and a commensurate fall in the long-term growth potential of an economy (Matsuyama 1992). In Matsuyama's model, forces that push the economy away from manufacturing and towards agriculture (the boom sector) will lower the growth rate of the economy (cited in Sachs and Warner 1995).

Sachs (1996) models the incentives to invest in education, by analyzing labor movements between the BT and NT sectors. Changes in resource-boom sectors, as explained above, push up the wages in the (unskilled) NT sectors. Therefore, younger workers will work in NT and they will be better off if they make no investment in education. Birdsall and others (1997) found evidence for the differences in the incentives to invest in education between resource-abundant and resource-deficient countries. However, there is little statistical evidence to suggest that natural resource production has a negative impact on the manufacturing sector, learning-by-doing, and ultimately economic growth (Stijns 2001).

The boom-sector: Low linkages with the rest of the economy

Primary goods are generally produced in an enclave with few backward and forward linkages to the rest of the economy. They are typically highly capital intensive, with a small (albeit well paid) workforce, and inputs are generally imported (Auty and Kiiski 2001). Hirschman (1958), Seers (1964) and Baldwin (1966) established these arguments more formally, by encouraging the view that linkages between the primary sector and the rest of the economy are minimal (in Sachs and Warner 1995).

Another implication of weak linkages of the primary goods sector is that the only way general benefits can be derived from a resource-boom is through the taxation of resource rents. Therefore, in the face of widely fluctuating export revenues, governments may find it difficult to promote economic growth. This disadvantage of low linkages was evident in Bolivia (Auty and Evia 2001). Furthermore, Mikesell (1997) found that governments experienced widely fluctuating export revenues (Mikesell 1997), leading to fluctuating levels in overall government revenues.

The Staple Trap Trajectory

Auty provides a more formal analysis of the resource curse by specifying a model that describes the behavior and incentive structure of resource-abundant economies experiencing resource booms. He attributes the symptoms of the resource curse to a pattern of behavior he calls a “staple trap” trajectory. Countries on this trajectory tend to experience strong Dutch Disease effects, closed economies, few incentives for the development of capital, and high dependency on the boom sectors for foreign exchange and revenues. When the boom subsides, groups with vested interests block the required adjustments to real exchange and wage rates.

An example consistent with the staple trap trajectory is that of Bolivia (Auty and Evia 2001). Bolivia was especially vulnerable to the staple trap. It exhibited Dutch Disease effects, which had already weakened the non-mining economy. Investment efficiency was low and the economy was not diversified. Most of the mineral windfall was not translated into investment and went into higher consumption. Perhaps most significantly, the resource boom created incentives to relax market discipline. In terms of macroeconomic policy, the government failed to sterilize the additional foreign exchange inflows and it used its hydrocarbon reserves as collateral for foreign borrowing, which increased to 78 percent of GDP from 1975 to 1979 (Auty and Evia 2001).

The resource curse thesis is merely a strong tendency and as such, exceptions are likely. More significantly, it has been suggested that prudent policy can avoid pitfalls (Auty 1994a). The next section, therefore, illustrates how incorrect policy can perpetuate the resource curse.

Political Dimensions to the Resource Curse

The economic after-effects of resource-booms have created hardship for resource-exporting nations. These hardships led to persistently slow growth. Furthermore, there appear to have been active policies pursued by governments that exacerbated the effects of the resource curse (Usui 1997). The next two sub-sections distinguish between policies that were *inappropriate* or misguided and those that were related to *rent seeking*. In either case, the root cause was substantial increases in government revenues caused by the boom.

Inappropriate economic management

Natural resource booms have often reinforced or created inappropriate economic policies in resource-abundant countries (McMahon 1997). Though there are a large number of studies on the implications of resource-abundant economies, there is little consensus on which countries have under-performed as a result of inadequate policy responses to a resource boom (Usui 1997). Nevertheless, there are some striking examples of inappropriate economic management.

McMahon (1997) argues that one of the most significant factors behind the negative impact of resource booms is the *irreversibility of government expenditure*. When the revenue streams from the boom subsided, it was very difficult to adjust expenditures down to levels on par with these smaller revenues. For instance, in Trinidad and Tobago there was public pressure to share the benefits of the boom, which led to large subsidies for food, fuel, utilities, and loss-making enterprises. By 1981, when the annual growth rate of GDP was actually negative, there was considerable political difficulty in making cutbacks (McMahon 1997). Furthermore, these increases in government expenditure sometimes went towards the civil service by way of an increase in the number of jobs and pay levels. In Côte d’Ivoire, for example, the

coffee and cocoa booms of 1976 to 1981 led to a 50 percent increase in expenditures on the civil service (McMahon 1997).

