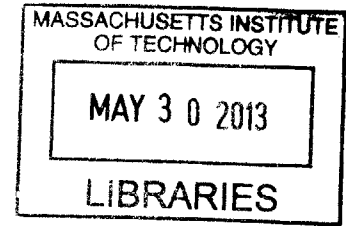# The Development Stories of Equatorial Guinea and Botswana

A Game Theory Model of How Public-Private Partnerships Can Turn Resources
from a Curse into a Blessing

By

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B.S. International Economics and Management
Università Commerciale Luigi Bocconi, 2010

SUBMITTED TO THE MIT SLOAN SCHOOL OF MANAGEMENT IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE IN MANAGEMENT STUDIES
AT THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

JUNE 2013

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ABSTRACT

The growth acceleration episodes characterizing Botswana and Equatorial Guinea were based on the respective discoveries of diamonds and oil. However, while Botswana, already characterized by inclusive and democratic institutions, succeeded in transferring much of the benefits deriving from the natural resource to society, Equatorial Guinea's corrupt government retained all the oil-generated wealth and prevented the population's standard of living from improving at a pace proportional to the country's growth. The two countries also differ in terms of their vulnerability to the "resource curse" phenomenon, due to their unequal level of economic diversification both within the major natural resource sector and across several industries.

This Thesis firstly adopts a deep analytical approach to compare the two countries' development records and to understand the discrepancy in the *quality* of the two growth acceleration episodes. The second main contribution of this study consists in the analysis of the potential benefits resulting from the implementation of Public-Private Partnerships in the developing world. The methodology applied in the last section derives from Game Theory, a branch of Economics increasingly adopted in applications to real-world circumstances. In this specific case, the results of this coordination exercise between public and private parties will present very different implications for a democratic country as Botswana and for a corrupt one as Equatorial Guinea.

Thesis Supervisor: Simon Johnson
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0. Introduction

De Beers' main marketing statement is "Diamonds are forever". In line with a quite different interpretation, Fabrizio De André, a highly celebrated Italian singer of the 70's, wrote in his song *Via del Campo*: "Dai diamanti non nasce niente, dal letame nascono i fior," meaning "Nothing grows of precious diamonds, out of dung flowers do grow." None of these statements are fully true, but De André's one is certainly more realistic.

First of all, diamonds are clearly *not* forever, and any country's resource endowment is sooner or later doomed to complete depletion. As a result, all resource-rich countries are potentially vulnerable to the realization of the "resource curse," thus developing an excessive dependence on the resource to spur and sustain growth.

The Italian singer is certainly too categoric in his affirmation. Truly, diamonds as a natural resource are neither necessary nor sufficient to set a country on a positive development path; nonetheless, they could facilitate the attainment of this goal by providing significant fiscal resources that, if allocated efficiently and productively, could boost growth and even prevent the "resource curse" from materializing. The "allocative condition" is, however, very difficult to implement in developing countries characterized by a lack of democracy and a corrupt administrative and political spheres.

This Thesis, by first comparing Botswana's and Equatorial Guinea's development records, will shed light on how gaps in institutional quality can be reflected in significant discrepancies concerning resource utilization and vulnerability to the "resource curse".

First of all, Chapter 1 will compare the two countries in terms of their history and colonial past, providing an initial description of the institutions characterizing their societal forms before the XXth century discoveries of natural resources. Chapter 2 will introduce the concept of "resource curse" and explain to what extent both countries might be vulnerable to the realization of this phenomenon. In Chapter 3, a first section will define the concept of "growth acceleration" according to the main trends in the economic literature; two other sections will examine the growth acceleration episodes in Botswana and Equatorial Guinea, defining both countries' developmental track according to a relevant set of measures and statistics. The analysis presented in Chapter 4 will adopt an endogenous institutional perspective also in consideration of both countries' involvement in regional and international

agreements. In Chapter 5 I will study the effects of the natural resource-driven increase in foreign investment in Botswana and Equatorial Guinea from the BB-NN model's angle. Chapter 6 will firstly introduce the concept of Public-Private Partnership (PPP) and related best practices; the second section of this chapter will be entirely dedicated to a Game Theoretic analysis of a PPP. The concluding remarks about this analytical journey will be presented in Chapter 7.

1. Does the colonial past matter? Two "Histories" in comparison

1.1 Botswana: a reiterated institutional success

To introduce this section dedicated to a retrospective analysis of Botswana's success with an extract from Landell-Mills (1992) is particularly appropriate: "Botswana is the only African country that has managed to transform its colonial heritage into a viable democracy without first passing through a period of authoritarian rule, mainly as a result of the wise political leadership and a large measure of good fortune."[1]

Botswana is a landlocked country, sharing borders with Namibia, South Africa, and Zimbabwe. Characterized by a semi-arid climate causing periodic droughts, it is slightly smaller than Texas[2] in size and the 84% of its territory is covered by the Kalahari Desert[3]. For this reason, the majority of the population inhabits the eastern part of the country, where the majority of the country's arable land is located.

The etymology of the word "Botswana" derives from *Tswana,* the name of the tribe inhabiting the country's territory. Despite the centralized nature of the Tswana State, a democratic representation was consistently assured to the leaders of different communities. The chief, the *kgosi,* was considered as the absolute authority in the country, second only to his predecessors and to the God *Modimo*[4]. The Tswana chief's authority over the community was ensured by three main powers he held in full: the political, the magical (i.e. the tribal meaning of "religious"), and the economic one. Leaders of different Tswana states were considered as advisors to the *kgosi;* their roles were formalized in (1) the *dikala tsa kgosi,* the body including the most confidential advisors to the *kgosi* who were not chosen on the basis of their social status and in (2) the councils of *Bagolwane* specifically representing the interests of the Tswana headmen. The Tswana assemblies, the *dikgotla,* were fairly centralized by allowing participation to a very small circle of individuals; if the *dikgotla* were similar to

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[1] LANDELL-MILLS, P., 1992. Governance, Cultural Change, and Empowerment. *The Journal of Modern African Studies,* **30**(4), p. 544.
[2] Central Intelligence Agency (2013) *The World Factbook: Botswana.* [online] Available at: https://www.cia.gov/library/publications/the-world-factbook/geos/bc.html
[3] ACEMOGLU, D., JOHNSON, S., and ROBINSON, J., 2002. *An African Success Story: Botswana,* p. 9. CEPR Discussion Paper No. 3219. Available at SSRN: http://ssrn.com/abstract=304100
[4] Being the God a living man, the chief was the only person allowed to approach him, a privilege not even granted to the priests.

modern Regional Councils, we could assimilate the *kgotla* (composed of a restricted group of adult males) to the National Assembly.

Botswana's land was a public resource, while cattle, the second most important form of economic wealth, were private and their distribution was managed by the chief according to an individual's social status. In line with an evil connotation of any political conflict, the Tswana society committed to a fully peaceful resolution of any confrontation emerging in the state; lacking a permanent army, they assembled an *ad hoc* one in the case of impending need. Accordingly, conflicts were extremely rare if nonexistent also amongst the multiple ethnic groups sharing the territory of current Botswana. Despite the fact that nearly 85% of the population currently speaks the official language *Setswana*[5], ethnic diversity still fundamentally defines the country's society. The Tswana tribe has always fostered the integration of other groups in their institutional apparatus in exchange for the payment of a tribute; thus, homogeneity and "inclusive pluralism" developed internally to then become cardinal elements of modern Botswana.

In the year 1885, with the aim of preventing the German colonial expansion from the recently annexed South West Africa (i.e. modern Namibia), the British established the Bechuanaland Protectorate in current Botswana. As a crucial point explaining a major part of Botswana's future democratic development, the British colonial power preserved all institutions created by the Tswana tribe over so many years. In contrast with other colonial experiences as the one of the Belgian King Leopold II in Congo, Botswana's one was not disruptive of the Tswana *status quo* while allowing the institutional structure to naturally evolve over time. This colonial commitment to foster the internal development of an optimal institutional apparatus is confirmed by the fact that around 75% of all colonial expenditures was directed at supporting the Tswana administration[6]. Even when the 1910 Act of Union combined the three British protectorates of Bechuanaland, Basutholand (i.e. modern Lesotho) and Swaziland under the same name of "South Africa," Botswana was still allowed to maintain its cultural and institutional specificities.

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[5] ACEMOGLU, D., JOHNSON, S., and ROBINSON, J., 2002. *An African Success Story: Botswana*, p. 11. CEPR Discussion Paper No. 3219. Available at SSRN: http://ssrn.com/abstract=304100
[6] ALFARO, L., ALLIBHOY, F., and SPAR, D., 2005. *Botswana: A Diamond in the Rough*. Harvard Business School Paper No. 9-703-027, p.3.

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In the post-World World I period, Botswana was led by the Tswana chief Tsekedi Khama and the local advisory councils were still very active in supporting the leader's decisions. At the same time, Botswana's major neighbor, South Africa, was subject to the spread of undemocratic and racist political ideologies; the pro-apartheid National Party had already gathered a solid consent among the country's major political constituencies. The apartheid system's development had negative repercussions on Botswana; due to the South Africa's opposition to mixed marriage, Seretse Khama, the natural successor of his uncle Tsekedi, was prevented from entering Botswana with his white wife met while studying Law at Oxford. Nonetheless, the negative occurrence had very positive implications: this forced exile generated probably the most charismatic and engaged leader that Botswana has had until now. Once Seretse came back to his country, he initiated a comprehensive process of political and institutional reforms that shaped modern Botswana. The instauration of a legislative council, readily allowed by the British, occurred in 1958; it represented the first step in the creation of a national Constitution. The Bechuanaland People's Party, disturbingly sympathetic to the pro-apartheid National Party in South Africa, was contrasted by Khama's creation of the Bechuanaland Democratic Party (BDP) in 1961. The institutional apparatus was then reformed to include the creation of a formally elected national assembly of thirty-six members (four of whom were elected by the President), a house of chiefs representing the different local interests and elected according to traditional precepts, and a President. After the implementation of this political plan and the creation of the Constitution of Botswana, the first democratic elections held in 1965 saw Khama's party, the BDP, at the top of people's preferences. Independence from British rule was obtained 1966, when Botswana formally gained the status of a sovereign republic. The BDP consistently maintained its majority over the years; Seretse Khama's death in 1980 was followed by the presidencies of Ketumile Masire (1980-1998) and Festus Mogae (1999-2008), before Ian Khama, first-born son of Seretse, took office in 2009.

This brief historical digression on Botswana proves that the country's institutional and democratic excellence shaped State development from a system of interconnected tribes tied by a common loyalty to the Tswana State, to the Bechuanaland British Protectorate that fostered the emergence of an inclusive system, to the current Republic of Botswana, a wholly

sovereign state that made an institutional leap back in the 1960's by formalizing the foundations of its democratically elected government through the creation of a Constitution.

1.2 Equatorial Guinea: the paradigm of stable corruption

Equatorial Guinea's colonial history, much differently from Botswana's, did not create the bases for a positive institutional development. Even before the instauration of a British colony, Botswana presented somewhat democratic institutions; differently, Equatorial Guinea's political and institutional apparatus was always defined by corruption and dictatorship.

Constituted by the insular part Bioko (and several other tiny volcanic islands as Annobon, Corisco, Elobey Chico, Elobey Grande, and Mbane) situated in the Gulf of Guinea and hosting the capital Malabo, and by a mainland part Rio Muni, Equatorial Guinea's total area is slightly smaller than Maryland[7] and is characterized by a tropical climate and by a 5% of arable land; also called the "Amazon of Africa," the country is rich in lush rainforests and presents an incredible biodiversity. The people of Equatorial Guinea represent a plurality of ethnic backgrounds and are composed of the Anabonese, Bubi, Bujeba, Fang, Fernandino, and Ndowe tribes.

Initially inhabited by the Pygmies and main destination of Bantu groups' migrations in the 17th and 19th century, the island of Bioko was originally discovered in 1471 by the Portuguese explorer Fernando Poo, who first called it "Formosa" (i.e. pretty flower) before renaming it after himself. The island formally became a Portuguese colony in 1474. After three centuries of inefficient and unproductive colonization, the Treaty of Pardo of 1778 legitimized the Portuguese "trade" of this African colony with Spain in exchange for South American land. From 1827 to 1843 a British base was established on the Bioko islands with the purpose of terminating the slave trade. A Spanish protectorate on the Rio Muni mainland was then instituted in 1885, and the Treaty of Paris of 1900 formalized Spanish colonial control on the region. In terms of fostering the country's economic and institutional development, Spain performed marginally better than Portugal as a colonizer. Through heavy investments in the development of cacao plantations, it boosted a substantial

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[7] Central Intelligence Agency (2013) *The World Factbook: Equatorial Guinea.* [online] Available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ek.html

immigration of workers from Nigeria. In spite of the initial spread of malaria, the period of Spanish colonialism was characterized by a relatively high rate of literacy and health care.

In the first half of the XXth century the insular and mainland regions were unified and they took the name of Equatorial Guinea in 1963. In the same year the promulgation of the Basic Law granted the two provinces some sort of limited autonomy under the purview of a joint legislative body. Pressures exercised by Equatoguinean nationalists and UN representatives favored the attainment of Equatorial Guinea's independence in 1968. This year also marked the beginning of President Francisco Macias Nguema Biyogo's despotic, unacceptably violent, and authoritarian regime. Freedom of expression was banned and political opponents were jailed and executed; opposition parties were declared illegal in 1969 and in 1972 President Macias appointed himself as President for life. Apart from the incredibly ruinous impact on the country's already weak infrastructures, human right violations became so evident that Equatorial Guinea started gaining reputation as the "Auschwitz of Africa"; the Nigerian workers, previously attracted by job prospects in cocoa plantations, left the country *en masse* during Macias's presidency.

President Macias's unconcealed and brutal dictatorship was replaced by one that is internationally viewed as more subtle and moderate; this "new regime" is controlled by Teodoro Obiang Nguema Mbasogo, President Macias's nephew and former director of the notorious Black Beach prison, who launched a *coup d'état* in 1979. The year 1982 saw the beginning of Nguema's Presidency as well as the promulgation of a new Constitution that, even though created under the auspices of the UN Commission on Human Rights, still lacked any democratic nuance; most of the powers were still held by the President.

In 1987 the President gave birth to the *Partido Democratico de Guinea Ecuatorial* (i.e. Democratic Party of Equatorial Guinea), which kept its majority and undisputed control until now. Despite some institutional rearrangements, as the end of a one-party rule in 1991, the President and a small group of advisors managed to dominate the country's politics and destiny. In spite of the 1992 formation of thirteen parties, Equatorial Guinea still presented a strong democratic deficit and lacked a proper system of institutional *checks and balances*; even if formally legitimized, the opposition has never practically had a role in Equatoguinean politics. For instance, the 100-members Chamber of Representatives, directly elected for a five-year term, always acts under the direction of the President. In line with the same

undemocratic logic, the 100-members National Assembly created in 2004, includes 14 "loyal" opponents and 2 "real" ones.

A tentative coup, which allegedly involved also Margaret Thatcher's son Sir Mark Thatcher, was organized and spotted in 2004. According to the Economist Intelligence Unit forecasts, Mr Obiang Nguema' autocratic regime is subject to significant risks to be diverted by a coup in the period 2013-2017. Despite all accusations of corruption and money laundering addressed to his son by the French and American government, President Obiang Nguema supported Teodoro Nguema Obiang Mangue's promotion to the rank of Vice-President in 2012. If his father is not replaced by a coup, Teodorin will be the main candidate as the new President of Equatorial Guinea, thereby perpetuating this profoundly ill and inefficient system.

This historical *excursus* on Equatorial Guinea has shed light on the sharp differences existing between the country's exclusive and autocratic institutions and the democratic rule of law characterizing Botswana's regime. Clearly, this significant institutional discrepancy does not result from the different identities of their respective colonizers, since both Spain and Britain have had positive and negative colonial experiences. However, it is undisputable that the management of the extractive sector and the resource curse problem are strongly dependent on the level of democracy and institutional inclusiveness characterizing the country. A more comprehensive view on this topic will be offered in Chapter 2.

2. The *Resource Curse* explained in Botswana and Equatorial Guinea

2.1   An assorted definition of the Paradox of Plenty

The economic literature on the resource curse phenomenon is extensive. In this first paragraph I will introduce the main elements of the economic reasoning underlying the Resource Curse, also called the *Paradox of Plenty*.

Sachs and Warner (2001) define the curse of natural resources as "the observation that countries rich in natural resources tend to perform badly,"[8] arguing that the weak development record characterizing resource-rich countries is supported by strong econometric evidence, even after controlling for trends in commodity prices. In particular, they articulate the resource curse paradigm according to the following formulation: the presence of natural resources in a country crowds out the so-called *activity x* which is the main driver of growth. As a result, natural resources actually hinder the realization of growth. There are of course different theories presenting different interpretations for what this *activity x* might be. In the opinion of Sachs and Warner (2001) the identity of *activity x* can be found in traded manufacturing activities. The dynamics are represented as follows: the natural resource boom has a positive impact on the country's wealth, thereby increasing the demand and price of non-traded goods; non-traded input costs and wages follow the same increasing tendency. A drop in profitability is therefore forced on those traded goods sector (e.g. manufacturing) that adopts the now more expensive non-traded inputs in their production process, while selling their output at fairly fixed international prices. The bottom line is that this negative impact produced on the manufacturing sector, certainly not sustainable from the long-term developmental perspective, will eventually stop the positive growth spiral that initially benefited the country. Sachs and Warner (2001) also present the following measure of the imbalance between the non-traded goods and traded goods sectors: the ratio of non-traded products (supposedly higher in resource-abundant countries) to traded products (supposedly constant in resource-abundant countries with respect to international standards). This ratio, presumably higher in resource rich countries, presents at the numerator the product of GDP in US dollars at current prices and the nominal US dollar

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[8] SACHS, J.D. and WARNER, A.M., 2001. *The curse of natural resources*. European Economic Review, 45(4–6), p. 827.

exchange rate (i.e. Y*P/E), and at the denominator the GDP computed according to the international price level (i.e. Y*P$). The *Dutch Disease* is exactly defined as the natural resource boom's negative impact on the manufacturing sector, realized through a real appreciation of the country's exchange rate that makes that country's economy less competitive vis-à-vis the international market. According to the authors' econometric analysis, resource rich countries indeed present a price level that is greater than the international standard. Their hypothesis concerning the discrepancy between the non-traded and traded sectors finds its econometric evidence in the fact that in resource-rich countries, the manufacturing sector contributes significantly less than the natural resources one to exports in terms of value added.

Other authors present different interpretations of the *activity* x that is crowded out by a country's natural resource endowment. For instance, Gylfason et al. (1999) and Gylfason (2000) argue that x corresponds to Education, while Auty (2000) sets x to be equal to the political process that is completely distorted by a predatory form of governance. On the same line of reasoning, we could consider the *activity* x to represent the level of entrepreneurial activity or innovation, assuming that profit-maximizing entrepreneurs will be attracted by the wage premium characterizing the natural resource sector. Another alternative for the identity of x would be the level of institutional inclusiveness in a country; a low record on this parameter would produce rent-seeking behavior, corruption, and inefficient allocation of wealth that, via the negative impact on governance, will deplete the growth accumulated by the country.

Singer (1950) explains the resource curse phenomenon through a deterioration of the terms of trade in the resource-abundant country, for whom imports of manufactured goods are more expensive than the natural resource it supplies on international markets. In the economist's own words: "Good prices for their primary commodities...give to the underdeveloped countries the necessary means for importing capital goods and financing their own industrial development; yet at the same time they take away the incentive to do so, and investment, both foreign and domestic, is directed into an expansion of primary commodity production, thus leaving no room for the domestic investment which is the required complement of any import of capital goods. Conversely, when the prices and sales

of primary commodities fall off, the desire for industrialization is suddenly sharpened. Yet, at the same time, the means for carrying it out are sharply reduced."[9] These resource-abundant countries seem therefore captured in an *industrialization trap*, which could be avoided as a result of an increase in foreign investment to be efficiently allocated to productive projects in the view of a sustainable development. This precept provides the perfect link to an alternative explanation of the resource curse, which is, in my opinion, the main determinant of the development gap between Botswana and Equatorial Guinea: the presence of inclusive institutions preventing the government's excessive rent-seeking and corrupt attitude, and instead fostering an efficient allocation of national resources to a productive use and putting the country on a sustainable path of growth.

Melhum at al. (2006) treat the topic of the resource curse by dedicating a particular attention to the analysis of institutions. According to their research, there exists significant econometric evidence denying the presence of a resource curse phenomenon in countries characterized by sufficiently inclusive and democratic institutions. In particular, the authors introduce an empirical measure of the quality of institutions, by differentiating between *producer-friendly* and *grabber-friendly* institutions. While the former are characterized by a complementarity between rent-seeking attitudes and production, the latter feature a competitive nature of the relationship between rent-seeking and production-based activities. In countries characterized by grabber-friendly institutions funds are directed to unproductive uses and entrepreneurial activity is not supported by the State. Melhum et al. (2006) articulate their empirical model of this "Institutional Interpretation" on the basis of four propositions: (1) a high quality of institutions fosters the achievement of a *production equilibrium*, while a low institutional quality concurs in the creation of a *grabber equilibrium*; (2) the abundance of natural resources can be considered as a blessing for a country characterized by a *production equilibrium* and a curse for a country represented by a *grabber equilibrium*; (3) the creation of producer-friendly institutions in a country characterized by a grabber equilibrium determines an increase in the level of national income for the country, while the income of an already producer-friendly country is not affected by the increase in

[9] SINGER, H.W., 1950. *The Distribution of Gains between Investing and Borrowing Countries.* The American Economic Review, **40**(2, Papers and Proceedings of the Sixty-second Annual Meeting of the American Economic Asociation), p. 482.

the producer-friendly metrics; (4) the increase in the number of entrepreneurs in a country identified by a grabber equilibrium causes an increase in the number of producers and a decrease in the number of rent-seekers, making both activities more profitable. Proposition (1) and (2) suggest that for countries affected by the resource curse, the *displacement income effect*, diluting national income as entrepreneurs leave production activities to focus on grabbing ones, is significantly greater than the *immediate income effect*, according to which the resource abundance initially spurs growth in national income. Proposition (3) indicates that the *multiplier* attached to producer-friendly institutions is greater for countries stuck in a grabber equilibrium; in my opinion this result is very significant in that it conveys the positive message that the resource-curse affected countries are "more elastic" to the introduction of producer-friendly institutions. In less economic terms, this result has powerful implications in terms of policy implementation; even a marginal improvement in the producer friendly character of those countries' institutions might be extremely beneficial to the country as a whole.

2.2   Botswana: a "minimization strategy" of the curse

As discussed already in paragraph 1.1 above, Botswana's history contributed to the formation and preservation of inclusive, democratic and growth-fostering institutions. Several elements prove that the country has until now been able to avoid the negative impact of the resource curse, by effectively capitalizing on its mineral endowment to foster a long-lasting development.

Despite its positive growth record, Botswana's economy is still characterized by some elements that could potentially facilitate the realization of at least some of the resource curse dynamics. For instance, the mining industry, inherently capital-intensive, does not create employment opportunities proportionally to the GDP growth it generates in the country. As pointed out by Iimi (2006)[10] while mining production's value added in terms of GDP amounts to 40%, the sector is able to contribute to just 4% of the country's employment. In addition to it, the landlocked nature of Botswana's territory imposes fairly high shipping costs on its sizable exports of natural resources. Despite the notorious De

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[10] IIMI, A., 2006. *Did Botswana Escape from the Resource Curse?*. IMF Working Paper, p. 9. Available at SSRN: http://ssrn.com/abstract=910703.

Beer's ad, diamonds are not forever and Botswana's reserves have been depleting since the beginning of extractive activities in 1966; sooner or later, the production capacity of mines will be exhausted. Also, the marginal investment to extend the useful life of a mine is considerable; for instance, Debswana, the joint venture between De Beers and the Government of Botswana, plans to conduct an investment in the order of Pula 24bn, equivalent to nearly US$3bn[11], to extend the useful life of the Jwaneng mine until 2025. Not only these extensions projects are significantly more expensive than the initial investment in the mine, but they also cause significant environmental damage because of the excessive waste they generate with respect to the initial exploitation period.