Similarly, there are many examples of governments investing windfall gains inefficiently. Unproductive *investment booms* were evident in many countries. Lal and Myint, 1996 (cited in Auty and Kiiski 2001) find that the efficiency of investment in resource-abundant countries collapsed during the 1970s. Furthermore, McMahon finds evidence in several countries of political pressure on government to spread investments towards failing industries. Governments tended to invest the windfalls in the NT sectors (for example, construction), or in projects with low rates of return. Options for investment were not in abundance, given the undeveloped and constrained nature of financial sectors and restriction on holding foreign assets (McMahon 1997). However, the key mistake was that recurrent cost and capacity issues (such as skill requirements) were not taken into account. In fact, the case of Botswana is exemplary of how to avoid these investment pitfalls (see below).

Auty (1993) provides an interesting argument, which attributes the low performance of resource-abundant economies to their ability to postpone reforms due simply to the large revenues from the primary sector. In particular, these large revenues reduced the incentives to develop competitive manufacturing sectors. Rents are used to support long-standing *import substitution strategies*,³ as part of the protectionism of non-booming tradable sectors (as already mentioned above), long after they have been of benefit (Auty 1998). This prolonged protection of non-boom tradable industries eventually reduces the competitiveness of manufacturing sectors (Mikesell 1997). Sachs and Warner (1995b) hypothesize that governments seek to protect the manufacturing sectors (in fear of the Dutch Disease) through protectionist trade policy.

They find evidence that increasing dependency on primary products is positively correlated with closed trade policy (cited in Auty and Kiiski, p14).

In order to finance expansionary fiscal policies and/or irreversible government expenditures, governments have been known to borrow on the strength of their booms. Examples of *boom-based borrowing* include Jamaica and Nigeria (Cuddington 1989; cited in McMahon 1997). Mexico implemented a highly expansionary fiscal policy aimed at rapid development, and spent its oil revenues in an imprudent way. Together with the onslaught of capital flight, these led to a severe current account deficit, leading Mexico to an accumulation of short-term debt (Usui 1997). The example of Mexico stands in stark contrast to that of Indonesia where a conservative stance to foreign borrowing was adopted.

Rent seeking

Inappropriate economic management can also be influenced by the effort of rent-seekers that are both within and outside of the public sector. For instance, in Brazil, rent-seeking groups blocked reforms that would have removed the protection of the uncompetitive urban-industrial areas (Auty 1995). In fact, it has been noted that resource-abundant economies are often more susceptible to rent-seeking behavior, due to the concentration of wealth either in the public sector or in the hands of a small number of companies (McMahon 1997). Auty (1998) argues that the existence of large resource rents distracts attention away from long-term economic development goals and towards rent seeking activity.

Bates (1994 cited in McMahon 1997) argues that the traditional functions of the state, in light of a resource-boom, give way to the redistribution of revenues. As such, socio-

economic development goals are pushed to the side by rent seeking and patronage. Lane and Tornell (1995 cited in McMahon 1997) contend that a resource boom can lead to a “feeding frenzy” in which rent seekers fight for the natural resource rents.

Policy Suggestions from the Literature

The resource curse literature, as a result of identifying the nature of the problem as well as analyzing success stories, is furnished with policy suggestions on how to avoid or mitigate the detrimental impact of the resource curse. One caveat to these policy prescriptions is that they cannot be applied across all resource-abundant economies experiencing resource booms. Nevertheless, there are some general principles that arise out of the literature, which stand out in relation to the Botswana experience:

- *Investment strategy:* Do not invest beyond the absorptive capacity; consider all the recurrent costs associated with new investment programs; only invest when the expected rate of return is considerably above that which can be earned in risk-less foreign assets; in fact some argue that it is better to leave windfall gains in the hands of the private sector (Collier and Gunning 1996 in McMahon, p38); pursue investments with high social rates of return, particularly those in human capital and infrastructure (Seymour 2000)
- *Economic diversification:* Improves economic performance by increasing the flexibility with which an economy can respond to external or internal shocks (Daniel 1992 in Auty 1994b). Failure to

diversify is one important reason why many mineral economies experience such disappointing rates of economic growth (Auty 1994b)

- *Macroeconomic related policies:* Avoid large-scale debt; accumulate budget surpluses (for example, Indonesia, Usui 1997); follow a prudent exchange rate management policy by controlling the appreciation of the exchange rate (Mikesell 1997); create a stabilization fund to guard against commodity-price volatility (Seymour 2000).

Other more specific policy suggestions include the promotion of autonomous fiscal and monetary authorities in response to the onslaught of rent seekers and special interest groups (McMahon 1997), and the adoption of Environmental and Natural Resource Accounting (EARA) policies which provide a rationale for the effective management of mineral windfalls to secure sustained rapid economic growth (Auty and Evia 2001).

The above literature review highlights several channels of influence through which resource booms have lead to negative effects in many resource-abundant economies. However, it is argued in this paper that being endowed with natural resource wealth is not an inescapable pre-condition for unsustainable economic growth. From these theoretical and empirical investigations of the resource curse, a number of policy suggestions have been put forward. The following case study of Botswana demonstrates how the adoption of such policy suggestions can lead to outcomes in contrast to the resource curse thesis.