Governance Research Indicator Country Snapshot (GRICS), 2002

	Botswana	Lesotho	Namibia	South Africa	Swaziland	Sub-Saharan Africa	LI[12] Countries	MI Countries	HI Countries
Voice&Accountability	0.75	0.53	0.66	0.75	0.28	0.42	0.38	0.57	0.82
Political Stability	0.78	0.57	0.69	0.52	0.64	0.45	0.40	0.59	0.82
Government Effectiveness	0.66	0.40	0.48	0.59	0.36	0.30	0.27	0.42	0.77
Quality of Regulation	0.72	0.44	0.59	0.66	0.50	0.38	0.34	0.51	0.85
Rule of Law	0.67	0.48	0.60	0.53	0.34	0.33	0.29	0.47	0.84
Control of Corruption	0.62	0.39	0.47	0.51	0.36	0.29	0.25	0.39	0.76

Source: KAUFMANN, D., KRAAY, A., MASTRUZZI, M., 2003. *Governance Matters III: Governance Indicators for 1996-2002*. The World Bank. Available at: http://wbi.worldbank.org/wbi/topic/governance

As show in in the Governance Research Indicator Country Snapshot (GRICS) table above, Botswana scores very well both in absolute and in relative terms with respect to the GRICS metrics created by Kaufmann, Kraay, and Mastruzzi (2003). The country has implemented several measures in order to foster positive governance over time. For instance, in terms of *Government Effectiveness* Botswana has introduced the Budget Sustainability Ratio (BSR), also called Sustainable Budget index (SBI)[13], in order to monitor the use of mineral revenues for the financing of investment-based and recurrent

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[11] Debswana (2013) *Cut-8 Sponsors Jwaneng Hospital Expansion*. [online] Available at: http://www.debswana.com/News/Pages/Hospital%20Expansion.aspx
[12] In the table: LI = Low-Income, MI = Middle-Income, HI = High-Income.
[13] AFRICAN ECONOMIC OULOOK, 2012. *Equatorial Guinea 2012*, p. 6. Available at: http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Equatorial%20Guinea%20Full%20PDF%20Country%20Note.pdf

expenditures focused on development, education, and health. This initiative proves that the government is already proactively planning for the moment in which a uniquely resource-driven growth will be unsustainable. The government has also issued a fiscal rule capping public expenditures at 40% of GDP; a Pula Fund has been created with a preventive motive and it only includes transparent investments in long-term financial assets.

According to Art. 3 in the Mines and Mineral Act: "Subject to the provision of the Mineral Rights in Tribal Territories Act, all rights of ownership in minerals are *vested in the Republic* and the Minister shall ensure, in the public interest, that the mineral resources of the Republic are investigated and exploited in the most efficient, beneficial and timely manner."[14] In terms of *Regulation and Interaction with private parties*, the government limits a maximum lease term of its land to 25 years. The remarkable involvement and positive relation of the government with the private sector, a topic that will be further analyzed in Chapter 6, is proven by Botswana's 50% ownership of the company Debswana in partnership with De Beers. Since when mine exploitation started in 1966 the interaction between the two parties has always been prosperous, leading to a progressive concentration of the De Beers diamond business in this African country. It is therefore not surprising that the diamond giant has decided to transfer its Diamond Trading Company (DTC) operations, through which it manages the worldwide supply (and price) of diamonds, in Gaborone starting from the end of 2013. This scheme is significant especially if considered from the long-term perspective of Botswana's sustainable development. The concentration of the majority of sorting and trading activities in Botswana will allow the country to become "the hub" in the market for diamonds despite the progressive depletion of its national mineral reserves. By differentiating the economy in the downward segment of the diamond value chain, the government of Botswana has cooperated with De Beers to ensure a long-term sustainable development of the country.

In terms of *anti-corruption policies*, Botswana has created in 1994 the Directorate of Corruption and Economic crime; this body is in charge of monitoring the record of corruption in the political, public and private sphere, and to report directly to the President about potential corruption cases.

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[14] REPUBLIC OF BOTSWANA, 1999. *Mines and Mineral Act no. 17 of 1999*. Supplement A- Government Gazette dated 17th September, 1999, p. 121. Available at: http://www.mines.gov.bw/mines%20and%20minerals%20%20Act.pdf

According to the econometric model developed in Iimi (2006), conditional on the presence of a sufficiently high quality of governance and democratic institutions, a country will benefit from its resource endowment in forwarding a sustainable economic development. In my personal opinion, this "institutional requirement" is a necessary but not sufficient condition for the attainment of sustainable growth path; other elements, as the one presented in paragraph 2.1 above, have to be present in order to guarantee this positive result.

Clearly, Botswana still faces some challenges in terms of ensuring the sustainability of its growth path. First of all, the country should improve its fiscal position, especially in consideration of the substantial health expenditures related to reducing the grievous HIV/AIDS incidence. In this respect, a fund should be created from the mineral sector-generated revenues and specifically dedicated to fighting this illness; the fund should be invested in fairly safe and long-term assets so as to ensure the financial resources' availability at least in the medium term.

In addition to it, the allocation of fiscal revenues, mineral rents, and savings mechanisms should be monitored and regulated in order to limit the negative impact that natural resources' price volatility has on national finances; the change in this international price cannot usually be predicted well in advance, and countries generally struggle to cope with it in a precipitated manner.

2.3   Equatorial Guinea: maximizing the curse's odds

As mentioned in Mogae (2006), oil and diamonds have different implications on the government's incentive to cooperate with private parties; due to the diamonds' longer initial investment recovery period, a company as De Beers has a stronger incentive to collaborate and nurture a positive long-lasting relationship with the government of the country in which it is located. The same incentive is valid on the government's side.

The handling of the resource curse phenomenon in Equatorial Guinea is unfortunately incomparable to Botswana's one. The former has neither implemented such measures as investing in a fund to foster a long-term sustainable development, nor it has adopted forward-looking fiscal regulations to prevent the resource curse's materialization. Instead,

Equatoguinean oil rents are squandered in items like a $30m villa in Malibu, a $38.5m jet, a €150m *hôtel particulier* in Paris, or Rodin's and Bonnard's artistic masterpieces valued at €1.5 and €2.1 respectively that we hope Teodoro Nguema Obiang, Teodorin for the friends, will be able to appreciate. The balance sheet of Equatorial Guinea is astonishingly simple: the majority of its source of funds originates from oil rents, and the uses of funds are directed at incrementing the President's friends and family circle, thereby making the nearly US$20bn GDP in 2011[15] totally fictitious. The Equatoguinean population does not benefit at all from the oil rents; in this country, democracy is just an illusion.

Oil reserves' exploitation started in 1996 in Equatorial Guinea, forty years later than the mineral exploration took off in Botswana. Now the country is the fourth[16] supplier of oil in Sub-Saharan Africa after Nigeria, Angola, and Congo, countries to which it is not even comparable in terms of size. Given its limited population of 720,213 in 2011, Equatorial Guinea could really improve the standard of leaving of the majority of its people if it allocated oil rents in an economically efficient manner; this potential will never be realized unless a drastic change of government accompanied by a significant institutional improvement occurs. It suffices to think that the country has already applied several times to be part of the Extractive Industry Transparency Initiative (EITI), but rejected because not compliant with the minimum entry requirements in terms of corruption.

The resource, in this case, is truly a curse in that it exacerbates the problems of negative governance and extractive institutions that were already afflicting Equatorial Guinea before 1996. To aggravate these dynamics, the country is highly dependent on the international price of oil, whose volatility has a very unsettling impact on national finances. In more technical terms, the *Beta* of Equatorial Guinea's revenues with respect to the oil market is very close to one; the real appreciation of the country's exchange rate has very damaging impact on the manufacturing sector's contribution to GDP, making it less competitive on the international markets and a possible victim of the Dutch Disease.

McSherry (2006)[17] established a parallelism between Equatorial Guinea and Nigeria in terms of their "resource curse" experience. The increase in Equatoguinean inflation has not only negatively impacted the population's already weak purchasing power, but it has also

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[15] Please see Appendix 8.1.
[16] Please see Appendix 8.4.
[17] MCSHERRY, B., 2006. The Political Economy of Oil in Equatorial Guinea. *African Studies Quarterly*, 8(3), pp. 25-45.

caused a 15% exchange rate appreciation in the period 2001-2003. Cocoa production, once a dominant component of Equatorial Guinea's competitive advantage, decreased by 30% in the five years from 1996 to 2001; investments were progressively concentrated on the oil sector and the rest of the economy became less competitive because of the exchange rate appreciation.

Since the Zafiro field discovery by ExxonMobil in 1995, the "Kuwait of Africa" did not generate any positive externality in economic sectors other than the oil industry. Still now, the majority of the country's people are subsistence farmers, thus denying any sort of integration in the market economy.

As it will be further developed in Chapter 6, the Equatoguinean government has put a *façade* showing both a concern with its population's living conditions and a commitment to foster employment by mandating to foreign companies a minimum "local content" in the procurement of workers and products. The government is also cooperating with private companies in order to entice their humanitarian help and investment to eradicate malaria. However, these are just minor initiatives in comparison to the colossal human development work that needs to be done in the country.

Both Equatorial Guinea and Botswana are *Rentiers* countries, whose economy is mainly sustained by the external rents generated through the natural resource exploitation, while little value added is produced by the manufacturing sector. If Botswana shows a marginally better record in terms of economic diversification, it creates a much greater discrepancy in terms of human development, inclusiveness of institutions, and governance. As it will be developed below, international organizations, private companies, and other stakeholders in the Equatoguinean growth model should be more actively involved in shaping the economic development of the country. It follows that if the improvement cannot originate from the inside, it should by necessity be generated and implemented from outside the country.

3. Analysis of Growth Acceleration and Development

3.1 A Technical Definition of *Growth Acceleration*

Husmann, Pritchett, and Rodrik (2005) provide the definition of "growth acceleration" that will be used in this paper to analyze the development stories of Botswana and Equatorial Guinea. As per their logic, a *growth acceleration* episode is identified by the following criteria:

1. Increase in per capita GDP of at least 2% during a certain year T (the majority of the yearly growth episodes are still above this lower bound);

2. Growth record to be sustained for at least eight year;

3. Growth in GDP per capita in the post-acceleration period to be at least 3.5% per year;

4. Post-acceleration output level greater than the pre-acceleration one (guaranteeing the sustainability of this growth episode).

These growth acceleration criteria will be applied to Botswana and Equatorial Guinea that, having benefited enormously from natural resources' discovery in the twentieth century, qualify for the definition of *growth acceleration.*

The development outlook presented for both Equatorial Guinea and Botswana will be fairly rich and heterogeneous in terms of content so as to create a comprehensive and complete view on their growth stories.

3.2 The case of Botswana: a "shared" growth acceleration

Hausmann et al. (2005) criteria have been applied to Botswana in the year 1968; the "T" identifying the beginning of the *growth acceleration* episode corresponds to the year of the diamonds' first discovery in Botswana by De Beers. As shown in Appendix 8.1, since the increase in GDP per capita growth between 1967 and 1968 amounts to 4.41%, Botswana satisfies the first criterion of at least a 2% increase in GDP per capita growth between the year of the growth take-off and the previous year. Botswana's yearly growth is generally well above 3.5% during the eight years following T; the second of the Hausmann et al. (2005)

criterion is thus satisfied. The fulfillment of third requirement is proved by the $313,182,708 increase in output from the year 1967 (T-1) and the year 1976 (T+8).

Ergo, Botswana clearly benefited from a growth acceleration episode starting in the year 1968 and spurred by a diamonds' discovery fostering development dynamics over several years[18].

Appendix 8.2 shows the sources of *value added* as a percentage of GDP, thereby providing a useful snapshot of the country's major economic activities. The structure of the economy in 2011 differs enormously with respect to the one in 1960, when the sectors of agriculture and services were very balanced in their contribution to GDP and together they provided for 87% of the country's GDP. Especially in the period 1975-1980, the sector of Agriculture was progressively "crowded-out" by industrial activity. The area of Services roughly maintained its magnitude over time, but its composition is different with respect to the past; the majority of the services are now mainly directed at the industrial sector. In 2011, Agriculture just contributes to the 3% of GDP, while Industry's value added has greatly increased to the level of 46%. Manufacturing's GDP contribution has decreased from a level of 12% in 1965 to 4% in 2011; again, the sector of Agriculture has been crowded out by the economic predominance of Industry following the diamond's discovery.

The facts exposed above confirm one of the precepts characterizing much of the resource curse literature. When a country's economy is overly based on a resource and its related sectors, other activities tend to be "crowded out" or "phased out" as a consequence of this excessive national specialization. The increase in the country's real exchange rate reduces its level of competitiveness on international markets, making its exports more expensive and its imports cheaper. The country will need to invest the funds gained from the "resource-related activity" in order to diversify its economy and regain its competitiveness in international markets.

In terms of *diamonds production*, Botswana's performance is remarkable on both a global and regional scale. As shown in Appendix 8.3, in 2011 the country contributed the 27% to the world production of diamonds in terms of value and 18% in terms of actual output. Botswana is in fact the reservoir of the worlds' most valuable and gem-quality

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[18] For reference, please notice in Appendix 8.1 the table related to Botswana in the period 1968-1990.

diamonds and its market positioning is different with respect to the one of Russia, which is the biggest producer in terms of actual output but second to Botswana in terms of value. The African country's central role in the diamonds' international market justifies the recent decision by De Beers to transfer the Diamond Trading Company in Gaborone at the end of 2013, making therefore Botswana the global hub for diamond trade.

Appendix 8.5 reports a list of *social indicators* characterizing Botswana. We find a confirmation of the country's progressive specialization on the Industrial sector in the demographic statistics; since 1965 individuals started leaving the countryside to move to cities. The rural population decreased from 96% of the total population in 1965 to a level of 38% in 2011. Conversely, the urban population increased in the same period from a level of 4% to 62%. In terms of *health metrics*, while birth rate and fertility rate significantly diminished from 1960 to 2011, consistently with industrialization dynamics, the reduction in death rate is not at all acceptable in the same 50-year period; this fact is especially concerning given that Botswana benefited from a significant increase in income per capita and FDI inflow in the same period. The cause for an almost steady death rate is attributed to the alarming increase in HIV prevalence. In 2011, nearly one quarter of the entire population in the 15-49 age group was affected by this virus. Several measures have already been taken by the government to counter this threat to people's health, and companies as De Beers have extensively invested in educating their employees about appropriate behavioral norms. Finally, both primary and secondary *education statistics* improved over the period 1975-2011, indicating that the industrialization dynamics also created significant learning opportunities for local people; secondary education has increased at a greater rate than the primary one.

In order to properly understand the main features of Botswana' economy the focus is now turned to the *Balance of Payments* reported in Appendix 8.7. The *Current Account* was at a remarkable level of 6,9% of GDP in 2008 before the global financial crisis hit Botswana's trade balance badly in 2009 as a result of a drop in global demand for luxury goods (including diamonds). During 2009 and 2010 Botswana presented current account deficits driven by a greater increase in imports with respect to exports; both deficits were however greater than -5% of GDP, threshold commonly used to measure the sustainability of a country's trade situation. From 2011 onwards Botswana has regained its positive trade

position and the current account balance is projected by the IMF to progressively increase until 2017. Raw materials in general and diamonds in particular drive the trade surplus, and they represent respectively 84% and 72% of the country's total exports. On the contrary, Services and Income will be mainly imported from abroad in the future and no reversing tendency is expected to occur at least until 2017. Despite the initiatives promoted in terms of economic diversification, the country is still overly dependent on diamonds. Also, the deterioration of Botswana's trade balance since the year 2013 is expected to be more than compensated by the increase in income and transfers inflows, whose related balance presents levels consistently above 7% of GDP over the whole period.

The *Financial Account* suffers a sharp decline until 2017, when it is projected to represent just 2% of its value in 2008. By looking closely at these figures, we notice that despite the fairly stable level of the Foreign Direct Investment account, both the Portfolio Investment and the Other Investment turn negative respectively in year 2009 and 2013. These declines are explained on the Assets side by the increase in Botswana's investments abroad, and on the Liability side by the increase in debts' or other securities' repayments to foreigners. Evidence for this assertion is found in the decomposition of the account "Other Investment"; interestingly enough, the government's long-term debt repayment is the main driver of the increasingly negative "Other investment" liability account. In terms of these investments' nature, a positive element is presented by the greater magnitude of long-term FDI inflows with respect to the short-term Portfolio Investment one; Botswana is not overly reliant on "hot money" that could dry up on the basis of the investors' sentiment.

The *Terms of Trade* ratio has been fairly volatile over time, clearly indicating the country's role of natural resource exporter. IMF estimates present a progressive increase in the ratio during the period 2013-2017, signaling a consistent increase in the price of exportable goods with respect to the one of importable goods.

Finally, Botswana's *Reserve* position is very solid and improving over the period considered. The measure of "Months of imports covered by Reserves" is consistently well above the level of 6 months, threshold defining the sustainability of a country's stance in terms of Reserves.

Botswana's performance as to *exports* is shown in Appendix 8.9. The snapshot presented in Table 1 proves that the country has progressively shifted its resource towards

the mining sector at the expense of the agricultural one; if once meat was one of the main exports characterizing Botswana's economy, now agricultural raw materials exports as a percentage of merchandise exports have been nearly halved in the period from 2000 to 2011. Ores and metal exports evidently make up the greatest proportion of merchandise exports; this ratio has significantly increased over time from 6.97% in 2000 to reach 14.54% in 2010, after reaching the peak of 23.28% in the pre-crisis 2007. Manufactures exports have been declining over time, indicating that Botswana should implement additional programs to diversify its economy from mineral resources. Since ICT and communications-related services have been acquiring importance in terms of exports in the 2000-2011 period, Botswana could leverage on this initial base to specialize further in these sectors and foster its economy's diversification. More specifically, Graph 1 shows that Pearls, Precious Stones and Minerals represent more than 85% of all Botswana's exports, the 98% of this category being composed by diamonds (Graph 2). In spite of the fact that the United Kingdom is represented as being by far the major importer of Botswana's diamonds globally, the figure is not fully representative of the true global demand for the resource; the origin of the figure instead derives from the fact that the DTC, the De Beers' division managing the worldwide supply of diamonds, is exactly located in London. All diamonds are first sent to London to be sorted and organized in different batches ready for sale to other locations internationally. Also, Graph 1 presents *Vehicles* as the fourth major source of Botswana's exports. In the optic of economic diversification, this positive result is indicative of the economic potential that could be released from this sector. With Volvo and Hyundai being the two major players in Botswana's automotive sector, exports of vehicles started decreasing since the latter's assembly plant was closed in 2000. The decrease in this sector's economic weight was mainly due to South Africa's protectionist attitude and to the strong pressure exercised by this country's lobby; being South Africa the major regional actor in the automotive sector, it has by all means discouraged the emergence of potential competitive pressures from Botswana. An analysis of this specific market is above the scope of this paper, but I just underline here that Botswana should persevere to attract investments in this sector in order to further its objective of economic diversification. The idiosyncratic national advantages that would guarantee an inflow of funds in the country are: political stability, positive and growing economic performance, direct market access to South African Customs Union

(SACU), negligible degree of corruption and violence, lack of exchange controls, and low tax rate.

In terms of its *investment* position, Botswana scores higher than Equatorial Guinea; its annual inflow of foreign investment increased by a remarkable 41% since 2008, showing a lower record than South Africa's 51% but a significantly better one than Namibia's 22%[19] (Appendix 8.11). On the flipside, Botswana's investment abroad has decreased since 2008 by an average of 11% per annum, meaning that national resources have been concentrated towards internal development.

In Appendix 8.12 Botswana is represented in terms of its potential to attract investment. The majority of the foreign investment is concentrated in the primary sector: the country generates an impressive 5.4% of international trade in mining and quarrying specialized on the resource of diamonds. Trade conditions in this sector are particularly favorable in the country; with respect to the sector of *Mining and Quarrying* Botswana's average tariffs faced and applied amount to respectively 5% and 0.2%. These values are very small if compared to the secondary sector of food, beverages and tobacco, in which Botswana's average tariff faced and applied are respectively 16.7% and 11%. The country is also fairly active in the market of *Motor vehicles and other transport equipment* with total exports of $145m in 2011; the average tariff faced and applied are respectively 8.7% and 5.1%, levels that can be considered fairly low relative to national standards in other sectors. In spite of the potential competitive advantage presented by this sector, the intrinsic complexities of the national tax code caused the loss of such multinational companies as Volvo and Hyundai at the end of their tax holidays. Given the highly beneficial nature of a diversification in the automotive sector, the government should simplify the tax code and provide economic incentives to attract car companies in the country. Other two sectors in which Botswana could potentially emphasize its diversification efforts are *Textiles, clothing and leather*, and *Metal and Metal products*, representing respectively exports $263m and $458m; tariffs characterizing the latter industry are significantly lower relative to the former one. Botswana is not particularly active in the tertiary sector; it is however a major recipient of FDI in the financial industry, that certainly supports "real" activities as the management and trade of diamonds.

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[19] Please, see Appendix 8.11.

In Appendix 8.14 Botswana and Equatorial Guinea are compared to other major global players respectively in the industries of mining and oil. Table 1 represents Botswana's position as the fifth major contributor of international trade in the mining sector, characterized by a 0.8% share of global commerce in the resource. Its 12.1% growth in annual FDI inflow, even if remarkable by global standards, is not one of the highest if compared to the other eight countries in the sample. As a final observation, the government of Botswana is clearly committed to liberalizing trade in the mineral resources, as indicated by the very low level of tariff applied at 0.2%.

3.3 A discriminatory model of development in Equatorial Guinea

Exxon Mobil discovered Equatoguinean oil reserves in 1995, year that will be considered as "T" for the purposes of the *growth acceleration* analysis. In fact, the 8.9% improvement in GDP per capita growth between 1994 (T-1) and 1995 (T) not only confirms the appropriateness of the choice of the year 1995 as "T", but it also satisfies the first Hausmann et al. (2005) criterion. As for the second requirement, it is fully satisfied by the outstanding Equatoguinean growth records between 1995 (T) and 2003 (T+8). Finally the $2,826,615,266 output increase between 2003 (T+8) and 1994 (T-1) provides evidence for the fulfillment of the third criterion.

As a result, Equatorial Guinea evidently benefited from a growth acceleration episode thanks to the 1995 oil discovery; despite the fulfillment of all the criteria presented by Hausmann et al. (2005), a deeper analysis proves that this country's wealth has not been equally distributed among its people.

This element might constitute a partial critique to the Hausmann et al. (2005) measure. It is arguable that a growth acceleration episode should be defined as such only if its benefits are fairly distributed in an equitable manner across its people; otherwise, the increase in output might well correspond to a great wealth windfall to the advantage of just a restricted circle of individuals (i.e. President Obiang Nguema and his "friends & family"); a similar occurrence would not qualify as a development episode improving the population's standards of living. As a result, I think that it would be appropriate to always complement the Haussman et al. (2005) growth acceleration measure with an indication of income inequality as the Gini coefficient. The two statistics might be used in tandem in order to

provide a more transparent and straightforward measure of the country's distribution of the wealth gained as a result of its growth acceleration.

After this brief methodological digression, the analysis of development in Equatorial Guinea is presented below, according to a plurality of parameters as it has been done with Botswana in section 3.2 above.

In the same way as observed for Botswana in Appendix 8.2, the share of *value added* from Agriculture has diminished in Equatorial Guinea from 69% in 1985 to 2% 2008, indicating the shift of investments towards oil production. In fact, the Industrial sector's contribution to GDP has skyrocketed from 11% in 1990, before the discovery of the country's oil reserves, to a staggering level of 96% in 2008. The increasing contribution from the Manufacturing sector indicates a possible intensification in the country's diversification efforts towards manufacturing activities still related to oil production.

Equatorial Guinea's value added snapshot presents an excessive economic specialization that, if not appropriately managed, could potentially lead to the realization of the resource curse.

For what concerns *oil production*, despite its very small size relative to other major market players, Equatorial Guinea is the fourth largest producer of oil in Sub-Saharan Africa after Nigeria, Angola, and the Republic of the Congo[20]. As we can notice from the second graph in Appendix 8.4, Equatorial Guinea in 2011 contributed 4% of the oil production by the major African countries. In the first graph, instead, we see that Equatorial Guinea, differently from Botswana, is not one of the top-three global player in the market for its resource; but, controlling for the very small size of the country, the country should still be considered as a significant player in the oil market.

Differently from Botswana, the Equatoguinean *population* still predominantly lives in the countryside and in the 1960-2011 period the urban population increased by just 15% from 25% to 40% (Appendix 8.6). This demographic fact is reflected in a considerably greater size of the Equatoguinean people living in poverty in comparison to Botswana; a

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[20] Being the difference in production between Equatorial Guinea and the Republic of the Congo not significant, we can consider the two countries as producing on the same scale.

much lower number of people in the former country have the means to move to cities. With respect to *health dynamics*, in the 52 years considered the birth rate has not decreased much and the fertility rate has been fairly stable; on an imaginary continuum measuring development and industrialization, Equatorial Guinea is currently far from Botswana. As counterintuitive as it might be, the very small discrepancy in 2011 death rates between the two countries is determined by the fact that Equatorial Guinea is characterized by a much lower HIV prevalence than its counterpart, generating a difference of 18% in 2011. Despite the lack of sufficient data for *education*, we notice that primary enrollment increases especially in the first decade of the XXth century, while secondary education still lags behind.

In this section, reference is made to Appendix 8.8 that reports Equatorial Guinea's *Balance of Payments*. The *Current Account* balance, positive from 2006 to 2008, turns negative in 2009 and presents a concerning ratio of -16% of GDP, well below the "sustainability threshold" of -5%. The global financial crisis was certainly the driver of this large deficit, which is maintained through 2010. The deteriorating trade balance is explained by the fact that starting in 2009 exports decrease and imports increase. Also, the country imports progressively more services from abroad and more funds in the form of current transfers and income. The Equatoguinean economy is even more dependent on oil exports than Botswana is on diamonds; in 2010 Hydrocarbons made up the 99% of Equatorial Guinea's total exports, thereby enhancing the country's vulnerability to changes in the price of oil.

In terms of its *Financial Account*, the country's Direct Investment in 2009 was even greater than its pre-crisis level in 2007; given the considerable magnitude of this long-term source of funding with respect to the more volatile Portfolio Investment, the country is not excessively vulnerable to shifts in investors' sentiment. This fact is also explained by the long-term nature of foreign investments characterizing the oil sector. This resource's exports are expected to have increased after the financial crisis's negative impact noticeable in the year 2009.

Since Equatorial Guinea is part of the Central Africa currency union, the *Communauté économique et monétaire de l'Afrique centrale* (CEMAC) adopting the Franc CFA, its *Reserves'* position cannot be considered independently of the one of its "monetary partners". The ratio of the country's reserves at the BEAC (Banque des Etats de l'Afrique Centrale) over the gross official foreign assets decreases from 72% in 2006 to 44% in 2010, in line with the

trend in Government deposits at the BEAC over the total Reserves. The reserves handled by the BEAC are not sustainable in 2006 and 2007 (below 6 months of imports) before improving in 2008 and reaching an acceptable level of 8 months of imports. The Equatoguinean reserves position is certainly less sustainable than the one proper to Botswana; however, the two results are not fully comparable since while Botswana retains its control over monetary policy, Equatorial Guinea has granted it to the BEAC and it only allows the analysis of the reserve position of the currency union in its complex.

In Appendix 8.10 we notice that Equatorial Guinea's *exports* of goods and services as a percentage of GDP have decreased over time from 2000 to 2011, and especially so after the onset of the global financial crisis in 2008; they have been slowly recovering since the end of 2010. In Graph 2 Equatorial Guinea's dependence on crude oil as a source national wealth is shown by the overwhelming proportion of exports generated just by mineral fuels, oil and distillation products, amounting to a total of more than 92% of total exports. As displayed in Graph 3, the 77% of these $12B exports rents generated by the category of mineral fuels is generated by crude oil alone, the 22% by petroleum gases, and a negligible 1% by non-crude oils. In terms of major partner countries, Graph 4 reveals that in 2012 France surpassed both China and the USA in terms of imports of Equatoguinean oil; France's access to the resource is certainly facilitated by the ex-colonial ties preserved with countries belonging to the CEMAC area. In Graph 1 Equatorial Guinea and Botswana 2010 records in terms of exports of goods and services over GDP are respectively compared to other CEMAC countries and to Namibia and South Africa. Both of our countries of interest score second in their respective rankings, Equatorial Guinea with an impressive 70% and Botswana with a 33% of exports over GDP. As a result, and in regional and in sectors-specific comparisons, both Botswana and Equatorial Guinea offer outstanding performances in terms of exports of goods and services. However, if compared to one another, Equatorial Guinea has a more solid exporter status than Botswana; oil, unfortunately essential to most of the modern economic activity, is characterized by a greater global demand than diamonds.

In the "Investment Map" shown in Appendix 8.11, both Equatorial Guinea and Botswana are included in the group of countries attracting between $1m and $6.3bn in terms of *investment* from abroad. Equatorial Guinea presents the greatest value of annual FDI

inflow and inward stock per capita if compared to other CEMAC countries, because of the substantial foreign investments in the oil sector and the very small size of the country's population (Table 1, Appendix 11). Since 2008, the FDI inflow in Equatorial Guinea has increased by a 20.3% per year. This growth in foreign investment, certainly positive in the short-term, could however hinder the country's long-term development performance; it would not only increase the country's dependence on foreign investments directed at the oil sector, but it would also make it a potential victim of the "resource curse".

As confirmed by the table in Appendix 8.13, Equatorial Guinea is predominantly active in the primary sector. It covers the 0.6% of international trade in *crude oil*, a remarkable result especially in consideration of the small country size; average tariffs faced and applied in this industry are respectively 4.6% and 9.8%, low if compared to the tariffs applied to other sectors and therefore encouraging trade in this industry. In addition to it, Equatorial Guinea provides for the 0.3% of international commerce in the sector of *Forestry and Fishing* because of its rich wood endowment; in this respect, Equatorial Guinea should invest more in the Forestry sector so as to diversify its economy from the oil sector. *Motor Vehicles and other transport equipment, Coke, Petroleum products and nuclear fuel* and *Chemical and Chemical products* are three of the activities in the secondary sector in which Equatorial Guinea seems to be engaging; export figures are respectively $437.4m, $377.1m and $344.2m. Consistently with the economic specialization in the oil industry, the lowest tariffs in the secondary sector are represented in the industry of *Coke, Petroleum products and nuclear fuel.* Equatorial Guinea is not involved in any tertiary sector activity. It is therefore clear that the majority of the national resources are spent on fostering the development of the oil industry, at the expenses of all other sectors that are characterized by generally greater tariff levels. Because of its lower level of economic diversification, Equatorial Guinea seems more vulnerable than Botswana to a future threat of the resource curse.

As displayed in Appendix 8.14, Equatorial Guinea's 0.6% share in the world international trade in crude oil is not among the greatest levels in the sample, but it is still considerable especially if controlling for the small country size. After Angola's staggering level of 20% tariff applied, Equatorial Guinea, Congo and Gabon present the next highest level of tariff at 9.8%, thus revealing these countries' expropriatory and protectionist nature of the resource management practices conducted by an overly corrupted public sector.

4. Interplay between Institutions and Development

4.1 Botswana: the "institutional outlier" of Africa

4.1.1 The main attributes of virtuous domestic institutions

The quality of a country's institutions is a powerful determinant of its economic development. Even if no direct and mutually exclusive causality can be established between the two elements, a correlation certainly exists between them.

As regards institutional quality and political pluralism, Botswana is an outlier in Africa. Even before the establishment of the British Protectorate in 1885, the *kgotla*, general assembly of adult males, ensured a fair degree of centralization of the administrative power; this body was allowed to disagree with the chief and to overrule his decisions. Also, the appointment of the chief was not uniquely based on hereditary ties; only the most talented individuals could achieve this position, irrespective of their family origins. In this respect, a Tswana proverb[21] claims "kgosi ke kgosi ka morafe," meaning "The King is King by the grace of the people".

Most Sub-Saharan countries experienced after independence the establishment of such extractive institutions similar to the ones installed during the colonial period; the existence of sufficiently inclusive and pluralistic institutions in the pre-colonial Botswana as well as the lack of interest in imposing control on the protectorate of Bechuanaland by the British ensured the persistence of a positive and sustainable institutional infrastructure. In terms of economic institutions, property rights were respected in Botswana; cattle, the most valuable resource until the discovery of diamonds, were held communally but owned privately and initially distributed by the chief to members of the elite. With the 1967 establishment of a marketing board, the Botswana Meat Commission, several measures were implemented to develop the market for cattle, as the installation of fences in order to fight the spread of the foot-and-mouth disease. The introduction of the Chieftancy Act of 1965 and of the Chieftancy Amendment Act of 1970 eliminated the chief's right to allocate land and cattle, and introduced the right for the President to depose the Chief.

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[21] ACEMOGLU, D., and ROBINSON, J., 2012. *Why Nations Fail*. Crown Publishing Group, New York. p. 408.

President Khama's legislative amendment vesting all subsoil mineral rights in the nation and not in the single tribes, as well as the existence of a fair degree of state centralization and of pluralistic institutions prevented diamonds from becoming the source of civil wars and from gaining the appellation of "Blood Diamonds". Instead, this mineral resource provided Botswana with a stronger fiscal base to be invested productively in the country's economic development.

A measure of the quality of *political institutions* is presented in Table 4 (Appendix 16). According to the measures provided by the Polity IV project, Botswana scores very highly on both *Democracy* and *Polity* indexes, with a value of 8 out of 10 on both and surpassed only by South Africa in its region. The country is aligned with both Namibia and South Africa on the highest score of 4 for the *Openness of executive recruitment*, and with South Africa only on the top score of 7 for the measure of *Executive Constraints*. All three countries present a remarkable 9 out of 10 on political competition.

In terms of Corruption Perception Index (Table 1, Appendix 16) Botswana has always outperformed its neighbors Namibia and South Africa since the year 1998, and while its ranking improved by two positions from 2005 to 2012, Namibia's and South Africa's ones worsened respectively by 11 and 13 positions in those same seven years. Botswana is the country with the highest CPI index value in Africa, and is ranked at the 30th position globally. It is followed by Cape Verde, ranked 39th on the 185-countries CPI list.

The eleven *Doing Business* indicators (Table 3, Appendix 16) provide a very good outlook on the quality of the country's economic institutions. Botswana is the best performer in its region on the measures of *Registering Property* and *Resolving Insolvency*; it should however invest in reducing the number of procedures, amount of time and related costs in *Dealing with Construction Permits* and *Trading Across Borders*, measures on which the discrepancy with its neighbors is significant. Likewise, while performing very highly (32th position) on the *Paying Taxes* measure, the country should commit to improve its 99th rank on *Starting a Business*. Overall, on the *Ease of Doing Business* measure Botswana is ranked 59th on a global scale, twenty position lower than South Africa but twenty-eight position higher than Namibia. In terms of economic development, South Africa is clearly at a more advanced

stage than Botswana, but if we qualitatively control for this temporal discrepancy in terms of growth-takeoff, Botswana's performance has undoubtedly to be considered as a remarkable one.

As a further confirmation of Botswana's regional superiority, *Standard & Poor's* foreign currency rating[22] for Botswana is A- (Table 2, Appendix 16), while South Africa's and Namibia's ones are respectively BBB and "not rated"; Botswana benefits from a greater economic wellbeing and safer market conditions not only in comparison to African but also regional standards.

In terms of Income distribution, Botswana's 60.69 *Gini* coefficient in 1994 was better than the ones of South Africa in 2009 and Namibia in 2004 (Table 5, Appendix 16). Despite the temporal discrepancy between these three measures, the comparison is maintained as a valid one since the Gini coefficient volatility from year to year is moderate or even negligible. Income inequality is a common cause for internal instability and lack of peace. The *Global Peace Index*, the global leading measure of peace promoted by illustrious personalities as former UN Secretary General Kofi Annan, former US President Jimmy Carter, economist Jeffrey D. Sachs, Nobel Laureate Muhammad Yunus and the Dalai Lama, is been reported in Table 6 (Appendix 16). Botswana, ranked 31st globally, outperforms by far South Africa and Namibia, respectively ranked 127th and 49th. It seems therefore clear that Botswana's dedicated leaders, inclusive political and economic institutions, lack of colonial expropriation, and centralized administration impeding ethnical fragmentation all concurred to putting the country on a positive and sustainable path of economic development.

4.1.2 Botswana vis-à-vis the rest of the world

Botswana is engaged in regional cooperation mainly through the South African Customs Union (SACU) and the Southern Africa Development Community (SADC).

The *Southern African Customs Union (SACU)*, Africa's oldest customs union, was created in 1910 as a direct consequence of the establishment of Union of South Africa; a common external tariff (CET) for all former Boer states and British colonies was introduced.

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[22] As explained in the notes to Table 2 (Appendix 16), this is the most "conservative" among the three ratings presented.

The original Agreement, subsequently amended and upgraded in 1969 and 2002, involves the following five countries: South Africa, Botswana, Namibia, Lesotho, and Swaziland. Steps have been recently taken in order to reduce the excessive economic dominance imposed by South Africa on the other four countries. While Lesotho, one of the world's poorest countries, and Swaziland, whose economy is based on agriculture, are much weaker in economic terms than their SACU neighbors, Botswana and Namibia present a much more successful record of growth mainly boosted by their mineral resource endowments. As a result, these last two countries, have progressively exercised a certain pressure to be adequately represented in SACU decision-making process and not to be subdued to South Africa's interests.

The 1969 SACU Agreement was characterized by three main aspects: the introduction of a Revenue Sharing Formula (RSF) based on each country's total imports and directed at allocating the wealth accumulated in the Common Revenue Pool (CRP), the inclusion of excise duties as a second source of funds to be re-distributed amongst the five governments, and the 'two-year lag' separating the moment in which the payment was disbursed to single governments and the moment in which data characterizing each country were measured. Following its independence in 1966, Botswana opted in the SACU re-distribution mechanism, in consideration of the high costs that the creation of a new customs administration would have required. Thanks to the introduction of the new RSF formula in 1969 Botswana's revenues from custom duties sharply increased from ZAR 1.4M in 1968 to ZAR 5.14M in 1969/1970, and, due to the country's strong negotiating position, it has been sustained at fairly high levels thereafter. If Botswana had historically been dependent on British transfers to sustain its public revenues, it might now be developing a similar dependence on SACU transfers.

In 1976, Botswana's government decided to leave the Rand Monetary Area (RMA) to introduce its own currency, the Pula, while still preserving its membership in the SACU. The initial regime pegged the Pula to the US dollar at a rate of P1 = US$ 1.15 (given that the same peg was in place for South Africa, an essential parity between Pula and Rand was initially assured) and it was then modified several times before settling on the current arrangement; introduced in 2005, it stipulates for a crawling band mechanism whose rate of crawl is determined by computing the differential between the Bank of Botswana's inflation objective and forecasted inflation in trading partners.

The new 2002 Agreement, apart from introducing institutional changes and at least a *de jure* equality amongst the five SACU members, presented fairly different rules with respect to the previous Treaty. First of all, Botswana, Namibia, Lesotho, and Swaziland (BNLS) are permitted to protect infant industries (i.e. existing in the country for less than eight years, they can be protected for up to eight years) by imposing duties on imports from South Africa, as long as the same duties are imposed on imports from the rest of the world; South Africa, the richest and most advanced SACU member, does not benefit from this infant industry protection clause. Secondly, countries are now allowed to protect their farmers by establishing marketing regulations on agricultural products, subject to the condition that these regulations do not restrict free trade within the SACU area. Last but not least, the RSF definition has been modified with respect to the past and is now defined by three separate components. *Customs Revenues* are allocated on the basis of each country's share of intra-SACU imports, thereby stimulating a trade diversion within the Union and compensating for the phenomenon of structural polarization. The 85% of *Excise Revenues* is now distributed according to each country's share of the total SACU GDP. The remaining 15%, so-called *Development Component*, is allocated in inverse proportion to the GDP per capita of each member state, thereby favoring the poorest countries. Given the lack of assurance that this last component will be effectively invested on development projects, a clause should be included in the SACU Agreement to provide for the great majority of this amount to be spent on useful and productive projects, and of course demanding relevant proof of this allocation. It was established in 2002 that South Africa would have kept managing the re-distribution mechanism and the Common Revenue Pool for two years after the new agreement was in place, and that a more transparent and democratic mechanism would have been implemented thereafter.

This new agreement has the strong potential to expand the so-called *entrepôt trade*, defined by single countries' increase in national purchases of commodities from abroad and their internal redistribution to other SACU members; unit cost of imports per member state should therefore be reduced. Also, administrative costs involved in border inspections and additional controls on merchandise entering or leaving the country have been eliminated.

Effective and Nominal SACU duties for Botswana

	Rate
Nominal Average SACU Tariff (2009)	8.1%
Trade Weighted Average (2008)	7.5%
Estimated Effective Rate of Customs Duties-Botswana (2009)[23]	19.7%

Source: GRYNBERG, R., MOTSWAPONG, M., 2012. *SACU Revenue Sharing Formula: Towards a Development Agreement.* Botswana Institute for Development Policy Analysis (BIDPA) Working Paper 32. p. 20.

As shown by the table above, if Botswana had to renounce to its share of SACU revenues, it would need to impose a new tariff significantly higher than the trade weighted average in order for this change of regime to have a neutral impact on Revenues; on the top of that, the imposition of a tariff on goods imported from South Africa would certainly provoke the country's exit from the SADC. Looking at the future, Botswana and Namibia would be able, thanks to their superior economic stance with respect to Lesotho and Swaziland, to phase out any immediate loss of SACU Revenues suffered in the short-term in order to implement long-lasting changes in their Trade policy and exit from the Union; as long as the diamonds market will not be contemporaneously be disrupted by negative shocks, these countries' fiscal adjustments are deemed to be sufficient to put them on the right track for the future.

According to the SACU mission statement, the objective of this Customs Union is "to serve as a building block of an ever closer community among the peoples of Southern Africa."[24] At the present time, it is however not totally clear if this arrangement is beneficial to the single countries and constitutes a positive basis for the future creation of a more EU-like Union.

The *Southern African Development Community (SADC)*, initially created in 1980 as a development coordinating conference, was converted into a proper community in 1992. The mission statement of this inter-governmental organization "to promote sustainable and equitable economic growth and socio-economic development through efficient, productive systems, deeper co-operation and integration, good governance, and durable peace and

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[23] Calculated as the estimated customs revenue divided by total imports. In addition, estimated customs duties are computed by applying ratios of customs to total SACU transfers for each country.

[24] *Source:* GRYNBERG, R., MOTSWAPONG, M., 2012. *SACU Revenue Sharing Formula: Towards a Development Agreement.* Botswana Institute for Development Policy Analysis Working Paper 32. p. 23.

security; so that the region emerges as a competitive and effective player in international relations and the world economy."[25] SADC is composed by fifteen member states, including all five SACU countries. In this respect, if SACU was dismantled, SADC would be the most likely candidate to assume its functions; however, the SADC Free Trade Area (FTA), established in 2008, does not provide for strong enforcement mechanisms, being instead based on a soft law apparatus. It is also clear that in the case of a SACU break-up, the BNLS would need to either increase tariffs on imports from South Africa and other trade partners, or significantly raise domestic taxes. If the first measure would increase the probability of a regional war erupting in Southern Africa, both initiatives would generate a decline in economic growth of the BLNS, thereby reducing those same revenues that they are supposed to raise. According to the above-mentioned logic, this hypothetical substitution of SADC for SACU is certainly not an optimal solution at least in the short-term.

Botswana's positive relations with the United States are confirmed by the statement from the US Department of State: "The United States considers Botswana an excellent partner and an advocate of and model for stability in Africa."[26] According to the African Growth and Opportunity Act, Botswana benefits from a preferential treatment from the US on trade matters. In addition to it, the Trade, Investment, and Development Cooperative Agreement (TIDCA) signed between the SACU and the US, "establishes a forum for consultative discussions, cooperative work, and possible agreements on a wide range of trade issues, with a special focus on customs and trade facilitation, technical barriers to trade, sanitary and phytosanitary measures, and trade and investment promotion."[27]

The European Union (EU) is also a relevant trade partner for Botswana. An interim Economic Partnership Agreement (EPA) has been signed between the EU and Botswana, Lesotho, Swaziland and Mozambique in 2009, while Namibia's signature is still pending. A Trade, Development and Cooperation Agreement between the EU and South Africa is currently in force, and most SACU members have aligned their trade practices to this

25 Southern African Development Community (2013). *SADC Mission.* [online] Available at: http://www.sadc.int/about-sadc/overview/sadc-mission/
26 U.S. Department of State (2013). *U.S. Relations With Botswana.* [online] Available at: http://www.state.gov/r/pa/ei/bgn/1830.htm
27 U.S. Department of State (2013). *U.S. Relations With Botswana.* [online] Available at: http://www.state.gov/r/pa/ei/bgn/1830.htm

agreement; according to the originally established and still unequal policy, custom duties are collected by South Africa and then redistributed to the other four SACU members.

The Interim EPA provides for the elimination of all duties and quotas on imports and exports from the above-mentioned Southern African countries to the EU. In the same spirit as the SACU infant industry protection clause, the participating African countries are allowed to re-introduce duties or quotas in the case they need to safeguard local economies. Negotiations on a comprehensive EPA involving the whole Southern African region are still pending, mainly because of the significant diversity in economic and institutional terms within the region, and because of the EU insistence on including a *Most Favored Nation* clause (ensuring that the EU will receive the as beneficial treatment in trade matters as the one granted to the nation which receives the most favorable terms in respect of trade matters) in future agreement. In spite of these hurdles, the presence of a solid agreement with South Africa currently guarantees a fruitful and positive relationship between SACU members and the EU; this is however just an anticipation of a future Southern Africa EPA.

4.2 Equatorial Guinea: a country afflicted by a massive democratic deficit

4.2.1 Appraising the poor quality of domestic institutions

Equatorial Guinea presents a totally different case with respect to Botswana's. The current record of corruption and political instability is not really the consequence of its colonial past, but of pre-existent extractive institutions, ethnic division and internal conflict; the most salient aspects of it have already been mentioned in paragraph 1.2.

The country's political standards are the lowest in the sample of CEMAC countries, as shown by the *Polity IV* scores of 0 and -5 on respectively *Democracy* and *Polity;* the country's executive is recruited in an unregulated fashion and is very weakly constrained. The dominance of the Democratic Party of Equatorial Guinea on the political scene is confirmed by an all-time low score of 2 on the measure of *Political Competition*. It is evident that the country lacks a system of checks and balances to rationalize its governmental and administrative apparatus; President Nguema effectively assumes the role of *Deus Ex Machina*, managing the country and its resources in line with a short-termist approach uniquely directed at incrementing his personal wealth. Equatorial Guinea underperforms with respect

to CEMAC regional standards and, according to the Polity IV scores, is comparable to the equally undemocratic Republic of Congo.