3 The Case of Botswana

"... we intend to conserve our resources wisely and not destroy them. Those of us who happen to live in Botswana in the 20th century are no more important than our descendants in centuries to come."

— Hon. Sir QKI Masire,
former President of Botswana

Since its independence from Britain in 1966, Botswana has become one of the great success stories of developing countries. Between 1966 and 1989, it was the world's fastest growing economy. Botswana's Gross Domestic Product (GDP) grew at an average of 13.9 percent per annum between 1965–80, at an average of 11.3 percent between 1980–89, and at an average of 4.75 percent between 1990–98 (The World Bank 1991, 1998, and 2001). At independence, Botswana was among the twenty-five poorest countries in the world. Since then, the mineral sector has grown significantly and is now a dominant part of Botswana's economy. By 1989 the country was ranked as a lower-middle income economy and in 1998, income per capita had reached \$3,460 (in constant 1995 USD) and Botswana was considered an upper-middle

income economy. Compared with other Sub-Saharan African countries, the economic growth of Botswana appears even more striking (Table 1).

This rapid economic growth is not totally surprising given the discovery of large mineral deposits, mainly diamonds. What is remarkable about Botswana is the way in which the mineral boom was managed. By avoiding common pitfalls of mineral booms, such as the "Dutch Disease," the Government was able to continuously manage growth well. The purpose of this section is to explore the factors that led to such and extraordinary economic record, and to draw the lessons learned.

Development of the Mining Sector

The mining sector is largely dominated by the diamond industry and, to a lesser extent, by copper-nickel. The first diamond mine was discovered in 1967 by De Beers in the region of Orapa. Since then this mine has yielded more than 118 million carats of diamond. Today, diamond mining is dominated by the Debswana

Table 1. Comparison between Botswana and Sub-Saharan Africa for selected indicators

	Botswana			Sub-Saharan Africa		
	1965	1989	1998 ^a	1965	1989	1998
GNP per capita (constant 1995 USD)	379	2,84	3,460	529	581	539
Life expectancy at birth (years)	50	57	46 ⁵	43	51	50
Infant mortality rate (per 1,000 live births)	108	55	58	149	101	94
Number of physician per 100,000 persons	4	19	20	3	5	
Pupil to teacher ratio in primary school	40	32	25	42	42	41

Source: The World Bank 1991, 1998, 2001.

company which is jointly owned by the government (more than 50 percent) and by DeBeers. In 1994, the three main diamond mines in Botswana—Orapa, Letlhakane and Jwaneng- produced 15.5 million carats of diamond.

Mineral development was the major contributor to the growth in Botswana's economy. The mining sector reached its peak in 1989, when it accounted for more than 50 percent of GDP (Table 2). It was also a major generator of revenue for the government. The mineral share of government revenue grew from almost nothing at independence to about 60 percent in 1989. It has since been oscillating around 50 percent of total revenue. The contribution of diamonds and copper-nickel to total exports varied between 75 percent and nearly 90 percent as of 1980 (except for 1981 when the diamond market was depressed). Despite its dominant role in economic production, government revenue, and exports, the mining sector is not a major employer. Due to its capital intensive structure, the sector only employed around 9 percent of the labor force in the early 1980s, and around 4 percent in 1989.

Management of the Mineral Boom

In the 1970s, many countries experienced important export sector booms. Mexico and Nigeria benefited from large increases in oil prices. Colombia, Cote d'Ivoire and Kenya benefited from an increase in coffee prices in the mid-1970s, as well as from technological improvements in coffee production. However, in the years that followed, many of these countries suffered from balance of payment problems and debt crises. As explained above, one of the reasons underlying this effect is that an increase in government revenues (resulting from a boom in the export sector), tends to be

Table 2. Contribution of the mining sector to GDP, government revenue, and export earnings in selected years

Year	Mineral share of total GDP (%)	Mineral share of total revenues (%)	Mineral share of export earnings (%)
1967	1.6	0	1
1972	11	5	44
1976	14	27	57
1980	23	31	81
1981	22	33	65
1983	32	25	75
1985	41	47	87
1987	44	55	88
1989	51	59	89
1991	40	54	87
1993	33	40	82
1995	33	51	76

Source: Central statistics office referred to in B. Gaolathe 1997, and in Harvey and Lewis 1990.

followed by fast increase in government spending, resulting in an overall increase in domestic costs. Consequently, the competitiveness of other tradable goods⁶ are likely to be reduced creating a slowdown in the growth of other sectors of the economy. Another common problem resulting from export booms is that, once the boom is over, governments find it very difficult to cut back on spending, creating serious economic consequences and possibly a debt crisis.