As in the case of Botswana, the *Doing Business* indicators provide a proxy for the quality of economic institutions in Equatorial Guinea. At a first glance, we notice that all CEMAC countries are listed at the very bottom of the ranking occupying positions ranging from the 161th (Cameroon) to the 183th (Republic of the Congo); Equatorial Guinea, however, performs relatively well in comparison to its peers providing the second best score of 162 on the condensed *Ease of Doing Business* measure. Accordingly, its performance on the parameters of *Getting Electricity, Registering Property*, and *Trading Across Borders* is satisfactory according to regional standards, and in particular Equatorial Guinea ranks 61st globally on the measure of *Enforcing Contracts*, an even better result than the one characterizing Botswana; the growth of the oil industry in the country has produced at least a mild progress in some components of development. However, the country should render more efficient its procedures to *start a business* and *resolve insolvency*, measures on which it underperforms its regional peers.

As all but two countries belonging to the CEMAC regional agreement, Equatorial Guinea is "not rated" by neither *Standard & Poor's* nor Moody's. Nevertheless, the country's unstable political conditions, corrupt regime, and extractive institutions suggest that any public debt issued by the country's would be considered as junk (i.e below S&P BBB rating).

Despite the unavailability of the *Gini* measure for Equatorial Guinea, other CEMAC countries' values of this coefficient are never below 40[28], considered by the UN as being the threshold for an acceptable level of inequality. According to African standards in general and regional tendencies in particular, and to the corrupt habits of its government, it is very likely that Equatorial Guinea' income distribution is highly unequal and aligned to the CEMAC trend.

Finally, the country is listed in the middle of the *Global Peace Index*, ranking at the 87th position and providing for the second-best score in CEMAC after Gabon. Nonetheless, this

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[28] For the purpose of this analysis, the two values of 38.91 and 30.78 for Cameroon and Chad can be rounded to 40.

index could be fairly volatile depending on the eruption of a civil war in the country; if it has been more or less under control until now, it is not at all to be excluded that, mostly after the attempted coup in 2004, the country's peace record will worsen in the future; until a democratic government and pluralistic political system will be installed, this risk will always persist in Equatorial Guinea.

4.2.2 The involvement of Equatorial Guinea in regional and international agreements

The most prominent regional agreement Equatorial Guinea is part of is the *Communauté Économique et Monétaire des Etats de l'Afrique Centrale (CEMAC)*, established on March the 16th 1994 and including the following six countries: Cameroon, Republic of Congo, Gabon, Equatorial Guinea, Central African Republic, and Chad. Characterized by the Mission Statement objective to "promote an harmonious development of the member states via the creation of a comprehensive and solid common market,"[29] the CEMAC is defined by a much more complex and integrated institutional structure than SACU including a Parliament, a Court of Justice and a Court of Accounts. This stronger cooperation is alimented by the fact that these six countries shared a common colonizer, France, and now have a common currency, the CFA Franc (different but exchangeable at the 1-to-1 parity with the West African Franc adopted by the other Francophone region in Western Africa). The CEMAC, as a result, resembles more to the EU than to the SACU, in that its free trade area is enhanced by the common currency. Both the CFA Franc and the West African Franc were pegged to the French Franc until 1999, and then to the Euro according to the following parity formula: 100 CFA Francs = 1 French Franc = € 0.152449.

In spite of Equatorial Guinea's Spanish and Portuguese colonial past, the country joined the CEMAC, adopting French along with Spanish as administrative languages and the CFA franc as national currency. This decision was mainly driven by economic and trade-related motives, since Equatorial Guinea is a very small country sharing borders with Cameroon and Gabon, two significantly larger countries and former French colonies; any other arrangement would have been detrimental to the Equatoguinean effective economic development.

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[29] Communauté Economique de l'Afrique Centrale (2013) *CEMAC en bref.* [online] Available at: http://www.cemac.int/presentationCEMAC.htm

The Equatoguinean membership in the CEMAC ensures a somewhat stable monetary policy for the small country as well as the support from the other five members; this, however, does not rule out the possibility of an internal conflict to counter the corrupted political system, an occurrence that would put at risk Equatoguinean future participation to the Union.

Equatorial Guinea's relationship with the United States started in 1968 when the country became independent from Spain. Much differently from the pronouncement by the US Department of State with respect to Botswana, the one referred to Equatorial Guinea reports: "Three major U.S. foreign policy issues form the cornerstone of the bilateral relationship with Equatorial Guinea -- good governance and democracy; the protection of human rights; and U.S. national security, especially access to energy resources."[30] Otherwise, the US connection to the African country is dominated by trade in oil products, which obviously constitute the main source of exports from Equatorial Guinea to the United States; also, US oil companies are among the main investors in the country, holding a leading role in explorative and extractive activities. In terms of humanitarian assistance, the US Agency for International Development is involved in some regional projects in Equatorial Guinea, but it currently has no office based in the country, thereby limiting the effectiveness of the implemented measures.

Trade relationship between the European Union and Central Africa, defined as the CEMAC countries plus the Democratic Republic of the Congo and São Tomé & Principe, are dominated *in primis* by petroleum products, and *in secundis* by wood, cocoa, copper, and bananas. In spite of the lack of a comprehensive EPA agreement between EU and Central Africa, an Interim EPA has been signed in 2009 by Cameroon, one of the major CEMAC countries, and it provides for a gradual elimination of duties and quotas in the 2010-2015 period on up to 80% of all EU exports to Cameroon. The agreement also encompasses EU support in trade matters, institutional issues, and dispute settlement. Gabon and the Republic of Congo are subject to the *Generalized Scheme of Preferences*, a conditional exemption from the WTO Most Favored Nation principle, and are not tied to the EU by any trade

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[30] U.S. Department of State (2013) *U.S. Relations With Equatorial Guinea.* [online] Available at: http://www.state.gov/r/pa/ei/bgn/7221.htm

agreement; this will pose a problematic issue for Gabon that, now considered as an upper-middle income country according to the World Bank definition, will not be anymore eligible to the preferential treatment starting from the 1st of January 2014. The remaining Central African countries, including Equatorial Guinea, fit the definition of Least Developed Nations and are currently subject to the Everything but Arms scheme providing for a preferential duty and quota-free EU access. As a result, the issue of stipulating a new EPA is less impending for this last group of countries than for the more developed Gabon.

5. A BB-NN analysis of positive investment dynamics

In this section I will adopt the BB-NN (Salter-Swan) model to briefly describe the economic effect of an increase in foreign investment in Botswana and Equatorial Guinea generated by the discovery of natural resources.

A graphical representation of the BB-NN model is provided in Appendix 8.17. The horizontal axis represents the aggregate demand ($Y=C+I+G+NX$[31]) and the vertical axis measures the country's competitiveness, identified by the real exchange rate (e/w=nominal exchange rate/nominal wage level). The three lines reflect three different equilibria in the economy:

- The *BB line* illustrates a situation of external balance, when the Balance of Payments[32] (BOP) is zero and the economy is in equilibrium with the rest of the world; a country located above the BB line is running a BOP surplus with a positive change in reserves, while the vice versa is valid for a country positioned below the BB line.

- The *NN line* reflects a situation of internal balance, involving equilibria both in domestic economy and labor market; the economy is at "full employment", unemployment is at its "natural rate" and inflation is at a sustainable level. The country is therefore close to the frontier of optimal potential growth, and wages are not subject to increasing or decreasing pressures. A country characterized by a high level of unemployment and a low inflation is located below the NN line producing output below potential; an economy presenting low unemployment and high inflation is above the NN line: output is above potential and the economy is "overheating".

- The *P line*, also called the social peace line, represents a situation in which the population's standard of living is sufficient enough to guarantee the social peace. Above the line is depicted a situation in which wages are too low and social unrest is more likely to happen; the contrary is valid for the area below the P line.

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[31] In a paraphrased form, National Output = Consumption + Investment + Government Spending + Net Exports

[32] BOP=current account + financial account = Δ Reserves

The area of Graph 1 (Appendix 17) is therefore subdivided in six triangles, each representing a different economic situation and characterized by different market conditions.

Both Equatorial Guinea and Botswana benefited from an increase in foreign investment attracted by their respective wealth in terms of oil and diamonds. The related economic dynamics are mapped in Graph 2 (Appendix 17). First of all, both Equatorial Guinea and Botswana are not restricted to being positioned exactly on the BB line, a condition that is instead mandated in the case of fully flexible exchange rate, and lack of intervention in currency markets preventing changes in Reserves. On the contrary, Equatorial Guinea is characterized by a system of pegged exchange rate (i.e. CFA Franc is pegged to the Euro), and Botswana presents an intermediate regime of exchange rate (i.e. crawling peg against a basket of international and regional currencies). In Graph 2 (Appendix 17), we notice that the investors' optimism regarding the two African economies' prospects of growth drove a significant increase of foreign investments in both countries. *Ceteris paribus*, the BB line moves down to BB' and the economy is now characterized by a greater level of national output. Over time, the population gets used to these higher standards of living and the P line will therefore shift down to P'. At the new point the population gradually becomes accustomed to a higher wage level and living conditions, making it extremely difficult for the government to reverse the situation through for instance an imposed wage reduction. The country has now achieved a new and better equilibrium, which on the BB-NN graph is located to the right of the initial point.

Two specifications are opportune at this point. Despite in Appendix 8.17 the new equilibrium is represented at the intersection between BB', P' and NN there is no element confirming that this perfect economic stabilization will happen in practice; it might well be that the two lines will not intersect with the NN line after the shocks. If that was the case, the government should implement specific fiscal and monetary policies in order to achieve a new equilibrium. However, given that a deeper analysis of the BB-NN model is above of the scope of this paper, only the simplest case has been portrayed in this section.

A second critique that could be addressed to the above-presented model hinges on the inherent institutional and political differences existing between the two countries, an element that would certainly affect the validity of their comparison. In the BB-NN model,

this discrepancy would be well represented as a different shock to the P line. While Botswana certainly qualifies for the definition of "socially peaceful", Equatorial Guinea, with its corrupt government and extractive institutions, does not fulfill those criteria. As a result, it is very likely that the P line characterizing Botswana will shift down significantly more than the one characterizing Equatorial Guinea, because of the much greater standards of living presented by the former country. Emphasizing this point, it might well be that the P line for Equatorial Guinea does not shift at all, because of the greatly unequal distribution of income within the country; the fact that standards of living for the President and his entourage have increased does not mean that the ones of the population have. Again, being a deeper analysis on this topic above the scope of this paper, discretion is left to the reader to investigate further these BB-NN dynamics.

6. A Game Theory model on the benefits of Public-Private Partnerships

6.1 Introduction to Public-Private Partnerships

According to the Organization for Economic Cooperation and Development (OECD), *Public-Private Partnerships (PPP)* can be defined as "a long-term agreement between the government and a private partner where the service delivery objectives of the government are aligned with the profit objectives of the private partner"[33]; the success of PPPs is exactly based on the appropriate transfer of risk between the public party and the private one. Bovaird (2004) defines PPPs as "working arrangements based on a mutual commitment (over and above that implied in any contract) between a public sector organization with any organization outside of the public sector."[34] The role of the Private Party is commonly undertaken by a Special Purpose Vehicle (SPV), a consortium of companies created to conduct a specific public project. The main advantages of PPPs are thus identified in such synergies as collaboration, learning, and trust.

The effectiveness of a PPP is highly dependent on a correct assessment of the project's *value for money*, which should include both quantitative and qualitative elements of judgment and should be subject to specific and transparent guidelines enhancing the quality of the final evaluation. In particular, the computation of the value for money is usually conducted through the so-called "Public Sector Comparator", a system comparing the net present cost of all bids related to the PPP project vis-à-vis what is considered to be the most efficient traditional procurement method for the allocation of a public sector project. In this respect, the adoption of advanced technologies facilitates the attainment of a positive equilibrium between public and private parties.

The Public Sector Comparator also takes into account the extent to which the *risks* underlying the project are appropriately shared between public and private parties. From a

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[33] OECD, 2011. *From Lessons to Principles for the Use of Public-Private Partnerships*. Public Governance and Territorial Development Public Management Committee. 32nd Annual Meeting of Working Party Of Senior Budget Officials 6-7 June 2011, Luxembourg [Hand-Out]. p. 3. Available at: http://www.oecd.org/gov/budgeting/48144872.pdf

[34] Bovaird, T. (2004). Public-private partnerships: From contested concepts to prevalent practice. *International Review of Administrative Sciences, 70*(2), p.200.

purely economic perspective, risks should be carried by the party that is more apt at bearing them, either in preventing their realization (*ex-ante* risk management) or in dealing with the results of a materialized risk (*ex-post* risk management). A second classification might be useful to characterize the risks attached to a project: performance-related risks, financial risks, time and cost overrun risks, and other construction risks. The ability for a party to manage the risk is measured both in terms of its competences and on the basis of the costs incurred in managing it. In addition, since the perception of risks proper to a project usually differs among stakeholders, an appropriate strategy of multi-party risk communication should be carefully implemented.

The government should also rigorously establish the affordability of the PPP project, by evaluating if the public expenditure associated to it is sustainable and in line with the intertemporal budget constraint. According to an "opportunity-cost logic", a project is affordable if its delivery through the PPP improves the value for money with respect to its completion via a traditional public procurement mechanism.

In addition to all the beneficial aspects usually characterizing these arrangements, the adoption of PPPs generally reduces spending flexibility, and potentially allocative efficiency, on the part of the government. In fact, in compliance with general rules related to national accounting, the government generally records in the initial period a level of public expenditure which is not at all commensurate to the significant investment outlay; given the necessary payment of an annual fee, future public expenditures will necessarily increase, thus limiting the scope of undertaking new investments in other areas. In order to counter this misrepresentation, the public sector should implement sound and transparent accounting procedures in the treatment of PPP activities; these would constitute a guarantee that a PPP arrangement will not be selected just because of its advantages from an accounting standpoint.

According to the OECD, PPP governance should be conducted in line with ten principles[35], internally divided in two areas of implementation: the *Political and Institutional framework* characterizing the country (principles from 1 to 3), and the *Approval and Management procedure* governing the PPP (principles from 4 to 10). It is very useful to consider these

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[35] The specific wording of the principles has been taken by the one presented on the OECD paper *From Lessons to Principles for the Use of Public-Private Partnerships* in order to ensure consistency.

guidelines to capture the essence of PPP measures' success. A brief representation of these ten principles follows[36]:

1. The political leadership should ensure public awareness of the relative costs, benefits and risks of PPPs and conventional procurement.

2. Set up a clear, predictable and well-regulated legal framework for PPPs.

3. Ensure that the necessary institutional roles and capacities are present and active in the public sector.

   In particular, four main roles should be independently covered in the public sector: ensuring the pursuit of the overall fiscal policy goals, carefully evaluating the project's value for money, implementing operationally the PPP project, and conducting a proper audit of the PPP results. A proper separation of the entities in charge of these positions is deemed necessary so as to avoid confusion and to ensure proper accountability. The agencies usually entrusted with the four above-mentioned roles are: the country's Central Budget Authority, the Public-Private Partnership unit specifically dedicated to the project, the Public Authority formally procuring the PPP, and the Supreme Audit Institution in the country.

4. The decision to invest should be based on the government thorough evaluation while being separate from the specific financing method related to the project.

5. The project should be affordable and transparently treated in the budget process – regardless of the level of government it applies to.

6. Carefully investigate which investment method yields most value for money.

7. Transfer the risks to those that manage them best.

   A significant and extensive communication and the development of trust should be fostered within the group of stakeholders in order to ensure the convergence of risk assessment criteria.

8. Involve the user in the design and monitoring of PPP to increase value for money.

   The significance of this principle derives from the alignment of the service quality needed by the end users and created by the service provider; this party will be compelled to minimize the discrepancy between quality offered and quality demanded.

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[36] OECD, 2011. *From Lessons to Principles for the Use of Public-Private Partnerships*. Public Governance and Territorial Development Public Management Committee. 32nd Annual Meeting of Working Party Of Senior Budget Officials 6-7 June 2011, Luxembourg [Hand-Out]. pp. 9-13. Available at: http://www.oecd.org/gov/budgeting/48144872.pdf

9. Maintain value for money during operation, renegotiation and project failure.

10. Ensure competition and integrity in the procurement process.

In economic terms, competition often creates a greater service quality in that any competitor is persuaded to maximize its performance (according to its specific objectives) so as to win the majority of demand; on the contrary, a monopoly will more likely provide the service in a less efficient manner, being the monopolist already aware that it will grab the whole demand; this conclusion is even more dramatic if the monopoly is natural one and therefore mandated and regulated by the government. The same reasoning is valid for PPP procurement; by ensuring that competition exists both *for* and *in* the market, the government boosts quality and efficiency in service provision.

The majority of the problems impeding a successful PPP implementation are related to bad administration policies. The adoption of an *opportunistic bidding behavior* during the procurement phase is prompted by the asymmetry of information between the government and the private parties involved. The bidders may have an incentive to either understate the risks attached to the project, or overstate the value of the project and its return; since the government is usually unable to verify the validity of the company's assertions due to the lack of information on its technical processes, it is likely that the public party will either wrongly choose PPP as the most appropriate mechanism, or that it will not choose the most efficient company or consortium to implement the project.

A second weakness of common PPP implementation, also related to a form of opportunistic behavior, can be defined as a *moral hazard* problem arising between the government and the company/consortium. A possible application is based on contract renewal. If the company expects the contract to be renewed in the future it will have the incentive to perform in a less efficient manner so as to maximize its current payoff; this short-termism will have a negative effect on the successful attainment of the PPP objectives. A potential cost for the company will be incurred in terms of reputational damage if their inappropriate conduct is discovered.

Negotiation between parties is a key determinant of a well-constructed PPP initiative, and the involvement of an International Organization as a mediator could be very beneficial in this respect. The achievement of a win-win solution and total benefits from negotiation is ensured if the value attached to cooperation by all parties is greater than the value that could

be realized by independently pursuing the "best alternative to a negotiated agreement". However, different parties often have asymmetric interpretations of the "need" to be satisfied by the accord. To circumvent this complication, risks should be appropriately shared and a threshold should be established for the "added value" so as to allow each party to autonomously decide if to enter the deal or not. In this regard, the creation of a shared and mutually understood set of objectives would facilitate the achievement of a successful deal. The proper value definition is generally achieved through the interaction between three parties: the private part (i.e. company), the public sector (i.e. government), and the citizens. The will of the public sector and the one of the citizens is merged to define the public value; this condition, while valid in most developed countries characterized by a sufficient level of institutional quality and democracy, is not at all verified in corrupted developing countries (e.g. Equatorial Guinea) where the leaders' rent-seeking objectives strikingly differ with respect to the population's ones. This is exactly the reason why International Organizations should be involved in PPPs performed in developing countries; these organizations guarantee that the government will act in the interest of the citizens despite the context of democratic deficit. Unfortunately, however, the main hurdle to a complete success of a PPP in a corrupt country still is identified in a lack of fair and equitable redistribution of the public good to society.

6.1.1 The advent of Public-Private Partnerships and related best practices

The adoption of PPP for the provision of public services has increased in the 1990's and particularly in the 2000's. For the most part of the 2000-2010 decade PPPs in UK represented the 12% of the country's total annual capital expenditure. In addition to it, other countries as France, Germany, Spain, Portugal, Australia, Korea, and South Africa are progressively increasing their use of PPPs. According to a survey conducted by Public Works Financing (PWF) and covering the years 1985-2009 the three main PPP projects involve Road construction, Rail, and Water. Also, an analysis conducted on twenty OECD countries revealed that their percentage of public sector infrastructure taking place through PPPs is between 0% and 5% for nine countries, between 5% and 15% for other nine countries and an above 20% for the outliers of Chile and Mexico.

A very successful example of PPP project is the Chad-Cameroon petroleum development and pipeline project, initiated in 1993 and considered still in 2005 to be the most significant energy infrastructure development project in Sub-Saharan Africa. A brief analysis of this project is useful for a proper understanding of the benefits characterizing PPPs and of the obstacles to be surmounted for their successful implementation.

The project was owned and operated by a consortium of companies in the form of a *Special Purpose Vehicle* (SPV), already presented in section 6.1 above as the most common PPP arrangement. The SPV was composed of: Exxon Mobil (operator of the project, and owing 40% of the equity), Chevron (owning 25% of the equity), and Petronas (owning 35% of the equity); they together invested $3bn in the project. The companies benefited from an extended exploration permit until at least the year 2004; they also received the 55% of the total returns from the petroleum deposits in the Doba basin, while the government of Chad and Cameroon received respectively the 36% and 9%. In addition to the governments of Chad and Cameroon, the other party involved in this PPP project was the World Bank. As highlighted above, the involvement of International Organizations (IOs) and Non-governmental Organizations (NGOs) is sometimes essential to ensure the credibility of governments in developing countries and to cover the risk of a possible defection by the public entity. In this specific occurrence, the World Bank not only contributed in terms of structural and strategic support to the governments of Chad and Cameroon, but it also extended a total value of US$193 million in loans.

The World Bank was particularly influential in establishing an oil revenue-management plan for the government of Chad. Oil revenues were categorized in *Direct Revenues*, including dividends and royalties, and *Indirect Revenues*, composed of taxes, fees, and customs duties. The 90% of the former income category was paid in a treasury account hosted at two local banks, while the 10% was retained in a savings account opened in an international financial institution and specifically directed at benefiting future generations. The totality of the indirect revenues was deposited in a public treasury account. A crucial aspect of the arrangement provided for all direct revenues to be allocated in line with the main goal of reducing poverty and on the basis of this sharing formula: 80% for the coverage of priority sector expenses (e.g. public health, rural development, education, environment and water resources management), 15% to cover the operating and investment costs of the country, and the remaining 5% to specifically address the expenses of

decentralized communities. In sum, the World Bank revenue management plan was directed not only at addressing the impending needs of the government in terms of development-related expenditures, but it also included an essential forward-looking element addressing the needs of future generations. The near majority of the expenditures, both of a short-term and long-term nature, were characterized by their beneficial impact on society.

With the development of oil fields and pipelines came the infrastructural advances involving the construction and improvement of roads, bridges, rail system, and airstrips. In this respect, the consortium differentiated itself from previous examples of PPP; by not limiting their monitoring activities to the common Environmental Impact Assessment (EIA), they also performed a Health Impact Assessment (HIA) to predict the PPP project's effects on human health; a proper coordination with policymakers was then needed to prevent or mitigate the realization of the assessed negative impacts.

The direct benefit to society accrued not only via the public programs supported by the World Bank revenue-management plan, but also via corporate channels directed at improving health and employment conditions in the country. An extensive malaria control program and similar initiatives directed at compensating for the lack of clean water, poor hygiene and nutrition, and low vaccination records were accomplished during the period of the PPP operations and were maintained thereafter. Significantly enough, these programs were extended not only to the project's employees but also to the whole community living in adjacent villages. In terms of their impact on the consortium's operations, these programs increased the average number of workdays per worker along with their working effectiveness, thus generating considerable savings for the private party. The involvement of the population via the promotion of community gatherings for the discussion of health programs and similar measures created a positive externality by increasing the public's participation in the political process; it thus fostered the implementation of the rule of law and good governance in those communities.

This particularly positive example of the Chad-Cameroon oil project highlights the beneficial impact that PPP can have on society, even in countries that are not characterized by a particularly high quality of institutions. In spite of the weak development of PPPs in Sub-Saharan Africa, this example presents the strong potential entailed in these cooperative arrangements and conditional on a sufficient level of political will. The strong commitment of the private parties involved and the presence of an International Organization like the

World Bank or the International Monetary Fund are two catalysts of the successful implementation of a PPP initiative.

A second example of positive PPP execution is represented by the case of Liberia, a country characterized by a rich natural resource endowment of rubber, iron ore, and timber. The focus of this section will be on some legal requirements that, is implemented, have the potential to increase the likelihood of a positive PPP realization. In concomitance with the creation of a new Poverty Reduction Strategy (PRS) to accelerate its achievement of "middle-income status", Liberia has recently started to leverage its resource concessions and to implement PPPs directed at fostering job creation. The majority of the concessions already approved by the government include a *local content clause*, mandating a lower threshold in terms of local procurement of goods and services to be observed by the private party, and an *employment clause* requiring all unskilled workers to be Liberian. Since the private party is supposed progressively develop the employees' skills, the government requires a specific share of those companies' subsidiaries to be owned by Liberia and a percentage of the management to be Liberian in a pre-defined number of years. According to a similar clause, the private party commits to consistently train the local workers and to improve their skills. These clauses have successfully formalized a series of principles that are now implied in the country's PPP framework in line with the mutual understanding of the parties involved. As a final note, by creating a solid legal structure underlying these agreements Liberia has maximized the PPP-related value for the government and its population.

These examples of successful PPPs provide several elements that should encourage other governments to improve their relationship with the private sector. It is with this principle in mind, that the focus is now shifted to analyzing the main characteristics of the natural resource markets in Botswana and Equatorial Guinea.

6.2 Botswana: how diamond sector's idiosyncrasies affect PPP applicability

The diamond industry is controlled by a handful of companies including De Beers, Rio Tinto, BHP Billiton, and Trans Hex; as a group, they hold a cartel-like power and control the global supply of gem-grade rough diamonds to preserve price stability. The

Diamond Trading Company (DTC) is in charge of all De Beers distribution activities; it collects rough diamonds from all over the world, sorts them, and resells them to "Sightholders"[37], who then take care of all other value-adding activities (e.g. dealing and preparing rough diamonds, designing and manufacturing jewelry). Traditionally established in London, the DTC will be definitely relocated in Gaborone at the end of 2013. The significance of this decision for Botswana is based not only on the FDI inflows but also on the now improved chances to avoid the resource curse; thanks to this rearrangement, Botswana will always represent the hub for the commerce of rough diamonds, even once its diamond' reserves will be fully depleted.

The Peter G. Peterson Institute for International Economics hosted a Conference with Botswana's President Festus Mogae in 2006. A very interesting record of Botswana's diamond activities is found in the transcript gathered from the audio recording[38].

As reiterated several times by the President, Botswana's developmental success has been achieved by re-investing the proceeds from mineral activities in economic sectors as education and health. The country is also a major initiator of those initiatives directed at eliminating the trade in "conflict diamonds" (i.e. diamonds that have generated intra-national conflicts among different groups determined to seize the resource), as the Kimberly Process established in 2003. Thanks to the serious involvement of several diamond-producing countries in this initiative, the trade in conflict diamonds had been reduced to less than 1% of the global diamond trade. De Beers, on the corporate side, also started supporting the Extractive Industries Transparency Initiative (EITI) initiative in 2003.

The successful nature of the relationship between Botswana and De Beers provides for one additional reason to relocate the DTC in Gaborone. In this respect, diamonds and oil differ in their recovery period of the initial investment; being this period longer for diamonds' exploitation and being the nature of the investment mainly fixed and infrastructure-based, De Beers is particularly interested in nurturing a positive relation with

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[37] According to the De Beers definition, these are the DTC's clients. Because the DTC does not have enough supply to meet demand, and does not require its purchasers to compete on price for reasons of commercial stability, it must use objective criteria (see Supplier of Choice) in order to select its customers, who are known as Sightholders. *Source:* De Beers (2013) *Diamond Glossary.* [online] Available at: http://www.debeersgroup.com/en/Diamonds/Diamond-Glossary/

[38] MOGAE, F., 2006. *Diamonds and Development: The Botswana Story.* [transcript prepared from audio recording], Peter G. Peterson Conference Center Institute for International Economics. [online] Available at: http://www.cgdev.org/doc/events/10.11.06/PresidentMogae10.11.06.pdf

Botswana. The achievement of this fruitful cooperation has also been facilitated by the stable business and regulatory environment distinguishing this specific country from many others in Africa. The current arrangement has been attained after several rounds of negotiations, always characterized by a solid and determinate bargaining stance of the Botswana's government. The main result has been the creation of Debswana, the diamond company jointly owned by the country of Botswana and De Beers, each party owing a 50% share.

This section presents the framework that will define the implementation of PPPs in Botswana. As mentioned above, the country's mineral resources are vested in the state[39]; in particular, the government already owns 50% of Debswana and has the right to the 15% of the equity of any new mining venture. In reference to the PPP game that will be presented in section 6.4, Botswana's payoffs from any public-private cooperation in terms of diamonds' exploitation are: dividends from profit redistribution (50% in the case of Debswana), royalty (10% of gross market value or sale value), profit tax (corporate tax equal to 22% of the realized profit), and withholding tax on remitted dividends (7.5% of all dividends paid by a resident company to a resident or non-resident)[40]. But the benefits accruing to the government are not only monetary. In fact, De Beers' investment in Jwaneng, the richest mine in the world by value whose operations started in 1982, has not been limited to mineral extraction. On the contrary, the company invested in economic development by building the Jwaneng Mine Hospital, the Jwaneng Airport, and the Acacia private primary school in the area surrounding the mine. Other benefits accruing to society involve the creation of employment opportunities; the 2011 Cut-8 project, extending Jwaneng's period of operation until 2025, created 1,400 jobs on the top of the 3,100 employees already working at the mine; the citizens of Botswana occupied the 86% of those newly created jobs. An additional gain to society was produced in terms of indirect employment; as a form of *local content clause*, the government stipulates that 51% of all external contracts signed as part of the Cut-8 project have to be allocated to citizens of Botswana. Finally, the relocation of DTC from

[39] REPUBLIC OF BOTSWANA, 1999. *Mines and Mineral Act no. 17 of 1999.* Supplement A- Government Gazette dated 17th September, 1999, p. 121. Available at: http://www.mines.gov.bw/mines%20and%20minerals%20%20Act.pdf
[40] DELOITTE, (2006). *Investing in Africa - Botswana.* Available at: http://www.deloitte.com/assets/Dcom-SouthAfrica/Local%20Assets/Documents/za_tax_Botswana_280907(2).pdf

London to Gaborone at the end of 2013 represents a game-changer in terms of centralization of the resource's management.

Despite the pretty restrictive fiscal tools adopted by Botswana, the country's institutional excellence relative to African standards and its development record have the potential to encourage future negotiations of PPPs; in this respect, evidence is found in the success of the "Debswana experiment," which could itself be defined as a PPP-like cooperative agreement.

6.3 The main elements of the Equatoguinean market as a host of PPPs

The establishment of Equatoguinean oil operations in 1994 progressively crowded out the production of coffee, cocoa and timber. The Zafiro field, discovered in 1995 and operated by Exxon Mobil, is still currently the main producing field in Equatorial Guinea. For the purposes of this paper, it can be considered as the counterpart of the Jwaneng mine in Botswana. In 2002 the Equatoguinean government instituted GEPetrol, the national oil company representing the State's interests in oil contracts and participating in partnerships with private parties. In fact, this national company detains the 28.75% of the joint venture operating the Zafiro field, the remaining 71.25% being owned by Mobil Equatorial Guinea, Inc, a subsidiary of Exxon Mobil.

According to the Code of Hydrocarbures and as in the case of Botswana, the State is the owner of all natural resources the country is endowed with[41]. Art. 13 of this law stipulates that oil operations rights are allocated to a particular company according to a process of competitive bidding. In addition, Art. 32 establishes that the government will own the facilities and infrastructures built on Equatoguinean soil once the contractor has recovered its initial cost. In representation of the benefits accruing to society, Art. 87 of the Code specifies that private contractors should satisfy domestic consumption requirements according to a pre-determined formula; in terms of skills development and training, Art. 88 mandates the cooperation of the State and the Contractor in the construction and maintenance of the "Hydrocarbon Technological Institute of Equatorial Guinea" and the creation of training centers for Equatoguinean citizens working in the oil sector.

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[41] Hydrocarbons Law No. 8/2006 of the Republic of Equatorial Guinea (2006). Available at: http://www.droit-afrique.com/images/textes/GuineeEq/GE%20-%20Code%20hydrocarbures%202006_ENG.pdf

The company Mobil Equatorial Guinea Inc. invested in some socially and environmentally beneficial projects in Equatorial Guinea, as the Bioko Diversity Protection Program directed at protecting the ecosystem in general and turtles in particular on the Bioko island, the World Class Technical Training Program running from 1996 to 2007 and valued at US$30m, and the StopAids program. The company has also invested in fostering the education of young girls and in fighting the spread of malaria.

In terms of monetary benefits, the country has signed a double taxation treaty with the other CEMAC member states. The oil production activities conducted by resident companies[42] in Equatorial Guinea are subject to the following tax treatment: both business income and capital gains are taxed at the Corporate Tax rate of 35%; dividends and capital gains received by foreign shareholders are taxed at the 25% rate; a withholding tax of 6.25% on resident companies and of 10% on non-resident ones is applied in the sector of oil and gas; as to royalties, the Tax code establishes that the cost of patents, trademarks, and similar rights are deductible conditional on their moderate size and on their actual adoption in the business[43].

A Public-Private Partnership could be established as a joint venture between GEPetrol and an oil company. Article 83 in Decree Law no. 8/2006 stipulates that the State participation through GEPetrol into any oil and gas venture cannot be lower than 20%[44]; this Law also increased the requirements in terms of the *local content clause*.

The situation in Equatorial Guinea is different with respect to the one characterizing Botswana, increasing the country's vulnerability to the resource curse's realization for two sets of reasons. Firstly, Botswana has committed to economic diversification by developing a market for vehicles' assembly (significant enough to scare the neighbor South Africa), by investing downstream in the diamond value chain to avoid being constrained in the upstream rough diamonds extraction, and by negotiating the relocation of the DTC in Gaborone; on the contrary, Equatorial Guinea's oil activity is merely focused on oil

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[42] In order to benefit from a preferential tax treatment, for instance, Exxon Mobil created a new entity to operate in Equatorial Guinea: Mobil Equatorial Guinea, Inc., based in Houston (Texas).
[43] DELOITTE, (2006). *Investing in Africa - Equatorial Guinea*. Available at:
http://www.deloitte.com/assets/Dcom-
SouthAfrica/Local%20Assets/Documents/za_tax_EquatorialGuinea_280907.pdf
[44] Hydrocarbons Law No. 8/2006 of the Republic of Equatorial Guinea (2006), p. 18. Available at:
http://www.droit-afrique.com/images/textes/GuineeEq/GE%20-
%20Code%20hydrocarbures%202006_ENG.pdf

extraction and no refinery is currently present in the country. The second set of reasons is based on the inexistent quality of Equatoguinean institutions and its lack of democracy. These conditions do not really encourage companies to cooperate and establish a positive relationship with the Equatoguinean government; private parties, predominantly driven by a profit-maximizing logic, would always distrust the public sector's focus on rent expropriation. As a reminder, Equatorial Guinea has not yet succeeded in complying with the EITI standards, thereby confirming the total lack of transparency in its oil operations. While the establishment of PPP in Botswana would be much easier, the creation of a similar cooperative agreement in Equatorial Guinea would require the participation of an IO or NGO in order to enhance the credibility of the corrupt government's commitment.

6.4 Introduction to the Public-Private Partnership Game

This section will analyze the potential of PPPs to drive development according to the Game Theory paradigm. As highlighted above, a fruitful collaboration between public and private sectors could effectively support the economic diversification and the increase in standards of living proper to a resource-rich country.

The initial focus will be on the description of all technicalities and assumptions underlying the game. In the following analysis, a particular reference will be made to the positive case of Botswana so as to identify positive elements that could be applied to the context of Equatorial Guinea; as a specification, a the reader should "qualitatively" control for the much worse institutional quality characterizing this latter country. In particular, the payoffs will be represented first by letters, to ensure the model's general applicability, and then by fictitious numbers, in order to represent the specific case of Botswana. Because of the lack or incompleteness of reliable data concerning the companies' investments in the analyzed countries, the figures displayed will uniquely serve the example; by no means, however, this arrangement will hinder the validity of the analysis's results. As to the magnitude of each letter (i.e. each payoff), it has been defined in relative terms with respect to other letters (i.e. other payoffs) so as to satisfy the main assumptions of the game and guarantee the validity of the results. With this premise, we shall now proceed with the game-theoretic analysis, trusting that its representation of our sector of interest is consistent with reality.

The starting point of the game occurs right after the private party (e.g. the diamond company in the case of Botswana, and the oil company in the case of Equatorial Guinea) has invested in the extraction of the country's natural resource (e.g. diamonds for Botswana, oil for Equatorial Guinea) and it has already established its operations in the country. A first commitment by the company[45] has already been made, but for the moment it is uniquely directed at generating rents from the natural resource sector dominating the country's competitive advantage. The specific purpose of this study is to analyze the company's incentive to contribute to the country's development by investing in sectors as Education or Health, as well as the public sector's incentive to attract a similar type of investment that is not centered on the exploitation of its natural resources.

The structure I am going to adopt is the one of a *Repeated Game* since the relationship between public and private parties are characterized by repeated interactions and a cooperation evolving over time; in the optic of creating and alimenting a long-lasting relationship, both players might accept to suffer a cost or lower payoff in the short-term in order to create and sustain a chain of positive payoffs over the long-term.

In conformity with the definition of Public-Private Partnership, the two players of the game are the country's *Public Sector* and the *Private Party*, a single corporate entity or a consortium that has already invested in the country's natural resource sector and is now deciding whether to engage in socially beneficial projects fostering economic development.

The Government's[46] strategies are defined by the specific treatment that is reserved to the private party, in terms of taxes and working conditions. The choice is thus limited to *cooperate*, when the government foregoes a higher tax/royalty rate and invests in the creation of positive working conditions to encourage the company's engagement in developmental projects, or *not cooperate*, when it is only interested in the private party's investment in the natural resource sector and in expropriating the generated rents through the imposition of restrictive fiscal and working conditions.

The Private party's strategies are either to *invest* in the country's development and undertake projects directed at improving the standards of living of the population, or *not*

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[45] In this section 6.4, the word "Company" is always referred to the Private Party, a single entity or Special Purpose Vehicle (consortium of entities), that has already invested in the country's natural resource sector and is considering if to invest in its development; for the purposes of the game representation, these two terms are used interchangeably.

[46] In this section 6.4 concerning the representation of the Game, the word "Government" always identifies the Government of the country in which the investment is made; it is also called *Public Sector* in the game.

invest because either it does not plan to operate in the country over the long-term or because it is discouraged by the lack of public sector's cooperation.

Two games will be presented in this paper: the first one is the Standard Repeated Game described above, while the second one will include an additional cross-ownership clause acting as a game-changer for both players' strategies. This second game will be governed by fairly different dynamics, facilitating the attainment of cooperation with respect to the standard case. The description of the games follows in the two sections below.

6.4.1 The Standard PPP game: a simple form of non-cooperation

As mentioned above, in the Standard Game public and private parties are different and separate entities and cross-ownership is not part of the picture.

The description will now shift to both parties' payoffs, which are first identified by letters and then by fictitious numbers in Appendix 8.18.

The Public Sector's payoff a involves all the benefits accrued to the country as a consequence of the private party's investment in economic development; these includes:

- Improving standards of Education and Health and the infrastructures related to these and other essential public services;
- Generating opportunities for both direct and indirect employment;
- Attracting additional investment in the country by enhancing investors' confidence through the creation of a better investment climate;
- Fostering the creation of a more transparent administration and a greater institutional quality by formalizing some of the underlying political mechanisms.

The cost c has the connotation of "opportunity cost": it includes the foregone marginal increase in fiscal revenues in the forms of taxes and royalties and the additional investment in the creation of positive working conditions that the government could have avoided by persisting with the *status quo* and preserving its uncooperative attitude; both the lower fiscal revenues and the expenditures in improving working conditions are considered in their marginal terms.

For what concerns the Private party, the positive payoff b is subdivided in two parts:

- b_{ST} represents the benefits accruing to the company in terms of paying lower taxes and royalties to the government and being able to operate under better working conditions;

- $(b - b_{ST})$ involves all those gains accumulated over time and are characterized by a more long-term nuance, including:

  - Attracting more companies and investment in the country by generating a better investment climate via a positive feedback loop mechanism[47];

  - Making its own presence in the country more sustainable and being less subject to the government's expropriatory practices by both facilitating he delivery of basic services (i.e. Health and Education) and improving the quality of institutions;

  - Ensuring its future access to a well-trained workforce thanks to its initial investment in human capital;

  - Engendering a more "supportive" attitude by the public sector; according to this *quid pro quo*-like context, the government is encouraged to cooperate because of the company's clear commitment to fostering the country's development;

  - Generating long-standing reputational benefits.

As a crucial specification, the long-term benefits resulting from the PPP implementation do not accrue independently of future actions; on the contrary, they require continued cooperation between the players and the creation of a shared trust between them.

The cost d incurred by the company includes the total investment in projects not directly related to the natural resource sector (i.e. main driver of the company's presence in the country) and alimenting the Public sector's benefit a.

The *assumptions* underlying the game are the following:

1. Both players' strategies are flexible and can be renewed periodically, thus allowing the representation of a Repeated Game.

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[47] In this case positive network externalities will be generated. If the company involved in the game will jump-start the creation of a positive investment climate, other companies and additional portfolio investment and FDI will be attracted in the country and this will contribute to the creation of an even better investment climate; this positive feedback loop is the source of the positive network externalities benefiting all the companies in the industrial ecosystem.

2. All payoffs and costs incurred are divisible; they are realized periodically and not in a lump sum.

3. For the purposes of the game, $a > b$ in that we assume that the benefits accruing to the government, entailing significant advances in terms of development, exceed the gains obtained by the company as a result of its involvement in the country's growth. For instance, the construction of a hospital or school will greatly contribute to the improvement in standards of living and create long-lasting benefits whose present value could be computed by discounting future payoffs.

4. We also define $d > c$ in that the costs incurred by the company to engage in projects fostering the country's development are assumed to be greater than the marginal foregone fiscal revenues and the marginal investment in improving working conditions incurred by the public sector.

5. Also, $a > d > c$ and $b > d > c$ since the benefits accruing to both players are characterized by both a tangible and intangible, and a long-term and short-term nature. They are so assumed to exceed the periodic costs incurred by each player.

6. Very importantly: $b_{ST} = c$. This assumption directly arises from the definition of this bilateral interaction as a zero-sum game: what the government loses in marginal taxes and spends in marginal investments in improving the country's working conditions is exactly gained by the company in the short-term and is reflected in the value of b_{ST}.

7. Finally, $b - d > b_{ST}$ since the several elements constituting the total benefits accruing to the company net of the one-period investment ensure its greater magnitude with respect to the simple short-term benefit.

As per the above assumptions, the game will be characterized by the chain of inequalities: $a > b > d > c = b_{ST}$.

The focus will now shift to describing the payoff Matrix 1 represented in Appendix 8.18; a numerical representation of the game is also displayed in Matrix 2. In the upper left quadrant, identified by the combination *(Cooperate, Invest)*, the Public Sector and the Private Party present respectively the payoffs *a-c* and *b-d*, always greater than zero by construction; they are simply defined as the difference between the gain realized by the player and the loss incurred in the form of marginal opportunity cost (for the government) and marginal investment (for the company).

The bottom-right quadrant of the matrix depicts the *status quo*, since neither party adopts a cooperative attitude vis-à-vis the other; the company persists in exploiting the country's resources and the government perpetuates its rents' expropriation. Despite both parties' positive payoffs related to the exploitation of the resource, they both present a *null payoff* with respect to the "social" game.

The upper-right quadrant represents a situation in which the Government adopts a cooperative attitude vis-à-vis the company, while this one refuses to invest in the country's development; the government's payoff, equal to $-c$, is exactly equal to the company's positive b_{ST} according to the zero-sum game logic underlying their interactions (Assumption 6).

Finally, the bottom-left quadrant displays the positive payoff of a for the Public sector and $-d$ for the Private party; the company has invested in the country's development creating a benefit a for the counterparty, but the government has decided not to cooperate, thus leaving the company with a negative payoff corresponding to the incurred investment $-d$.

The numeric Matrix 2 (Appendix 8.18) facilitates the identification of the equilibrium of the game in period 1. The company does not have a dominant strategy; knowing that the government cooperates, the company has the incentive to invest (1.5>1), and it has the incentive not to invest otherwise (0>-2). On the contrary, the government does have a dominant strategy: it always prefers not to cooperate irrespective of what the other player does (4>3, and 0>-1). As a result, the equilibrium characterizing the Standard Game in Period 1 is *(Not cooperate, Not invest)* represented by the payoffs (0, 0); the *status quo* is the equilibrium solution for both players. Nonetheless, conditional on a consistent and shared intention to create a positive and long-lasting relationship, the players could coordinate on a better solution in which the government *cooperates* and the company *invests*, thereby inducing the achievement of greater payoffs (3, 1.5) for both actors; this "coordination exercise" is thus beneficial to both parties. The same conclusion is confirmed by the representation of the Standard game in Period 2, which is the subject of the next section.

The analysis is now shifted to the Standard Game in Period 2. For the sake of clarity, Period 1 and Period 2 are characterized by the same length, assumed to equal 3 years, a period of time sufficiently long in order for both players to implement their strategies; the results of the game are however not dependent on the specific definition of the time period. Matrix 3 (Appendix 8.18) pictures the same game as the one represented in Period 1

(consistently with the definition of a repeated game) assuming that both players converged on the equilibrium *(not cooperate, not invest)* in Period 1. The approach used in the analysis is to add to the payoffs in Period 2 the ones obtained by each player in Period 1, that in this case are both equal to zero; as a result, the Standard Game in Period 2 will present exactly the same payoffs as the ones proper to Period 1. The equilibrium is still defined by the *status quo* and no cooperative dynamic is engendered between the two players. Hence, if the uncooperative equilibrium is attained in Period 1, then players will always be attracted by the same settlement in the following periods; this negative feedback loop locks both players in an adverse equilibrium. It will be extremely difficult for any actor to exit this trap, because of the path-dependent nature of this "trust game"; each party has observed the counterparty's uncooperative behavior in the past; perceiving a high risk of this attitude to persist in the future, both players will be discouraged from cooperating in the current period fearing to suffer an immediate loss.

Matrix 4 (Appendix 8.18) represents instead a Period 2 Standard Game assuming that both players, by avoiding the "uncooperative trap" in Period 1, have coordinated on a bilaterally beneficial equilibrium *(Cooperate, Invest)*. In this case, the payoffs (3, 1.5) are added to the ones proper to the Period 2 game. Despite the fact that *(Not cooperate, Not invest)* is still the equilibrium of this second game, one condition is inherently different with respect to the game in Period 1. The government and the company have developed a mutual understanding in Period 1, by credibly coordinating on a combination of strategies that is more beneficial to them both in the short and in the long run. According to a history-dependent playing logic, the future rewards and the threat of future punishments have provided incentives for both players to cooperate today (i.e. Period 1). This concept is graphically represented in Figure 1 (Appendix 8.18) by the *Grim-Trigger Strategy*: a player will *cooperate* in Period 1 if the other party has never defected before, and it will *not cooperate* otherwise. The necessary condition to be satisfied is: *Reward - Punishment > Temptation*. This strategy is well represented by the Αυτοματον, or Automaton in ancient Greek. As long as both players adopt a cooperative attitude in Period 1, this self-replicating and positive feedback-loop will autonomously aliment itself "trapping" the players in this positive equilibrium for the long term. On the contrary, as soon as one player defects by not adopting a cooperative attitude, the game is transferred to the right of the Automaton, where

players are "trapped" in a negative and self-replicating non-cooperative equilibrium. This last occurrence corresponds to the *(Not cooperate, Not invest)* combination of strategies.

Figure 2 (Appendix 8.18) represents the choice faced by the Public sector in Period 1. It could benefit from a greater Defection Payoff for one period by not cooperating, and then suffer from the much lower Punishment Payoff forever (or until the end of the game); alternatively, it could benefit from the Cooperation Payoff from Period 1 until the end of the game (represented as a perpetuity). In order to compare these strategies we introduce the discount factor $\delta = 1/(1+r)$, where r is the opportunity cost of capital to be adopted for valuation purposes. In the mathematical representation that follows future payoffs have been evaluated in the current period by applying the discount factor δ which is lower than one and represents the weight assigned to the future by each player. For the sake of clarity, the letter "p" represents the punishment that the government will suffer in Period 2 if it does not cooperate in Period 1; in our case, p = 0.