Botswana has managed to avoid most of the economic problems associated with export booms by adopting appropriate macroeconomic policies. Two main *objectives* guided Botswana's economic policies: avoid external debt and stabilize growth on one hand, and encourage economic diversification on the other (Hill and Mokgethi 1989).

The economic *policies* adopted by the government to achieve these objectives included the following. To avoid excessive increases in expenditure during boom periods, the government accumulated international reserves and ran budget surpluses earmarked for stability spending in leaner periods. This policy

avoided having to drastically cut expenditures during bad years and reduced inflationary pressures. A second central policy was to manage the nominal exchange rate to avoid real appreciation of the local currency. This was achieved largely through the accumulation of international reserves. Preventing the local currency from appreciating allowed other tradable goods to maintain competitiveness on world markets, and hence encouraged economic diversification.

Management of government's budget and accumulation of international reserves

As shown in Table 2, mineral revenues constituted a major source of government revenue. Consequently, any fluctuation in diamond revenues would directly affect government revenue and hence spending. In line with the above objectives, the government decided not to increase spending whenever revenue increased. Instead, it based expenditure levels on longer-term expectations of export earnings and government revenues. Despite considerable political pressure, the temptation to spend everything in the treasury was successfully avoided. Instead, any excess revenue was used to build up foreign exchange reserves at the Bank of Botswana. These reserves were thus available to be drawn on in years when revenues were low.

Control over expenditures: Government savings can be measured by the budget surplus. As can be seen in Table 3, the government saved a large fraction of revenues, avoided excessive increases in expenditure, and sustained high recurrent surpluses. Faced in 1981/82 and in 1994 with a fall in diamond export earnings, surpluses declined while expenditure levels were maintained. The government thus managed to avoid drastic cuts in expenditures when revenues decreased.

This ability to maintain expenditures in line with long term growth had been a strong stabilizing force.

Investment decisions: Given the high level of savings, the government had to decide how to allocate its surpluses between international reserves and domestic investment. A common problem in countries where windfall gains accrue principally to the government is that it will tend to invest in projects that have lower rates of return vis-à-vis the private sector. It is often argued, therefore, that a substantial part of the windfall gains should be kept in the hand of the private sector. However, the public allocations of the gains in the case of Botswana were done very wisely.

Table 3. Government current revenue, expenditure, and surplus (million current pula)

Year	Current revenue	Current expenditure	Current surplus
1971	18	18	0
1972	28	20	7
1973	40	26	14
1974	61	36	25
1975	78	47	31
1976	70	63	6
1977	99	76	23
1978	132	100	32
1979	209	137	72
1980	266	179	88
1981	277	212	65
1982	343	270	73
1983	508	316	192
1984	757	416	341
1985	1,081	498	583
1986	1,446	728	719
1987	1,707	963	745
1988	2,429	1,217	1,212
1989	2,695	1,478	1,217
1990	3,600	1,859	1,741
1991	3,970	2,219	1,752
1992	4,505	2,618	1,887
1993	5,136	3,254	1,882
1994	4,393	3,274	1,119
1995	5,383	3,986	1,397

Source: Statistical Information Management and Analysis, The World Bank.

Domestic investments, as measured by development expenditure, were based on expected intermediate and long term revenue flow, taking into account the recurrent expenditure involved in each new development project. Faced with a boom, countries often make investment decisions without proper account of the recurrent expenditures associated with each new investment. As a result, once the boom is over countries are unable to cover the recurrent costs of all the new investments, and projects often have to be abandoned before completion.

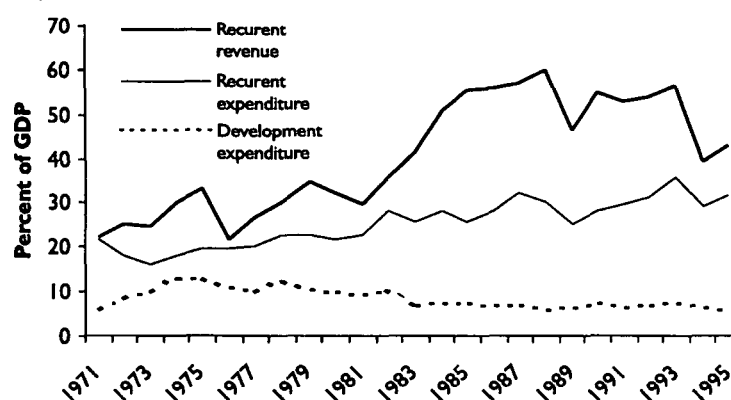
In Botswana, however, the government astutely avoided undertaking any new development projects if there was no provision to cover the long term recurrent costs. The government has consistently produced National Development Plans that determined its spending. Once a plan is voted into force by parliament, it is illegal to implement any additional public projects without going back to parliament. This system has proven to be effective in controlling spending, because it prevents the inception of a project for which no provision was made to cover the total costs over time.

Moreover, decisions to invest domestically took into account the absorptive capacity of the economy. Since the availability of skilled manpower was a large constraint in Botswana, the government felt that increasing development expenditure beyond the capacity of the country would result in a rate of return lower than what could have been earned on alternative assets (international reserves in particular). With reference to Figure 1, although development spending could have been further increased (given the huge inflow of

revenues), they were intentionally kept well below revenue levels. Avoiding over-investment also helped reign in inflationary pressures.

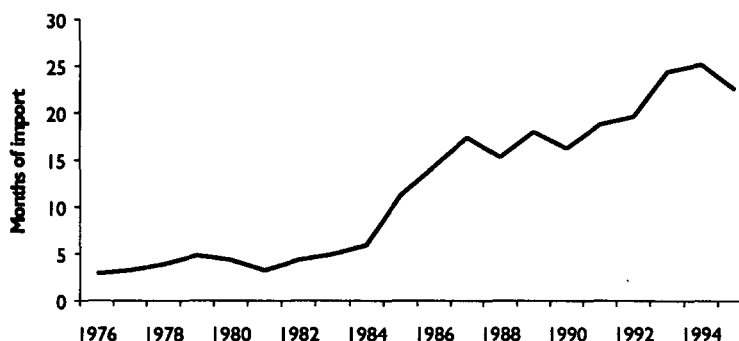
International investment: Between 1976 and 1996, foreign exchange reserves increased from US\$75 million to US\$5 billion. Once again, the rationale to save windfall gains from mineral revenues for use when export receipts declined. The part of the recurrent surpluses (Table 3) not invested domestically was used to accumulate foreign reserves. By 1995, the government had accumulated reserves equal to 25 months of import cover (Figure 2). If these reserves were not accumulated during booms, the government would have had to either borrow or reduce

Figure 1. Revenue, expenditure, and development expenditure as a percent of GDP



Source: Statistical Information Management and Analysis, The World Bank.

Figure 2. Reserves in months of imports of goods and services⁷



Source: International Financial Statistics, International Monetary Fund.

imports when diamond revenues declined. Instead of having to respond under pressure with drastic, fast acting policies, the government had considerable leeway for more thoughtful decision making. Another advantage of investing a part of the windfall gains in foreign exchange rather than domestically is that it prevents the exchange rate from excessively appreciating.

When hit with the decline in diamond earnings in 1981/82, as mentioned above, the government used some of the store of savings to avoid any drastic decline in expenditures. However, faced with uncertainty concerning the duration of the diamond crisis, the government took the precautionary measure of assuming that it might be a long term crisis rather than a temporary one. As a result, it quickly adopted a package of adjustment policies, which included limiting increases in lending, increasing the prime lending rate, freezing wages and salaries and devaluing the pula.⁸ The rationale for reacting quickly with a package of policies was twofold. First, to spread a moderate impact on the whole economy rather than making one drastic change in a particular sector. Second, to take moderate measures before the situation became too serious and more extreme actions might be required.

Management of the exchange rate and economic diversification

The Government of Botswana paid close attention to the management of foreign

exchange rates. A common problem in countries experiencing export booms is an appreciation of the local currency leading to a reduction in the competitiveness of other sectors in the economy. By avoiding real appreciation of the pula, other traded goods could continue to compete successfully. Botswana's policy was, therefore, to use the exchange rate as a tool to promote economic diversification. The accumulation of foreign exchange reserves during boom periods was consistent with this objective. However, even if economic diversification was a goal, the government had also to worry about inflation. In times where the stability of domestic prices dominated the diversification goal, the pula was allowed to appreciate.

The effort of the government to diversify the economy can be seen in Table 4. Although the share of manufacturing value added in GDP is very small (only 5 percent in 1995), its growth has been very dynamic, especially when compared to the average growth of the manufacturing sector in Sub-Saharan African countries or upper-middle income economies. The growth of the service sector was also very important, far outweighing the growth in other similar countries. The agricultural sector, as discussed below, was the sector that did not succeed. It grew at a very slow, occasionally negative rate, and its contribution to GDP fell from 13 percent in 1980 to less than 4 percent in 1995.