Let $\delta = \frac{1}{1+r}$ be the present value of \$1 received in Period 2 and discounted to Period 1. In the case at hand, the government will accept to cooperate in Period 1 if and only if:

$$(a - c) + \delta(a - c) + \delta^2(a - c) + \cdots \geq a + p + \delta p + \delta^2 p + \cdots$$

This inequality can also be expressed as:

$$\frac{a - c}{1 - \delta} \geq a + \frac{\delta p}{1 - \delta}$$

Since in the current game p = 0 *(status quo)*, we find:

$$\frac{a - c}{1 - \delta} \geq a,$$

or

$$\delta \geq \frac{c}{a}$$

Expressing the above-mentioned condition in terms of the interest rate r, we have:

$$\frac{a-c}{1-\dfrac{1}{1+r}} \geq a + \frac{p\dfrac{1}{1+r}}{1-\dfrac{1}{1+r}}$$

Simplifying the above inequality:

$$\left(1+\frac{1}{1+r}\right)(a-c) \geq a + \frac{p}{r}$$

Again, since in our case p = 0, we obtain:

$$r \leq \frac{a-c}{c}$$

Substituting with the numbers (Matrix 2, Appendix 8.18), we find that the government will have an incentive to cooperate if and only if:

$$\delta \geq \frac{1}{4} = 0.25$$

In terms of r we have:

$$r \leq \frac{3}{1} = 3$$

As a reminder, the numerical results obtained are just used for illustrational purposes and are by no means deemed to be representative of reality. They however allow the reader to draw conclusions about the strategic development of the game under analysis.

For the sake of clarity, given the condition $b - d > b_{ST}$ the company's decision cannot be represented on a similar graph to the one in Figure 2; the best payoff that this player can attain is $b - d$, corresponding to a cooperative attitude vis-à-vis the government; given the lack of a bigger reward than this one, the private party will always have an incentive to cooperate if the government does.

The mathematical result shown above confirms that Trigger strategies work if the future matters enough, and that the uncertainty characterizing the future helps to sustain cooperation in the present. In order for this cooperative equilibrium to be created and

sustained threats, rewards and punishments need to be credible. Despite the difficulties and restrictions characterizing the attainment of this positive equilibrium, it is encouraging to know that there exist a real possibility for Public and Private counterparties to coordinate on a long-term cooperative result.

6.4.2 The Augmented PPP game: increasing the odds of a cooperative equilibrium

This second version of the main game introduces the condition of cross-ownership, implying that the government owns part of the company. This case is specifically inspired by the example of Botswana, where the country currently holds 50% of Debswana shares. The assumptions of the first game also apply to this one; we hereby add another assumption:

8. The letter x represents the percentage holding of the country's public sector into the private party. For the sake of simplicity and according to a zero-sum game logic, we assume that revenues and expenses, profits and losses, are shared between the government and the company in line with their respective shares x and $(1 - x)$.

The condition $a > b > d > c = b_{ST}$ also underlies the structure of this game.

This Augmented version of the game is represented in Matrix 5 (Appendix 8.18). The payoffs are exactly the same as the one represented in Matrix 1 with the only difference that now any private party's payoff is shared with the government on the basis of x. Matrix 6 represents the Augmented game in numeric form under the condition that x = 50% as in the case of Botswana. Differently from the standard version of the game, this one is not characterized by a Nash Equilibrium since neither player has a dominant strategy. Knowing that the public sector will cooperate, the company has the incentive to invest (0.75>0.5), while subject to the public sector not cooperating, the company will decide not to invest (0>-0.75). Similarly, the government will cooperate if the company invests (3.75>3.25), and will not cooperate otherwise (0>-0.5). The Augmented version of the game is thus characterized by two possible equilibria: the uncooperative one that simply maintains the *status quo*, and the cooperative one that fosters a long-term cooperative dynamic identified by positive payoffs for both parties. The numeric form of the Augmented game is replicated for Period 2 in Matrices 7 and 8. In the first one, the payoffs displayed are based on the condition that a *(Not cooperate, Not invest)* equilibrium was attained in Period 1; the payoffs

(0, 0) are added to the initial payoffs (equal to the ones characterizing the Augmented Game in Period 1, given the definition of a repeated game); the matrices in Period 1 and 2 are perfectly equal. Matrix 8 builds instead on the assumption that the two players coordinated on a positive *(Cooperate, Invest)* equilibrium in Period 1; the payoffs (3.75, 0.75) are therefore added to the initial payoffs to obtain the matrix corresponding to Period 2. Conversely to the Standard game, the Period 1 equilibria *(Not cooperate, Not invest)* and *(Cooperate, Invest)* are not self-replicating; players will be subject to the same combination of choices and strategies in Period 2. In fact, in the second period the game will be repeated and it will still be characterized by two possible equilibria.

A crucial specification is necessary at this point: despite this game-theoretic analysis conveys the lack of a univocal solution for the game, if both parties value the potential upside of long-lasting cooperation, then they should adopt a cooperative attitude starting from Period 1 and avoid defection afterwards. Accordingly, if the Period 1 equilibrium is the negative *(Not cooperate, Not invest)* both players should credibly commit to cooperate in the next period so as to converge to a more advantageous equilibrium thereafter; in this second case, the commitment to be provided after the initial defection will require more complex and "costly" (for the player committing to cooperate) conditions in order to be credible.

In addition, in this case the government's and the company's payoffs from not cooperating are lower than in the standard case (3.25<4 for the government, and 0.5<1 for the company); the values of cooperation are greater than in the standard case only for the government (3.75>3) since in the augmented version the company's payoffs are shared with the counterparty. As a result, both parties have a much stronger incentive in this case than in the standard one to coordinate with each other on a positive *(Cooperate, Invest)* equilibrium.

Figure 3 presents the "valuation graph" characterizing the government's choice between gaining $a - xd$ in the first period and 0 forever (or until the end of the game), or alternatively to secure $a - x$ $(b - d) - c$ from Period 1 until the end of the game. Comparing Figure 1 and Figure 3, we notice that in the Augmented version of the game the government does not have any incentive to defect in the first period since the payoff deriving from cooperation is always the greatest one. This conclusion is extremely powerful since it implies that with shared ownership there is no need for the players to structure their relationship on the basis of repeated game in order to sustain their cooperation, which instead originates naturally in

Period 1. Since the result might have been produced by the specific numbers used in the example, the game is still solved below according to the condition *Reward − Punishment >* *Temptation*. It is necessary to underline that this influential and telling solution is a fully valid alternative to the two-equilibria one represented below.

Mathematically, the Government's incentive to cooperate depends on the following condition:

$$[a - x(b - d) - c] + \delta[a - x(b - d) - c] + \delta^2[a - x(b - d) - c] + \cdots \geq a + p + \delta p + \delta^2 p + \cdots$$

The inequality above can be also expressed as:

$$\frac{[a - x(b - d) - c]}{1 - \delta} \geq a + \frac{\delta p}{1 - \delta}$$

Given the assumption of p = 0 (*status quo*), we find:

$$\frac{[a - x(b - d) - c]}{1 - \delta} \geq a,$$

or

$$\delta \geq \frac{[x(b - d) + c]}{a}$$

Expressing the above-mentioned condition in terms of the interest rate r, we have:

$$\frac{[a - x(b - d) - c]}{1 - \frac{1}{1 + r}} \geq a + \frac{p\frac{1}{1 + r}}{1 - \frac{1}{1 + r}}$$

Simplifying the above inequality:

$$\left(1 + \frac{1}{1 + r}\right)[a - x(b - d) - c] \geq a + \frac{p}{r}$$

Again, since in our case p = 0, we obtain:

$$r \leq \frac{[a - x(b - d) - c]}{c}$$

Substituting with the numbers (see Matrix 6, Appendix 18), we find that the government will have an incentive to cooperate if and only if:

$$\delta \geq \frac{(0.5)(1.5) + 1}{4} = 0.4375$$

In terms of r we have:

$$r \leq \frac{3.75}{1} = 3.75$$

As already expressed above, the magnitude of the interest rate and delta are probably too high and not realistic, but their numerical realizations are uniquely dependent on the specific numbers chosen to portray the example and do not influence the conclusion of this game theoretic exercise.

The results obtained in this Augmented version of the PPP game are very interesting, especially if compared to the Standard game's solutions. In the current case, the fact that the discount factor's lower threshold is greater than the one obtained for the standard game (i.e. 0.4375>0.25), as the fact that the interest rate's upper threshold is greater than the one presented in the standard game (i.e. 3.75>3), mean that the value attributed by the government to the future is greater in the current Augmented form of the PPP game. Given this condition, and the fact that the company will always cooperate if the other player does, this analysis has succeeded in showing that the attainment of a cooperative equilibrium is much easier in the case of cross ownership; as mentioned above, this result is even emphasized by the the conclusion conveyed by the "valuation graph" in Figure 3. From the public sector's viewpoint, punishment is not an attractive solution anymore, since the government would pay a share x of any increase in taxes imposed on the company. On the contrary, in this game it is even more advantageous to develop a long-term understanding between the players who look at tomorrow on the basis of what is done today. If the government holds a sufficient share of the company, it will always have the incentive to cooperate; this incentive increases with the magnitude of cross-ownership.

On a slightly different note, the company's gain in the Standard Game cooperative outcome was bigger than the one realized in the Augmented Game one (1.5>0.75). Nonetheless, knowing that the government will have a bigger incentive to cooperate in the case of cross-ownership (3.75>3), the company is encouraged to sell shares to the

government in order to avoid the (0, 0) uncooperative trap proper to the Standard Game. Hence, the conditions proper to the Augmented game can be satisfied much more easily in order for both players to coordinate on a long-term cooperative equilibrium.

As a final note, despite minor adjustments that might be necessary to address the specific nature of the relationship between public and private parties, this game is not country or context specific and its validity extends to the majority of the PPP initiatives.

7. An open-ended conclusion on the value of PPPs

This comparative study has definitely proved that more differences than similarities exist between Botswana and Equatorial Guinea. The most salient discrepancy is certainly related to the record of democracy and institutional quality. It is also likely that all the other incompatibilities between the two cases follow directly from this first "institutional" one.

Botswana is a positive outlier in the distribution of African countries on several measures. Already endowed with a pluralistic political foundations and a centralized system of institutions before independence, Botswana leveraged on its mineral wealth to finance its economic development and to improve its population's standard of living. It has also diversified its diamonds-related activities in the downstream part of the value chain so as to avoid a full dependence on the extractive operations. In particular, the DTC relocation to Gaborone, expected for the end of 2013, will represent a real game-changer; Botswana will become the hub for the global diamond trade, sustaining its dominant position even in the absence of the resource. In line with this premise, the country will likely avoid the realization of the resource curse; this claim is supported by its unique (on African standards) quality of institutions, the development of a fruitful and positive relationship with De Beers, and the continuous inflow of investment from foreigners whose confidence is boosted by the inclusive nature of the county's system.

The institutional deficit characterizing Equatorial Guinea has both a political and an economic connotation. Even after controlling for the lower size of natural resource reserves with respect to Botswana, Equatorial Guinea is still more subject to the realization of the "natural resource curse"; the expropriatory and extractive nature of the State have attracted a form of foreign investment which is mostly directed at exploiting the country's oil and natural gas reserves. The relocation of a DTC-like body to Equatorial Guinea would be very unlikely because of State's the corrupt and undemocratic nature. This country, differently from Botswana, has not developed its economy downstream on the "natural resource value chain", thus avoiding any sort of economic diversification. On the contrary, it has sharply reduced its involvement in those activities that once made its competitive advantage, like cocoa and timber production.

The Repeated PPP game presented in Section 6.4 illustrates the potential cooperative dynamics that could be created between the private and the public sector. In the Standard form of the game this coordination on the most beneficial result (i.e. the *(Cooperate, Invest)* combination of strategies) has to be fostered by a credible commitment not to defect in the future and by a strong motivation to sustain a positive and long-lasting relationship. In the Augmented form of the game, adding cross-ownership to the picture, the attainment of the cooperative equilibrium is significantly easier, since the government attaches more weight to future payoffs via the discount-factor mechanism, and the "cooperation payoff" is always greater in magnitude than the one obtained in the Standard case. The incentive to cooperate increases with the government's shareholding in the private party. But, if De Beers has agreed on the 50% government ownership of Debswana, a similar deal is unlikely to be negotiated in a country lacking any instance of rule of law and democracy[48]. The private party will constantly suspect the government to be operating according to its own agenda based on expropriation, theft, and corruption; it will thus be unwilling to concede such a significant share of ownership to a party whose conduct is more often than not characterized by the game-theoretic "defection". Hence, how could Equatorial Guinea leverage on the creation of a PPP in order to increase its chances of escaping the resource curse? In my opinion, the best solution in this case would be centered on the involvement of a third party in the game, as an IO or an NGO that could provide a guarantee for the government "cooperative behavior"; this arrangement would facilitate the implementation of a PPP and the attainment of the cooperative equilibrium.

The application of Game Theory to the field of Development Economics offers elegant and realistic solutions to the lack of cooperative dynamics between the government and the private sector proper to many developing countries. Thanks to the Game Theory's models, it is possible to forge implementable strategies to persuade both parties to coordinate on an equilibrium that is beneficial both for them and for the country as a whole. Hence, because of its potential applicability to the area of Public Policy, further studies should focus on this area of knowledge and on the potential impact of the inclusion of IOs or NGOs as third parties to the game.

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[48] For this purpose, it is useful to remember that Equatorial Guinea is currently owner of the 28.25% of the Zafiro Joint Venture established with Mobil Equatorial Guinea Inc.

As a final note, the potential establishment of a PPP in Equatorial Guinea would not be limited to an economic and social improvement; by fostering transparency and participation, as show in the Chad-Cameroon petroleum development project, PPPs could also create positive externalities on the country's political and institutional system; Equatorial Guinea should reinvent these best practices and encourage the participation of IOs/NGOs.

In order for a PPP project to express its full potential, Equatoguinean institutions need to be turned around. In this respect, Public-Private Partnerships offer a strategic and cooperative loophole for the country to escape this intricate network of corruption and expropriation and to emerge as a resource-curse free and more democratic country.

8. Appendix

8.1 Growth Accelerations in Botswana and Equatorial Guinea

Source: The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

Botswana (1966-1978)	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
GDP (current US$M)	51.47	58.64	66.25	77.36	96.24	126.95	165.25	244.12	306.04	355.17	372.03	451.62	590.41
GDP per capita growth (annual %)	3.36	2.85	7.26	11.60	13.45	21.82	22.27	17.27	5.05	4.55	6.52	7.73	9.93

Botswana (1979-1990)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
GDP (current US$M)	819.87	1,060.89	1,073.81	1,014.95	1,172.23	1,240.82	1,114.78	1,392.60	1,965.22	2,644.55	3,083.82	3,790.64
GDP per capita growth (annual %)	7.90	7.87	5.19	8.30	9.35	4.98	3.65	4.72	8.38	15.79	9.66	3.62

Equatorial Guinea (1993-2003)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GDP (current US$)	152.13	125.74	163.98	259.07	497.74	455.80	872.02	1,242.85	1,736.12	2,146.76	2,952.36
GDP per capita growth (annual %)	2.73	1.61	10.51	24.96	65.69	18.03	36.97	8.91	58.27	15.75	10.45

Equatorial Guinea (2003-2011)	2003	2004	2005	2006	2007	2008	2009	2010	2011
GDP (current US$)	2,952.36	5,240.84	8,217.37	9,602.96	12,575.15	18,425.04	12,222.20	14,500.47	19,789.80
GDP per capita growth (annual %)	10.45	33.84	6.51	-1.66	18.01	7.61	1.71	-3.25	4.84

Notes

1. For both tables, T=time point of the growth take-off; T+8=time point after which, in to qualify as a "growth acceleration" - Hausmann et al. (2005) - growth has to exceed 3.5%.
2. Equatorial Guinea became independent in 1968, but its growth does not *accelerate* until the oil discovery in 1995; independence is not significant for the purpose of this analysis.

8.2 Value Added (% of GDP) in Botswana and Equatorial Guinea

Botswana	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2011
Agriculture	43.36	33.84		29.88	14.69	6.39	4.85	4.43	2.70	1.82	2.47	2.51
Industry	13.37	19.21		33.64	50.74	61.21	61.02	51.88	52.65	50.16	45.04	45.82
Services	43.26	46.95		36.49	34.57	32.41	34.13	43.69	44.65	48.02	52.49	51.67
Manufacturing		11.59		7.23	5.09	5.44	5.12	4.87	4.54	3.65	3.99	4.20
% of manufacturing value added												
Food, beverages and tobacco								44.26	20.26	22.57		
Chemicals								4.17				
Machinery and transport equipment								6.43				
Other manufacturing								36.19	74.66	73.31		
Textiles and clothing								8.96	5.09	4.11		
Mineral rents (% of GDP)	0.00	0.00	0.00	2.06	2.10	0.33	1.20	0.45	1.25	3.27		

Equatorial Guinea	1985	1990	1995	2000	2005	2008
Agriculture	68.86	61.55	51.58	9.91	2.61	2.00
Industry	8.68	10.64	27.24	86.74	94.42	95.70
Services	22.46	27.81	21.18	3.35	2.96	2.30
Manufacturing				1.44	6.15	12.61

Source (two tables): The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

Notes

Since several data are lacking for Equatorial Guinea, not as transparent as Botswana in terms of reporting, only the most relevant data have been displayed in the table.

8.3 Botswana's positioning in the global market for diamonds (2011)
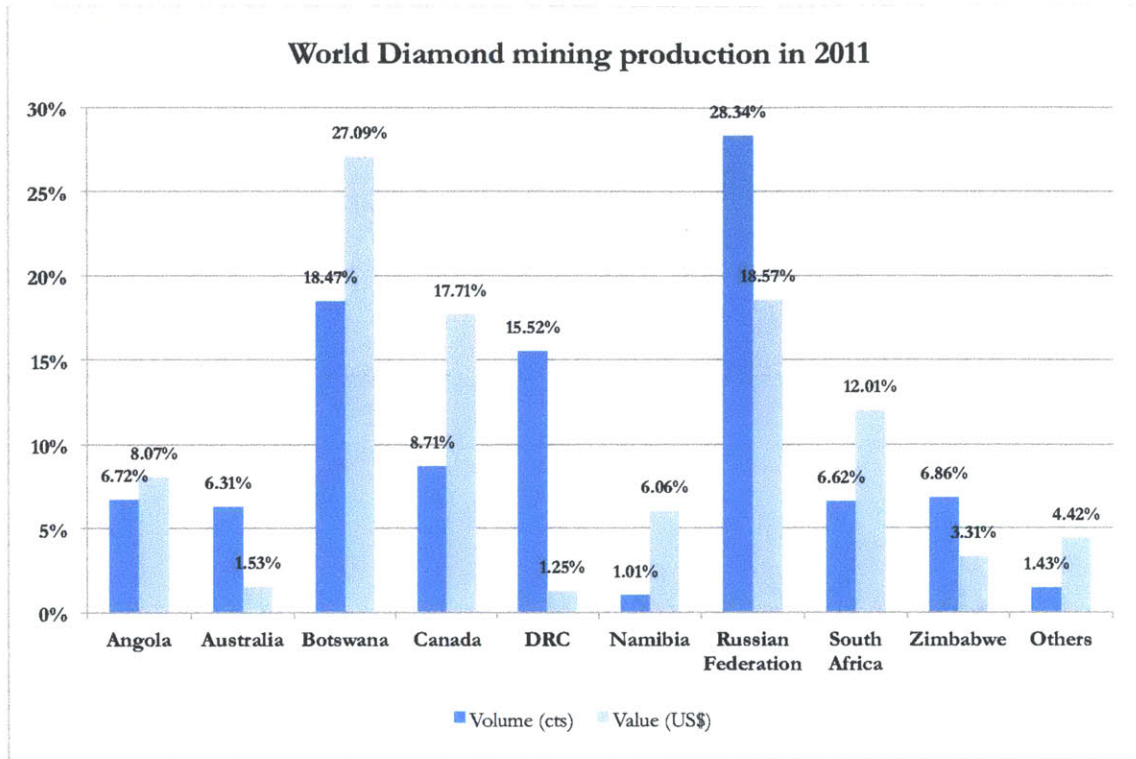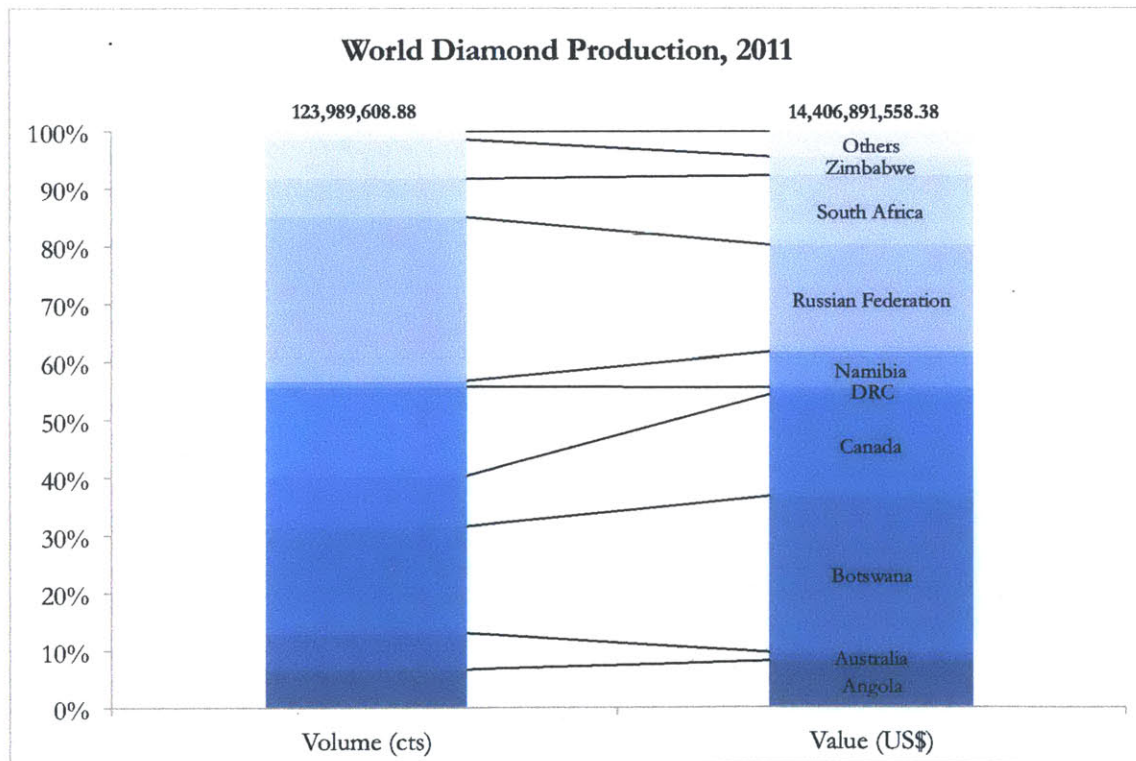
World Diamond mining production in 2011

	Angola	Australia	Botswana	Canada	DRC	Namibia	Russian Federation	South Africa	Zimbabwe	Others
Volume (cts)	6.72%	6.31%	18.47%	8.71%	15.52%	1.01%	28.34%	6.62%	6.86%	1.43%
Value (US$)	8.07%	1.53%	27.09%	17.71%	1.25%	6.06%	18.57%	12.01%	3.31%	4.42%

■ Volume (cts) ■ Value (US$)

Source: Kimberley Process Rough Diamond Statistics (2013)

World Diamond Production, 2011

123,989,608.88   14,406,891,558.38

Volume (cts)   Value (US$)

Source: KIMBERLEY PROCESS, 2011. Kimberley Process Statistics, Year 2011. [online] Available at: https://kimberleyprocessstatistics.org/static/pdfs/public_statistics/2011/2011GlobalSummary.pdf