Table 4. Growth of output for selected groups of countries, 1970–1996
(average annual growth rate, percentages)

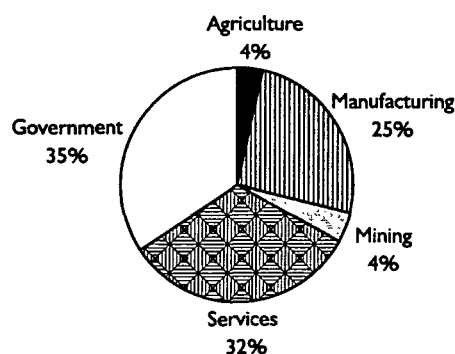
	GDP			Agriculture			Industry ⁹			Manufacturing			Services		
	70-80	80-90	90-96	70-80	80-90	90-96	70-80	80-90	90-96	70-80	80-90	90-96	70-80	80-90	90-96
Botswana	14.5	10.3	4.1	8.3	2.2	-1.2	17.6	11.1	1.8	22.9	8.8	2.6	14.8	11	7.1
Upper-middle income	5.9	1.4	2.9	3.2	2.5	1.7	6.1	0.7	2.9	6.6	1.3	3.4	6.3	2.0	3.7
Sub-Saharan Africa	3.8	1.7	2.0	1.7	1.8	2.1	3.8	1.1	0.9	4.3	1.3	0.8	4.9	2.2	2.0

Source: The World Bank 1995 and 1998.

Given that the employment potential of the mining sector is limited due to the capital intensive nature of its operation, the creation of jobs in other sectors of the economy was a major concern for the government. Even if the government's overall strategy was to minimize intervention, it still adopted a few incentives to create jobs in the manufacturing and services sectors.¹⁰ Despite the small size of the manufacturing sector, it had great potential to create employment, especially in the construction sector (Figure 3). Employment in manufacturing and services has grown tremendously during the past decades and in 1989 they represented 25 and 32 percent of formal employment respectively. Although employment in agriculture only represents 4 percent of formal sector employment, it accounts for the majority of informal sector employment. It is important to note that in Botswana formal sector employment only represents 30 percent of the total labor force. The remaining 70 percent constitute the informal sector employment.¹¹

Not only has Botswana's government successfully managed revenues from the mining sector, it has also paid considerable attention to environmental protection in implementing mineral projects. Commitments to environmental protection were part of the concession agreements with mining companies.

Figure 3. Formal employment by sector, 1989¹²



Source: Labor Statistics 1989, Gaborone, Republic of Botswana cited in Perrings (1996).

Moreover, the legal framework to control environmental impacts of mining operations is well established.¹³ Examples of actions taken to protect the environment during mining operations include: the incorporation of a sulfur reduction plant into the Selebi-Phikwe copper-nickel smelter; the installation of power lines underground to save the flamingo population near the Sua Pan soda ash company; and the suppression of coal dust by the wetting system in the coal mine of Moruplue Colliery (B. Gaolathe 1997). Although diamond mines do not pose serious environmental hazards, various measures were still taken to ensure that diamond mining operations would be as environmentally friendly as possible. A major aspect underlying Botswana's environmental protection from mining activities is the internalization of environmental costs, whereby private operators were responsible for implementing protective measures.

Other Aspects of the Economy

In addition to the protection of the environment from mineral activities, Botswana is among the top ten countries in terms of preserving its natural environment; about 19 percent of its total land area is estimated to be nationally protected (The World Bank 1998). This area comprises national parks and game reserves, some of them having gained international fame for their abundant wildlife (for example, the Central Kalahari Game reserve and the Gemsbok National Park). Despite these accomplishments, it is fair to say that Botswana has not solved all of its environmental problems. Large shortcomings remain and need further efforts, such as deforestation from overgrazing, soil erosion and water pollution. Through many years of sustained growth, there have also been two main shortcomings which contrast with the overall picture of economic success: the agricultural sector, and income distribution.

The agricultural sector: The poor performance of the agricultural sector can be seen in Table 4.

Between 1980–90, while the industrial, manufacturing and services sectors grew at an average rate of 11 percent, 23 percent and 11 percent respectively, the agricultural sector grew at only 2.2 percent. More recently, between 1990–96, agricultural GDP contracted at an average of 1.2 percent. The decline in agricultural productivity is mainly the result of severe and prolonged periods of drought experienced by the country and the over-utilization of rural resources. The evidence for increasing pressure on scarce rural resources is visible through the depletion of water reserves available to villages, water pollution problems, overgrazing, rangeland degradation, and the depletion of wood around large settlements. While the dependence of agricultural growth on the sustainable use of agricultural resources has been recognized in Botswana, action to improve the situation has been lacking. Given that agriculture accounts for 70 percent of the labor force, this is an issue of considerable concern. As explained in paragraph 46, formal sector employment constitutes only 30 percent of the labor force, while the informal sector employment accounts for the remaining 70 percent, most of which is in the agricultural sector. Robust employment in the agricultural sector would have a very positive affect on the overall rate of unemployment, which is currently quite high.

Income distribution: Unequal income distribution in Botswana has always been recognized as a major problem. Many claim that income inequality has been widening since independence and that much of the population did not benefit from the overall growth in the economy. Income distribution surveys indicate that income

inequality has neither improved nor worsened in urban areas and has barely improved in rural areas. Table 5 presents the Gini¹⁴ index calculated in each of the 3 surveys undertaken in Botswana since independence. World Bank estimates of income distribution also suggest that very little improvement (almost none) has been made since independence. In 1970–75, it was estimated that the share of income accruing to the lowest 20 percent of the population was 4 percent, and the share of income accruing to the top 20 percent of the population was 60 percent. By 1986 these numbers had changed to 3.6 percent and 58.9 percent respectively.