8.4 Equatorial Guinea's positioning in the global oil market (2011)

World Oil Supply 2011 ('000 bpd)

Total oil Supply by major African producers ('000 bpd)
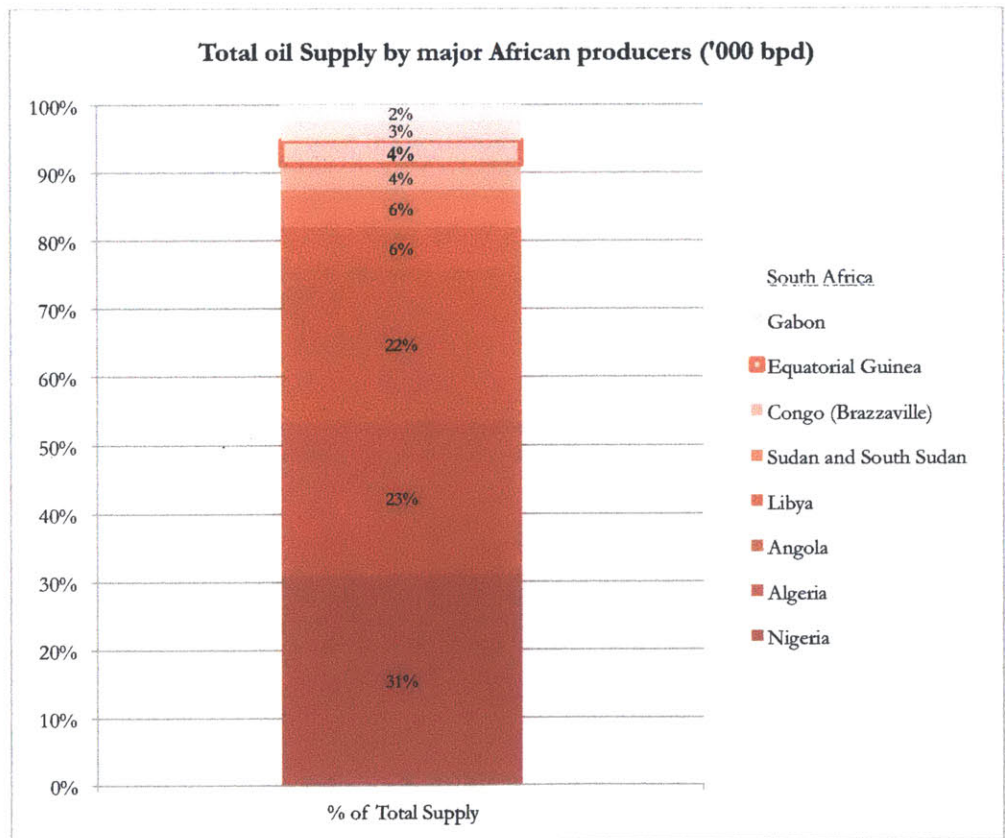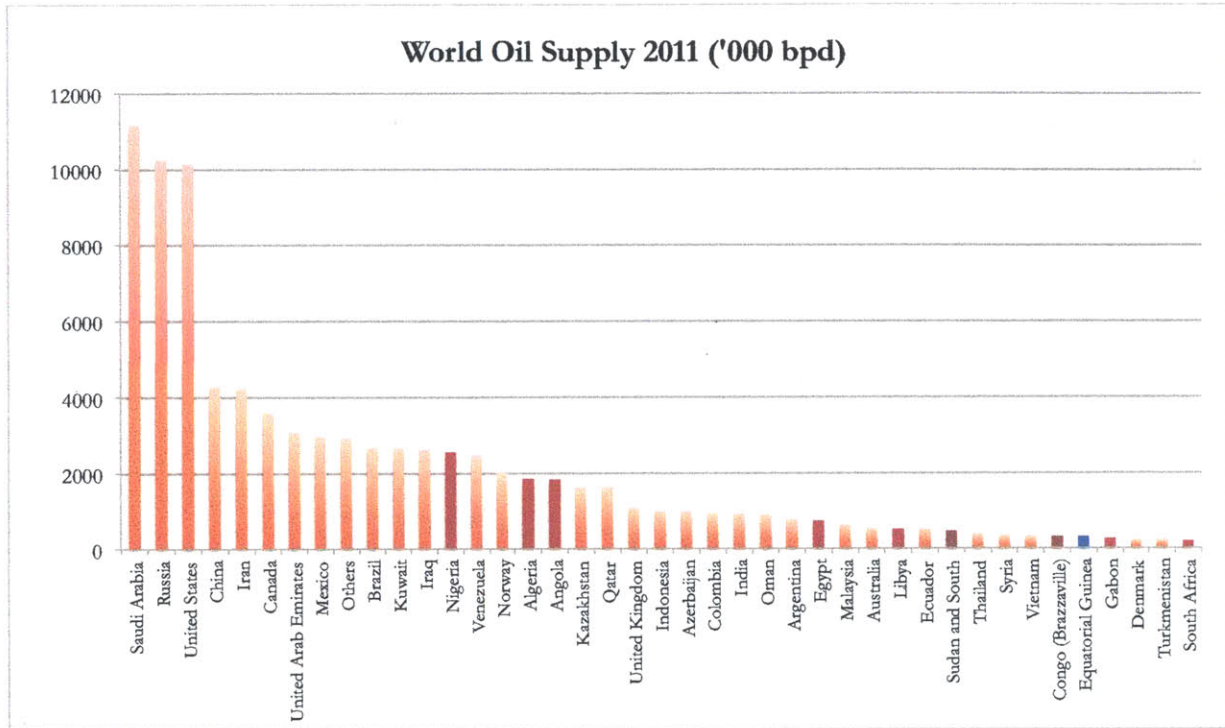
Sources: U.S. Energy Information Administration (2013) *International Energy Statistics.*

8.5 Social development indicators in Botswana

Botswana	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2011
Population (1960-2011)												
Population, total ('000)	524	596	693	822	996	1,183	1,382	1,586	1,758	1,876	2,007	2,031
Rural population (% of total)	96.94	96.16	92.17	88.12	83.52	73.28	58.07	51.02	46.78	42.68	39.02	38.39
Urban population (% of total)	3.06	3.84	7.83	11.88	16.48	26.72	41.93	48.98	53.22	57.32	60.98	61.61
Health (1960-2011)												
Birth rate, crude (per 1,000 people)	47.0	46.3	45.8	45.4	44.1	40.1	34.6	30.3	26.9	24.7	23.6	23.3
Fertility rate, total (births per woman)	6.6	6.7	6.6	6.5	6.2	5.6	4.7	4.0	3.4	3.0	2.8	2.7
Death rate, crude (per 1,000 people)	16.5	14.8	13.1	10.9	9.1	7.5	6.7	8.8	13.4	14.0	13.1	13.3
Infant mortality rate (per 1,000 live births)	111.9	100.1	91.9	75.5	58.0	47.1	41.3	45.4	50.5	28.5	21.3	20.3
Children (0-14) living with HIV							1,400	6,800	16,000	19,000	16,000	15,000
Total prevalence of HIV (% of pop. aged 15-49)							6.2	19.3	26.8	25.8	23.7	23.4
Education (1960-2009[1])												
Primary education, # pupils			83,002	116,293	171,914	223,608	283,516	313,693	324,283	329,191	330,775	
School enrollment, primary (% net)			43.64	56.71	72.67	83.31	85.64	76.89	80.90	84.55	87.07	
Secondary education, # pupils[2]			5,197	14,286	20,969	36,144	61,767	111,134	162,663	171,265	179,830	
School enrollment, secondary (% net)				10.19	14.19	21.83	31.26	40.38	53.40	55.85	61.07	

Notes

1. The measured for education enrollment are available up until the year 2009. In correspondence to the year 2010 are displayed the values for the year 2009.

2. The category "Secondary education" includes individuals conducting University studies.

8.6 Social development indicators in Equatorial Guinea

Equatorial Guinea	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2011
Population (1960-2011)												
Population, total ('000)	252	269	291	238	221	313	374	443	520	608	700	720
Rural population (% of total)	74.46	73.50	73.05	72.59	72.13	70.06	65.26	61.17	61.19	61.13	60.66	60.49
Urban population (% of total)	25.54	26.50	26.95	27.41	27.87	29.94	34.75	38.83	38.81	38.88	39.34	39.51
Health (1960-2011)												
Birth rate, crude (per 1,000 people)	40.2	40.7	39.0	33.9	36.6	45.4	46.9	43.2	39.7	37.8	36.7	36.4
Fertility rate, total (births per woman)	5.5	5.6	5.7	5.7	5.7	5.8	5.9	5.9	5.8	5.5	5.2	5.1
Death rate, crude (per 1,000 people)	27.8	26.1	24.5	22.9	21.7	21.0	19.6	17.9	16.8	15.7	14.6	14.4
Infant mortality rate (per 1,000 live births)					142.0	129.6	118.3	107.6	97.6	89.0	80.8	79.6
Children (0-14) living with HIV							200	500	1,000	1,600	2,500	2,600
Total prevalence of HIV (% of pop. aged 15-49)							0.9	1.5	2.3	3.3	4.4	4.7
Education (1960-2011)												
Primary education, # pupils			31,600[1]	35,977[2]		61,532[3]		72,725[4]	73,307	75,809	85,061	86,821
School enrollment, primary (% net)									72.13		56.28	57.82
Secondary education, # pupils			6,014[1]		2,729			17,535[4]	20,705			
School enrollment, secondary (% net)												

Source: The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

Notes

1. Data available for Equatorial Guinea are scarce and not released on a yearly basis. Data displayed for the year 1970 correspond instead to the year 1971.
2. Data displayed for the year 1975 correspond instead to the year 1974.
3. Data displayed for the year 1985 correspond instead to the year 1984.
4. Data displayed for the year 1995 correspond instead to the year 1993.

8.7 Botswana: Balance of Payments (2008–2017)

(US$ millions)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
			Est.				Projections			
Current account balance	931.9	-606.0	-296.8	283.9	544.5	503.4	439.5	454.2	426.7	542.2
Trade balance	440.1	-565.8	-237.1	183.1	7.9	-215.8	-263.6	-331.3	-443.4	-685.5
Exports, f.o.b.	4,835.9	3,451.4	4,635.5	6,475.2	6,245.2	6,303.7	6,399.7	6,518.4	6,638.0	6,772.0
Diamonds	3,068.7	2,139.5	3,207.8	4,435.2	4,584.4	4,605.0	4,651.4	4,720.9	4,793.6	4,872.4
Diamonds/Exp. (%)	63.5	62.0	69.2	68.5	73.4	73.1	72.7	72.4	72.2	71.9
Other raw materials	948.8	582.4	699.1	495.2	743.1	754.0	770.8	784.6	794.3	810.7
Other RM/Exp. (%)	19.6	16.9	15.1	7.6	11.9	12.0	12.0	12.0	12.0	12.0
Raw materials	4,017.5	2,721.9	3,906.9	4,930.4	5,327.5	5,359.0	5,422.2	5,505.5	5,587.9	5,683.1
RM/Exp. (%)	83.1	78.9	84.3	76.1	85.3	85.0	84.7	84.5	84.2	83.9
Other	818.5	729.5	728.5	1,544.7	917.7	944.6	977.5	1,012.9	1,050.1	1,088.9
Imports. f.o.b.	-4,395.8	-4,017.3	-4,872.6	-6,292.1	-6,237.3	-6,519.4	-6,663.3	-6,849.7	-7,081.4	-7,457.5
Services	80.3	-633.0	-869.7	-881.4	-760.8	-734.7	-727.7	-737.2	-762.3	-942.6
Transportation	-382.1	-273.0	-277.9	-289.4	-299.9	-302.2	-311.5	-334.2	-358.3	-459.9
Travel	171.6	317.0	150.5	200.8	230.2	240.6	247.5	253.3	245.3	159.7
Other services	290.7	-677.0	-742.3	-792.9	-691.2	-673.1	-663.7	-656.3	-649.3	-642.4
Income	-636.8	-40.7	-206.3	-230.3	-398.7	-366.0	-441.0	-459.7	-460.9	-50.2
Current transfers	1,048.3	633.6	1,016.4	1,212.6	1,696.2	1,819.8	1,871.8	1,982.3	2,093.3	2,220.5
SACU receipts	1,146.9	1,159.1	977.7	1,155.8	1,638.7	1,693.5	1,730.9	1,824.9	1,972.2	2,044.2
Capital and financial account	833.3	872.0	165.5	976.5	442.8	363.9	234.8	169.9	148.3	121.9
Capital account	103.7	115.0	22.0	64.8	82.5	92.4	96.0	95.5	92.7	106.4
Financial account	729.6	757.0	143.5	911.7	360.3	271.5	138.8	74.4	55.7	15.4
Direct investment	624.2	601.3	556.1	585.0	546.9	566.0	577.8	591.1	609.1	629.7
Portfolio investment	531.7	-331.7	-402.4	-201.7	-220.5	-260.3	-299.0	-344.5	-397.3	-458.3
Other investment	-426.3	487.4	-10.2	528.4	33.9	-34.2	-140.0	-172.1	-156.2	-156.0
Assets	-355.6	-581.7	-353.0	-1.7	-110.0	-84.1	-79.9	-82.7	-87.4	-99.6
Liabilities	-70.6	1,069.1	342.8	530.1	143.9	49.8	-60.0	-89.5	-68.8	-56.4
Net gov. LT borrowing	-13.4	936.2	31.9	445.3	73.7	11.8	-68.2	-98.8	-96.5	-92.4
Other net private LT b.	-109.5	228.7	66.5	65.4	62.6	40.8	1.5	5.9	25.4	32.2
ST borrowing	52.3	42.4	-38.1	19.4	7.5	-2.7	6.6	3.5	2.3	3.8
Reserve assets (increase -)	-1,089.3	639.3	960.4	-503.1	-987.3	-867.3	-674.2	-624.0	-575.0	-664.1
Net errors and omissions	-675.9	-905.3	-829.1	-757.3	0.0	0.0	0.0	0.0	0.0	0.0
Memorandum items:					(percent of GDP, unless otherwise indicated)					
Balance of payments	8.0	-5.5	-6.4	2.8	5.5	4.6	3.4	3.0	2.6	2.8
Current account	6.9	-5.2	-2.0	1.6	3.0	2.7	2.2	2.2	1.9	2.3
Trade balance	3.2	-4.9	-1.6	1.0	0.0	-1.1	-1.3	-1.6	-2.0	-2.9
Exports of goods	35.6	29.8	31.1	36.6	34.9	33.5	32.3	31.2	30.2	29.0
Of which: diamonds	22.6	18.5	21.5	25.1	25.6	24.5	23.5	22.6	21.8	20.8
Imports of goods	-32.4	-34.7	-32.7	-35.6	-34.8	-34.7	-33.6	-32.8	-32.2	-31.9
Services balance	0.6	-5.5	-5.8	-5.0	-4.2	-3.9	-3.7	-3.5	-3.5	-4.0
Income and transfers	3.0	5.1	5.4	5.6	7.2	7.7	7.2	7.3	7.4	9.3
Financial account	5.4	6.5	1.0	5.2	2.0	1.4	0.7	0.4	0.3	0.1
Direct investment	4.6	5.2	3.7	3.3	3.1	3.0	2.9	2.8	2.8	2.7
Portfolio investment	3.9	-2.9	-2.7	-1.1	-1.2	-1.4	-1.5	-1.7	-1.8	-2.0
Other investment	-3.1	4.2	-0.1	3.0	0.2	-0.2	-0.7	-0.8	-0.7	-0.7
				(Annual percentage change. unless otherwise indicated)						
Export volumes	-13.4	-28.8	19.8	11.2	7.2	-0.1	0.5	0.9	0.9	1.0
Import volumes	20.6	-3.5	1.4	13.8	-2.5	4.9	3.1	3.4	5.1	7.0
Terms of trade	2.6	5.9	-6.3	-0.2	-2.0	1.4	1.9	1.5	2.5	2.6
End-of-year reserves (US$ m)	9,115.6	8,668.8	7,883.1	8,386.1	9,373.4	10,240.7	10,914.9	11,539.0	12,114.0	12,778.1
Months of imp. G&S	22.0	17.3	12.6	13	14.9	17.1	18.8	20.4	19.3	19.1
(Months of imports g&s)[1]	22.0	17.3	12.6	13.0	14.9	17.1	18.8	20.4	19.3	19.1

Source: IMF, (2012), *Botswana*. IMF Country Report No. 12/235, p.32. [1] months of prospective imports

8.8 Equatorial Guinea: Balance of Payments (2006–2010)

(US$ millions)	2006	2007	2008	Est. 2009	Proj. 2010
Current account balance	679	541	1,673	-1,950	-714
Trade balance	6,270	7,886	10,555	3,237	5,936
Exports, f.o.b.	8,290	10,251	14,465	8,495	9,781
Hydrocarbons exports	8,217	10,150	14,366	8,386	9,661
Hydrocarbons exports/Exports, f.o.b. (%)	99.12	99.01	99.32	98.72	98.77
Imports, f.o.b.	-2,020	-2,365	-3,909	-5,258	-3,845
Petroleum sector	-525	-636	-733	-587	-548
Petroleum products	-114	-149	-253	-177	-212
Petroleum/imports, f.o.b. (%)	31.63	33.19	25.22	14.53	19.77
Public sector equipment	-1,189	-1,319	-2,486	-3,943	-2,408
Public sector equipment/Imports, f.o.b. (%)	58.86	55.77	63.60	74.99	62.63
Other[2]	-192	-260	-437	-551	-677
Services (net)	-1,117	-1,397	-1,849	-1,750	-1,598
Income (net)[3]	-4,440	-5,902	-6,953	-3,331	-4,925
Current transfers	-34	-46	-81	-106	-127
Capital and financial account	109	-101	-1,263	454	1,608
Capital account	0	0	0	0	0
Financial account	109	-101	-1,263	454	1,608
Direct investment	1,739	1,716	-570	1,304	1,369
Portfolio investment (net)	0	0	0	0	0
Other investment (net)	-163	-1,817	-693	-850	239
Medium and long-term transactions	-84	-22	-10	502	532
General Government	-95	-36	-9	503	533
Of which: Amortization	-95	-36	-9	-5	-6
Banks	0	0	0	0	0
Other sectors	11	13	-1	-2	-2
Short-term transactions	-1,546	-1,794	-682	-1,351	-293
General Government[4, 5]	-1,203	-1,831	812	-1,437	0
Banks	49	-84	-144	92	-221
Other sectors	-392	120	-1,351	-6	-71
Errors and omissions	-103	-44	424	29	0
Overall Balance	686	397	834	-1,467	894
Financing	-686	-397	-834	1,467	-894
Change in net international reserves[6] (increase -)	-686	-397	-834	1,467	-894
Memorandum items:					
Gross official foreign assets	4,247	6,651	8,012	8,463	9,417
Reserve Assets at the BEAC	3,067	3,846	4,431	3,146	4,100
Reserve Assets at the BEAC/Gross official foreign assets (%)	72.22	57.83	55.30	37.17	43.54
Of which: Government Deposits at the BEAC	2,478	3,103	3,973	2,134	2,832
Government Deposits at the BEAC/Reserves (%)	80.80	80.68	89.66	67.83	69.07
Government deposits outside the BEAC	1,180	2,805	3,581	5,192	5,294
Government deposits outside BEAC/Gross official foreign assets (%)	27.78	42.17	44.70	61.35	56.22
Gross government savings	3,658	5,907	7,554	7,326	8,126
Gross official reserves of BEAC (millions of U.S. dollars)	9,032	12,087	15,688	-	-
Gross official reserves of BEAC (months of next year's imports)	4.70	5.00	8.00	-	-
Current account balance (percent of GDP; deficit -)	7.10	4.30	9.10	-16.00	-4.60
Overall balance (percent of GDP; deficit -)	7.10	3.20	4.50	-12.00	5.70
Growth of oil exports, including petroleum derivatives (%)	16.70	23.50	41.50	-41.60	15.20
Growth of non-oil exports, excluding petroleum derivatives (%)	0.10	37.10	-1.60	9.40	10.70
Growth of other imports (%)	23.70	35.30	68.30	26.00	22.70

Source: Republic of Equatorial Guinea: 2010 Article IV Consultation, IMF Country Report No. 10/103, p. 20.

Notes: 1. BOP data not compiled in accordance with *IMF's Balance of Payments Manual, fifth edition* (ad hoc adjustments applied).

2. Including private sector consumption and investment imports.

3. Including investment income of oil companies.

4. Includes purchase of Devon's share of oil fields in 2008 by Equatorial Guinea.

5. Since 2000, entries represent changes in government deposits in commercial banks abroad.

6. Consists only of items on the balance sheet of the BEAC (i.e. excluding government bank deposits abroad).

8.9 Analysis of Botswana's role as an exporter

Table 1. Snapshot of the country's exports by economic sector

Botswana Exports	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Exports of goods and services (% of GDP)	53.26	44.27	46.57	45.35	44.23	51.25	47.01	48.18	42.12	32.46	32.99	39.14
Exports of goods and services (current US$ m)	3,000	2,671	2,837	3,668	4,444	5,256	5,292	5,964	5,662	3,745	4,917	6,782
Goods exports (BoP. current US$ m)	2,675	2,315	2,346	3,024	3,696	4,445	4,522	5,163	4,800	3,435	4,633	0
ICT goods exports (% of goods exports)	0.68	0.18	0.18	0.11	0.16	0.17	0.22	0.16	0.20	0.36	0.27	
Merchandise exports (current US$ m)	2,675	2,510	2,425	2,810	3,513	4,425	4,529	5,174	4,951	3,456	4,693	0
Agricultural raw materials exports (% of merchandise exports)	0.34	0.45	0.33	0.12	0.28	0.16	0.15	0.17	0.29	0.17	0.19	0.18
Food exports (% of merchandise exports)	2.79	3.14	3.54	2.36	2.49	2.59	2.70	2.83	2.90	5.15	5.08	
Fuel exports (% of merchandise exports)	0.08	0.07	0.02	0.04	0.04	0.09	0.13	0.24	0.30	0.32	0.36	
Ores and metals exports (% of merchandise exports)	6.97	5.48	4.92	10.72	11.22	11.52	16.77	23.28	19.35	16.05	14.54	
Manufactures exports (% of merchandise exports)	89.56	90.60	90.92	86.39	85.63	85.35	79.95	73.30	76.29	77.97	79.54	
High-technology exports (% of manufactured exports)	0.51	0.25	0.51	0.45	0.42	0.44	0.42	0.43	0.57	0.92	0.40	
Service exports (BoP. current US$ m)	325	340	490	643	748	834	779	801	872	496	394	0
Communications, computer, etc. (% of service exports, BoP)	12.31	13.67	21.60	12.72	8.52	15.33	17.73	23.66	23.18	35.29	33.82	
Insurance and financial services (% of service exports, BoP)	3.29	3.21	1.89	5.54	6.97	7.08	2.84	3.83	3.84	6.51	1.32	
ICT service exports (% of service exports, BoP)	0.12	1.70	2.34	1.51	1.11	2.75	2.24	3.63	3.12	5.55	5.49	
Commercial service exports (current US$ m)	306	326	439	626	743	821	771	788	863	486	385	0
Computer, communications and other services (% Comm. Serv.)	6.85	9.91	12.61	10.27	7.85	14.05	16.92	22.42	22.38	33.99	32.15	
Insurance and financial services (% of commercial service exports)	3.50	3.35	2.11	5.70	7.02	7.19	2.87	3.89	3.88	6.64	1.35	

Source: The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

Graph 1. Botswana's economic concentration on minerals

Botswana's Top 10 exports (2012)

Mineral fuels, oils, distillation prod.
Articles of apparel & accessories
Aircraft & spacecraft
Machinery
Meat
Electrical & electronic equip.
Vehicles
Ores, slag & ash
Nickel & related articles
Pearls, precious stones, metals

Stacked bar values (top to bottom): 33,732 · 35,192 · 38,006 · 61,120 · 65,949 · 73,208 · 91,258 · 97,429 · 342,084 · 4,894,513