Identifying the factors responsible for the lack of improvement in income distribution in Botswana is a complex task. Nevertheless, two issues seem relevant. First, many authors recognize that long periods of drought are generally associated with an increase in inequality. This occurs because large and rich farmers with large reserves of livestock can better endure drought than poor ones. Second, it is also accepted that rapid economic growth and resource-abundance usually results in increasing inequality. In the context of the mineral development of Botswana, this view seems to be correct; the direct benefits were mainly restricted to a fortunate minority. Despite Botswana's bad performance in terms of income distribution, it is still favorably comparable with other resource-abundant countries, such as Brazil and Peru (Auty, personal communication). Nevertheless, the Government's recognition of this problem has

Table 5. Gini index in Botswana

	Rural income distribution survey 1974/75	Household income and expenditure survey 1985/86	Household income and expenditure survey 1993/94
Per capita urban areas		0.54	0.54
Per household rural areas	0.52	0.51	0.50

Source: Central Statistics Office, cited in Hudson and Wright 1997.

pushed it to invest in many social aspects of the economy, such as education and health. But the problem that seems to be facing a now better

educated population is one of serious unemployment (estimated at 21.2 percent in 1994).

4 Conclusion

The “resource curse” literature shows, through various channels of influence, how resource booms can actually harm resource-abundant economies. A review of the literature offers both economic and political dimensions to the problems of resource-abundant economies. For instance, an increase in copper prices in Peru lead to an appreciation of the real exchange rate which subsequently damaged the manufacturing and agricultural sectors. In Bolivia, low linkages of the booming mineral sector to the rest of the economy did not promote sustainable economic development. In terms of political influences, Brazil’s attempts to remove protection for uncompetitive sectors were blocked by rent seeking groups. In short, the curse of resource booms is very real. However, the question raised in this paper is whether or not resource-abundance and subsequent resource-booms lead to inevitably low economic performance.

The case of Botswana illustrates how a natural resource curse is not necessarily the fate of all

resource abundant countries, and that prudent economic management can help avoid or mitigate the detrimental effects of the resource curse. The discovery of large diamond deposits allowed Botswana to witness an important export boom and the world’s fastest growth in GDP. The country moved from being the 25th poorest country in 1966 to an upper-middle economy thirty years later. The most important factor in Botswana’s long term sustained economic growth was its ability to avoid common problems associated with export booms and the adoption of sound economic policies. Its main objectives were to avoid external debt, stabilize growth and to encourage economic diversification. This paper has explored the various economic policies adopted by the Botswana government to achieve those objectives. Even if the agricultural sector and income distribution have had a less successful fate, various lessons could be drawn from Botswana’s capacity to manage the revenue of the resource booms and to sustain long term economic growth.

Notes


1. This example is drawn from a similar example cited in McMahon (1997).
2. The Dutch Disease model is named after the disappointing experience of the discovery of natural gas in the Netherlands. The term is popularly used to refer to all economic hardships associated with resource exports. Its more formal definition, however, describes two effects of a resource boom: an appreciation of the real exchange rate; the tendency to draw capital and labor away from non-boom tradable sectors, making them more un-competitive (Ross 1999).
3. Import substitution strategies were promoted by the United Nations Economic Commission, as part of the development campaign of the 1960s and 1970s (cited in Sachs and Warner 1995).
4. 1998 or latest available year.
5. The decrease in life expectancy since the early nineties is mainly due to the high incidence of HIV infection in Botswana.
6. By other tradable goods, it is meant tradable goods other than the one experiencing a boom (such as minerals, in the case of Botswana).
7. Represents international reserves expressed in terms of the number of months of import of goods and services which could be paid for.
8. For additional information please refer to Hill and Mokgethi (1989).
9. Industry includes mining.
10. For more information on this issue, please refer to Siwawa-Nadi (1996).
11. The size of the labor force estimate is based on the projection of the population assumed to be economically active. Informal sector employment is the difference between the estimated labor force and formal employment (Perrings 1996).
12. Manufacturing includes: electricity, water, and construction. Services include commerce, transport, and financial.
13. The legislation related to the environmental impacts of mining operations include: The Atmospheric Pollution Prevention Act of 1971; the Mining, Quarries, Works, and Machinery Act of 1973; and the Mines and Mineral Act of 1976.
14. A Gini index measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality while an index of 100 implies perfect inequality (The World Bank 1998).

References

- Auty, R. 1993. *Sustaining Development in Mineral Economies: The Resource Curse Thesis*. Routledge, London.
- _____. 1994a. "Industrial Policy Reform in Six Large Newly Industrializing Countries: The Resource Curse Thesis." *World Development*, Vol 22, No 1 pp. 11-26.
- _____. 1994b. "The Resource Curse Thesis: Minerals in Bolivian Development, 1970-90." *Singapore Journal of Tropical Geography*, Vol. 15, No. 2 pp. 95-111.
- _____. 1995. "Industrial Policy, Sectoral Maturation, and Postwar Economic Growth in Brazil: The Resource Curse Thesis." *Economic Geography* vol. 71 No. 3.
- _____. 1998. "Resource Abundance and Economic Development: Improving the Performance of Resource-Rich Countries." *The United Nations University World Institute for Development Economics Research*, Helsinki.
- Auty, R., and J. L. Evia. 2001. "A Growth Collapse with Point Resources: Bolivia." Chapter 11 in Auty, R., ed. *Resource Abundance and Economic Development*. WIDER Studies in Development Economics, Oxford University Press.
- Auty, R. and S. Kiiski. 2001. "Natural Resources, Capital Accumulation, Structural Change and Welfare." Chapter 2 in Auty, R., ed. *Resource Abundance and Economic Development*. WIDER Studies in Development Economics, Oxford University Press.
- Birdsall, N., D. Ross, and R. Sabot. 1997. "Education, growth, and inequality." In N: Birdsall and F. Jasperson, eds. *Pathways to Growth: Comparing East Asia and Latin America*. Washington DC: Inter-American Development Bank, 93-127.
- Gaolathe B. 1997. "Development of Botswana's Mineral Sector." *Aspects of the Botswana Economy, Selected Papers*.
- Gaolathe N. 1997. "Botswana's Boom and Recession Experience: A Discussion." *Aspects of the Botswana Economy, Selected Papers*.
- Harvey, C., and S. Lewis. 1990. *Policy choice and development in Botswana*. St Martin's Press, New York.
- Harvey, C. 1993. "Botswana: Is the Economic Miracle Over?" *Journal of African Economies*, Vol. 1, No. 3.
- Hill, C., and N. Mokgethi. 1989. "Botswana: Macroeconomics Management of Commodity Booms, 1975-86." *Successful Development in Africa*, Economic Development Institute of The World Bank.
- Hudson, D., and M. Wright. 1997. "Income Inequality in Botswana—Trends Since Independence." *Aspects of the Botswana Economy, Selected Papers*.
- McMahon, G. 1997. "The Natural Resource Curse: Myth or Reality?" mimeo, World Bank Institute.
- Mikesell, R. "Explaining the Resource Curse, with Special Reference to Mineral-Exporting Countries." *Resources Policy*, Vol. 23, No. 4, pp. 191-199, 1997
- Mohohlo, L. 1997. "Central Banks as Protectors of National Wealth: Botswana's Case." *Aspects of the Botswana Economy, Selected Papers*.

- Perrings, C. 1996. *Sustainable Development and Poverty Alleviation in Sub-Saharan Africa: The Case of Botswana*. Macmillan Press, London.
- Ross, M. 1999. "The Political Economy of the Resource Curse." *World Politics*, Vol. 51, No. 2, pp. 297-322.
- Sachs, J., and A. Warner. 1995. "Natural Resource Abundance and Economic Growth." Development Discussion Paper No. 517a, Harvard Institute for International Development.
- Seymour, J.M. 2000. "East Timor's Resource Curse?" Global Policy Forum, UN Security Council. <<http://www.globalpolicy.org/security/natres/oil/001130et.htm>>.
- Siwawa-Ndai, P. 1997. "Industrialization in Botswana." *Aspects of the Botswana Economy, Selected Papers*.
- Stijns, J. C. 2001. "Natural Resource Abundance and Economic Growth Revisited." (Unpublished Second Draft) University of California at Berkeley.
- Syrquin, M., and H. B. Chenery. 1989. "Patterns of Development 1950 to 1983." World Bank Discussion Paper 41, Washington DC: World Bank.
- Usui, N. 1997. "Dutch Disease and Policy Adjustments to the Oil Boom: A Comparative Study of Indonesia and Mexico." *Resources Policy*, Vol. 23, No. 4, pp. 151-162.
- Wood, A., and K. Berge. 1994. "Exporting Manufactures: Human Resources, Natural Resources and Trade Policy." *Journal of Development Studies*, Vol. 34, pp. 35-59.
- The World Bank. 1998. *World Development Indicators*.
- _____. 2001. *World Development Indicators*.
- _____. 1991. *World Development Report*.
- _____. 1995. *World Development Report*.
- Wright, M. 1997. "The Use of Mineral Revenues in Botswana: Super Caution vs. Pragmatism." *The Research Bulletin*, Vol. 15 No.1, Bank of Botswana.

Environment Department
The World Bank
1818 H Street, N.W.
Washington, D.C. 20433
Telephone 202-473-3641
Faxsimile 202-477-0565



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