Total Exports in 2012 ('000 US$)

Graph 2. The predominance of diamonds in exports

Botswana's major precious mineral exports in 2012

- Diamonds, not mounted or set
- Gold unwrought or in semi-manuf forms
- Others

2% · 98%
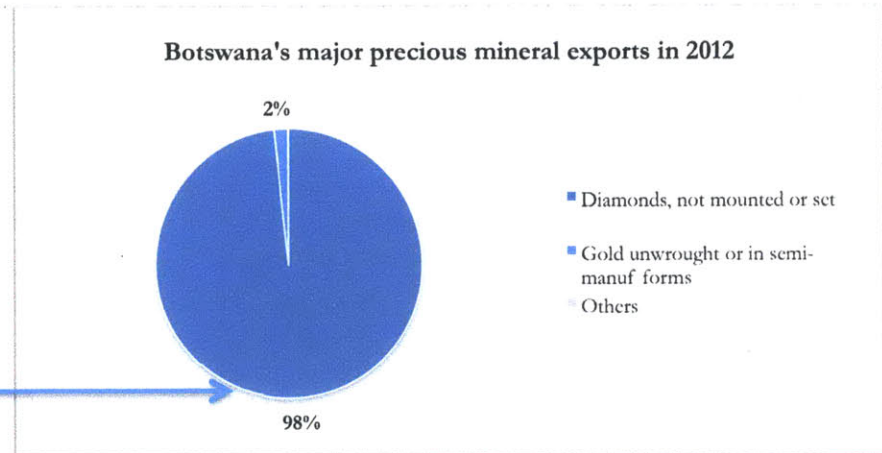
Graph 3. United Kingdom as a major trade partner
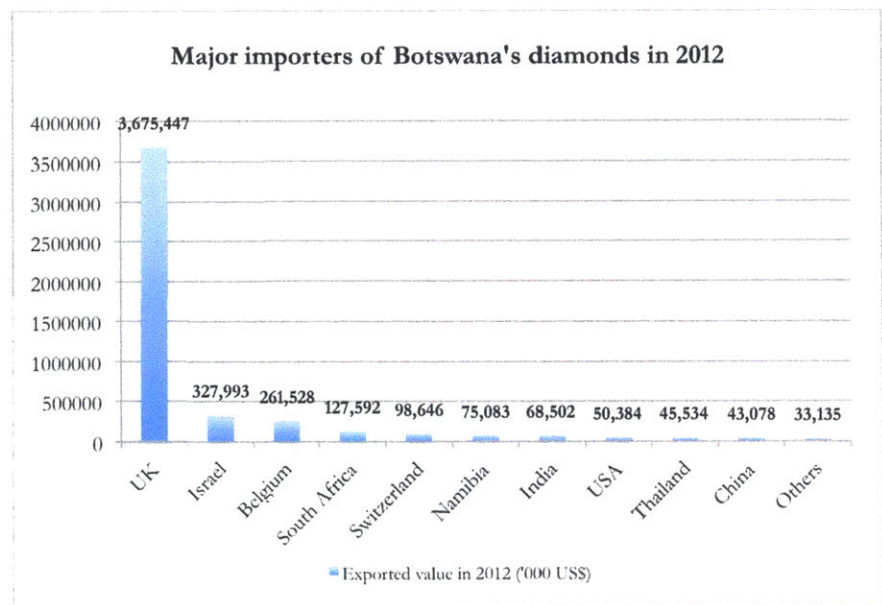
Major importers of Botswana's diamonds in 2012

UK: 3,675,447
Israel: 327,993
Belgium: 261,528
South Africa: 127,592
Switzerland: 98,646
Namibia: 75,083
India: 68,502
USA: 50,384
Thailand: 45,534
China: 43,078
Others: 33,135

Exported value in 2012 ('000 US$)

Source (three graphs): International Trade Center (2013) *Trade Map: Trade statistics for international business development.* Available at: http://www.trademap.org

8.10 Analysis of Equatorial Guinea's role as an exporter

Table 1. Summary of the main export statistics

Equatorial Guinea	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Exports of goods and services (% of GDP)	99.46	101.35	99.62	96.85	90.13	87.42	86.76	81.89	78.81	69.80	69.90	71.39
Exports of goods and services (current US$ m)	1,236	1,760	2,139	2,859	4,724	7,183	8,331	10,298	14,520	8,531	10,136	14,129
Merchandise exports (current US$ m)	1,097	1,735	2,117	2,801	4,599	7,064	8,207	10,210	15,900	9,100	9,900	13,500

Source: The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

Notes

Data available for Equatorial Guinea are scarce; as a result the table shows fewer exports' metrics than the ones shown for Botswana.

Graph 1. Exports as a percentage of GDP in "comparable terms"
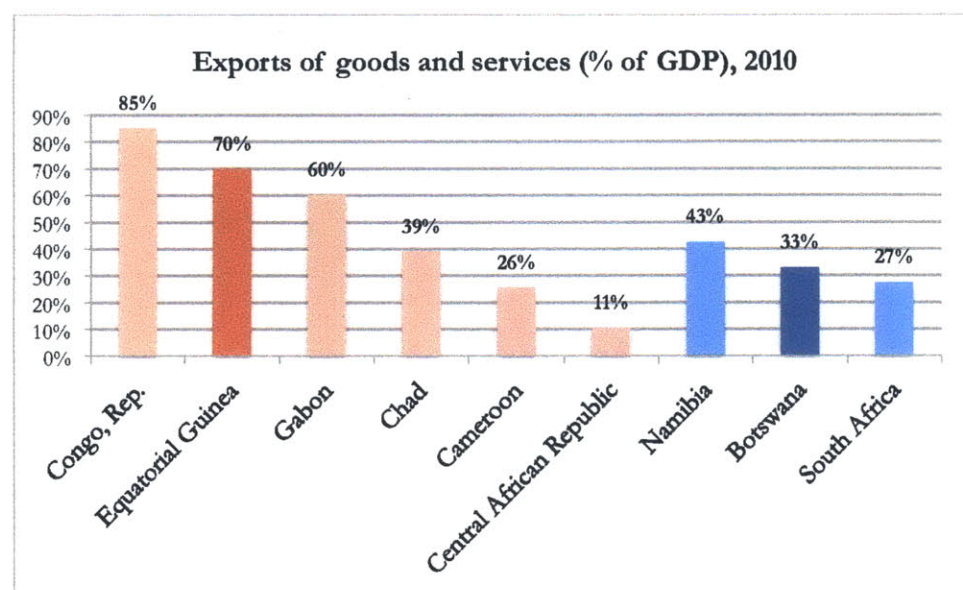
Source: The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

Graph 2. The Equatoguinean oil dependence
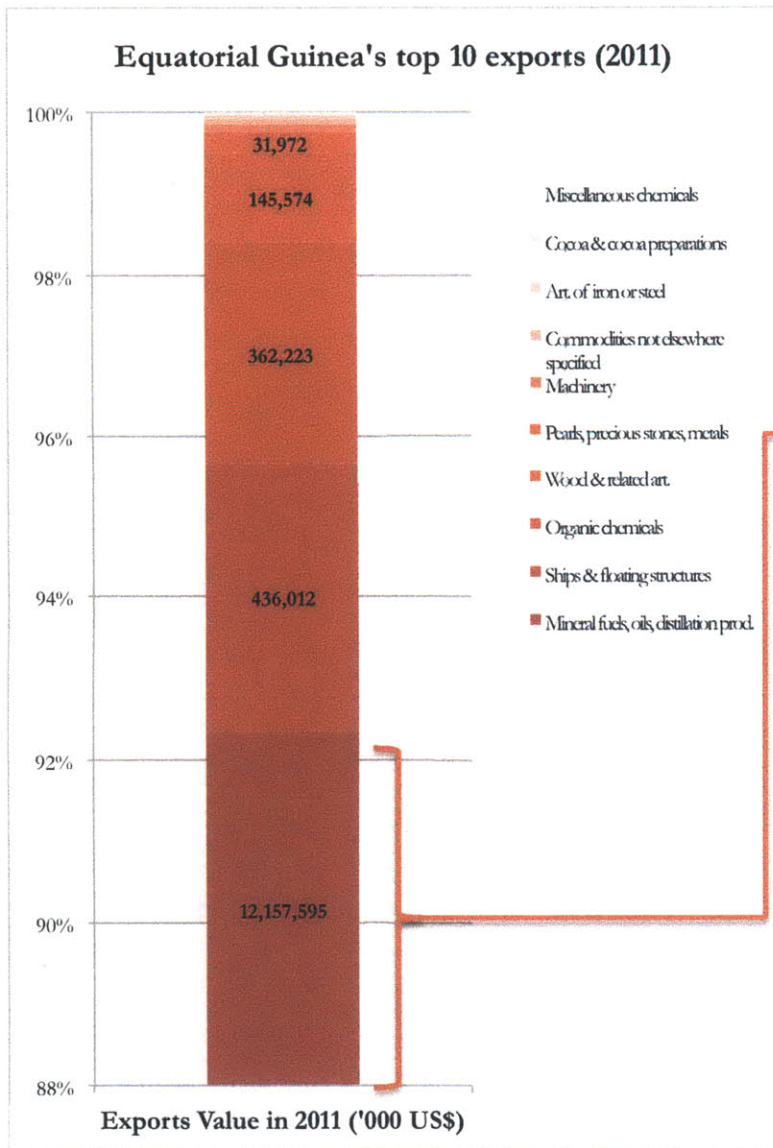
Equatorial Guinea's top 10 exports (2011)

Legend:
- Miscellaneous chemicals
- Cocoa & cocoa preparations
- Art. of iron or steel
- Commodities not elsewhere specified
- Machinery
- Pearls, precious stones, metals
- Wood & related art.
- Organic chemicals
- Ships & floating structures
- Mineral fuels, oils, distillation prod.

Bar values (bottom to top): 12,157,595; 436,012; 362,223; 145,574; 31,972

Exports Value in 2011 ('000 US$)

Graph 3. Crude oil as the main source of exports

Equatorial Guinea's major mineral fuels exports (2011)

Pie values: 1%, 22%, 77%

- Crude petroleum oils
- Petroleum gases
- Petroleum oils, not crude
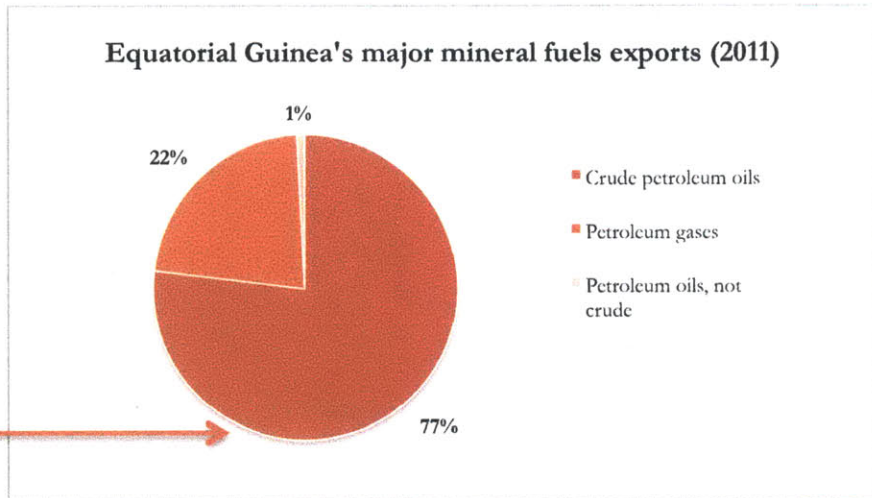
Graph 4. The major Equatoguinean oil trade partners

Majors importers of Equatoguinean crude oil (2011 & 2012)

Countries: France, China, USA, Canada, Portugal, Chinese Taipei, Japan, Brazil, Norway, Uruguay, South Africa, Republic of Korea, Thailand

■ Exported value in 2011 ('000 US$)   ■ Exported value in 2012 ('000 US$)

Source (three graphs): International Trade Center (2013) *Trade Map: Trade statistics for international business development.* Available at: http://www.trademap.org

8.11 The role of foreign investment in Botswana and Equatorial Guinea

Graph 1. Classification of countries according to their potential to attract investment

Countries attracting investment in sector: Total (merchandise and services)

Inward FDI flow 2011
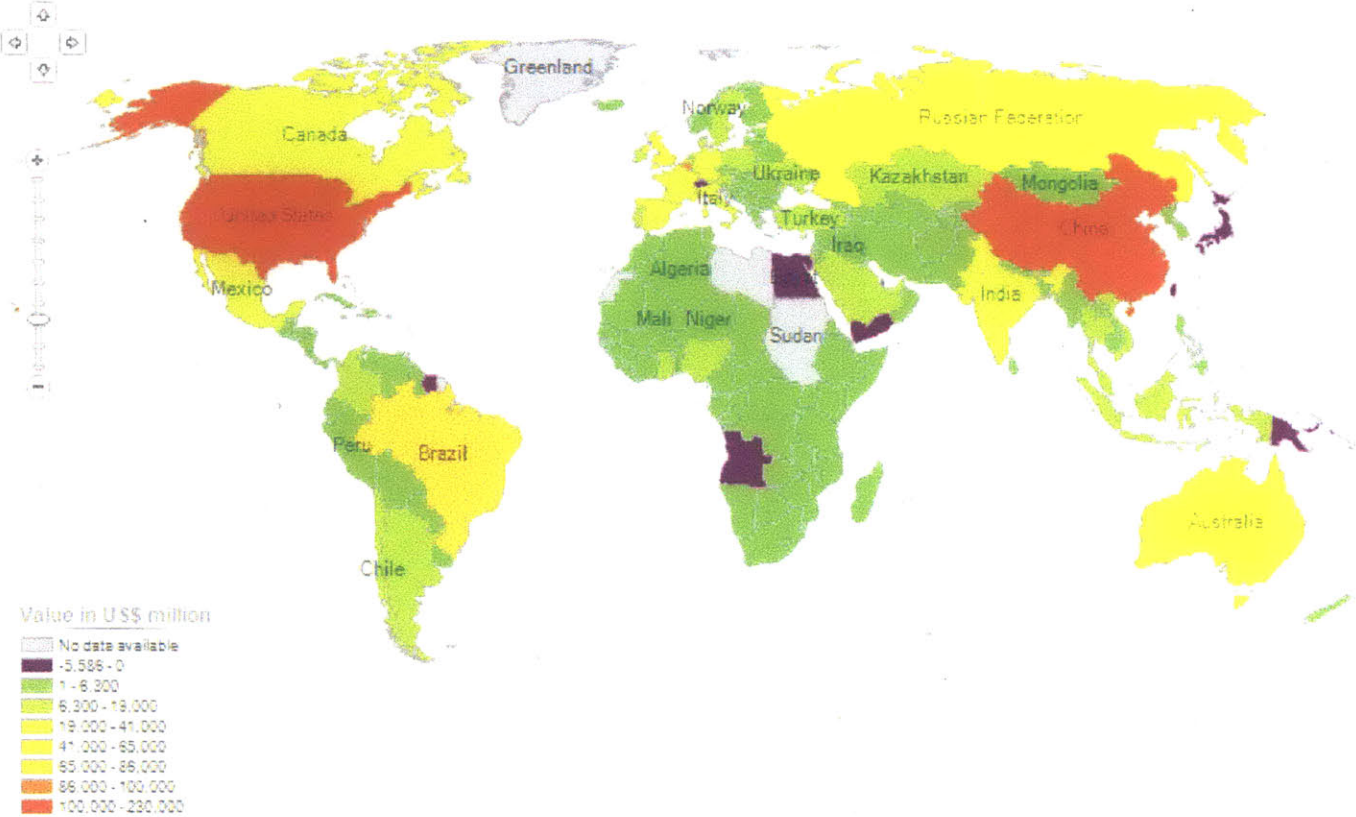
Value in US$ million

- No data available
- -5.586 - 0
- 1 - 6.300
- 6.300 - 19.000
- 19.000 - 41.000
- 41.000 - 65.000
- 65.000 - 86.000
- 86.000 - 100.000
- 100.000 - 230.000

Source: International Trade Center (2013) *Investment Map: For better foreign investment attraction and targeting.* Available at: http://www.investmentmap.org

Table 1. Analysis of the Investment statistics in CEMAC countries

Country	Foreign Direct Investment												Foreign Affiliates	
	Inward Flow	Yr.	Per capita in US$	Inward stock	Yr.	Per capita in US$	Chg. p.a. since 2008	Outward Flow	Yr.	Outward stock	Yr.	Chg. p.a. since 2008	Number	Number of parents
Equatorial Guinea	737.1	2011	1,023	8,784.7	2011	12,197	20.3%			2.6	2011	0.0%	23	21
Cameroon	360.0	2011	18	4,497.1	2011	225	13.0%	-74.6	2011	8.5	2009	-94.3%	118	89
CAR	109.2	2011	24	547.5	2011	122	10.4%			43.2	2011	0.0%	7	7
Chad	1,855.0	2011	161	7,249.2	2011	629	42.4%			70.3	2011	0.0%	13	11
Congo	2,102.4	2009	533	18,126.9	2011	4,379	17.7%						58	43
Gabon	33.5	2009	23	2,526.4	2011	1,647	26.9%	87.9	2011	750.4	2011	14.9%	79	58

Source: International Trade Center (2013) *Investment Map: For better foreign investment attraction and targeting.* Available at: http://www.investmentmap.org

Table 2. Analysis of the Investment statistics in a subset of SACU countries

Country	Foreign Direct Investment												Foreign Affiliates	
	Inward Flow	Yr.	Per capita in US$	Inward stock	Yr.	Per capita in US$	Chg. p.a. since 2008	Outward Flow	Yr.	Outward stock	Yr.	Chg. p.a. since 2008	Number	Number of parents
Botswana	587.1	2011	289	1,389.1	2009	701	40.7%	3.6	2011	386.2	2011	-10.9%	38	34
Namibia	899.7	2011	387	5,276.1	2010	2,311	22.0%	-3.2	2011	29.1	2011	36.7%	54	43
South Africa	5,807.4	2011	115	152,990	2010	3,06	51.2%	-634.9	2011	72,284.7	2011	13.1%	1,13	532

Source: International Trade Center (2013) *Investment Map: For better foreign investment attraction and targeting.* Available at: http://www.investmentmap.org

Notes

1. Equatorial Guinea and Botswana are shown respectively in the first line of Table 1 and Table 2, presented in comparison to other CEMAC countries for Equatorial Guinea, and to close competitors and comparable geographies in terms of resource richness for Botswana.

2. All latest available data have been displayed for any single country. As a result, the reporting year slightly varies in the two samples in order to maximize the data availability. Data are unfortunately rarely reported with an annual frequency for developing countries.

8.12 Sectors with Potential to Attract Investment – Botswana (values in US$ million)

Industry	Foreign Direct Investment			Foreign Affiliates		International Trade 2011			Tariffs	
	Inflow 2011	Stock 2009	Δ p.a. since '08	# affiliates	# parents	Exports	Share in world	Imports	Avg. faced	Avg. applied
Total (merchandise and services)	**587.1**	**1,389.1**	**40.7%**	**38**	**34**					
Agriculture and hunting						17.6	0.0%	154.8	12.3%	4.6%
Forestry and Fishing						3.9	0.0%	4.2	10.6%	2.4%
Mining and quarrying	546.2		12.1%	1	1	3,833.5	0.8%	809.8	5.0%	0.2%
Mining and agglomeration of hard coal						7.2	0.0%	1.5	3.9%	0.0%
Mining and agglomeration of lignite								0.0	4.3%	0.0%
Extraction and agglomeration of peat								0.0	3.8%	0.0%
Mining of iron ores								0.0	4.1%	0.0%
Mining of non-ferrous metal ores, except						74.5	0.1%	0.1	4.2%	0.0%
Quarrying of stone, sand and clay						0.2	0.0%	2.5	5.7%	0.0%
Mining and quarrying n.e.c.						3,751.5	5.4%	805.0	5.4%	0.7%
Unspecified other mining and quarrying						0.0	0.0%	0.7	4.5%	0.0%
Petroleum						0.4	0.0%	16.4	4.9%	0.0%
Food, beverages and tobacco				1	1	117.3	0.0%	606.8	16.7%	11.0%
Machinery and equipment				1	1	65.0	0.0%	801.8	6.1%	2.2%
Electrical and electronic equipment				1	1	71.2	0.0%	758.0	8.2%	3.7%
Precision instruments						3.0	0.0%	73.8	7.8%	0.2%
Motor vehicles and other transport equipment				2	2	145.0	0.0%	680.3	8.7%	5.1%
Other manufacturing				2	2	722.5	0.1%	174.7	13.2%	9.4%
Recycling				2	2	23.4	0.0%	2.3	5.4%	0.4%
Textiles, clothing and leather				1	1	262.6	0.0%	259.5	13.2%	22.2%
Wood and wood products						21.0	0.0%	163.6	8.8%	5.2%
Publishing, printing and reproduction of recorded						4.1	0.0%	35.8	8.8%	5.0%
Coke, petroleum products and nuclear fuel				2	2	16.0	0.0%	948.3	5.5%	3.2%
Chemicals and chemical products				1	1	69.3	0.0%	471.2	5.5%	1.7%
Rubber and plastic products				2	2	24.6	0.0%	191.2	10.4%	10.6%
Non-metallic mineral products				3	3	4.5	0.0%	185.6	10.7%	5.5%
Metal and metal products						458.0	0.0%	620.5	7.7%	3.6%
Unspecified secondary	14.4		30.7%							
Electricity, gas and water										
Other services				1	1					
Construction	0.1		-95.8%	3	3					
Wholesale and retail trade	105.7		1,059.7%	16	15					
Hotels and restaurants	1.3		-64.0%	1	1					
Transport, storage and communications	2.1		-57.6%	3	3					
Finance	562.6		41.1%	2	1					
Business activities	86.8		27.7%	7	7					
Mixed goods (trade data)						0.2	0.0%	229.7	8.4%	1.1%

PRIMARY (rows: Agriculture and hunting through Petroleum)
SECONDARY (rows: Food, beverages and tobacco through Unspecified secondary)
TERTIARY (rows: Electricity, gas and water through Business activities)

Source: International Trade Center (2013) *Investment Map: For better foreign investment attraction and targeting*. Available at: http://www.investmentmap.org

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8.13 Sectors with Potential to Attract Investment – Equatorial Guinea (values in US$ million)

| Industry | Foreign Direct Investment | | | Foreign Affiliates | | International Trade 2011 | | | Tariffs | |
	Inflow 2011	Stock 2011	Δ p.a. since '08	# affiliates	# parents	Exports	Share in world	Imports	Avg. faced	Avg. applied
Total (merchandise and services)	**737.1**	**8,784.7**	**20.3%**	**23**	**21**					
PRIMARY Agriculture and hunting						3.3	0.0%	13.0	11.7%	22.6%
Forestry and Fishing				1	1	129.5	0.3%	4.1	10.2%	21.7%
Mining and quarrying						1.5	0.0%	10.0	4.7%	10.6%
Petroleum						11,780.5	0.6%		4.6%	9.8%
Extraction crude petroleum & nat.						11,780.5	0.6%		4.6%	9.8%
SECONDARY Food, beverages and tobacco				1	1	0.1	0.0%	297.3	16.4%	22.5%
Machinery and equipment				1	1	11.2	0.0%	437.7	5.9%	13.0%
Electrical and electronic equipment						0.7	0.0%	239.0	8.0%	17.0%
Precision instruments						1.9	0.0%	60.3	7.5%	16.2%
Motor vehicles and other transport equipment						437.4	0.0%	259.2	8.5%	14.6%
Other manufacturing						0.0	0.0%	56.1	12.9%	28.1%
Recycling						1.5	0.0%	0.1	5.0%	14.9%
Textiles, clothing and leather						0.1	0.0%	30.5	13.5%	22.5%
Wood and wood products						16.1	0.0%	27.1	8.6%	18.2%
Publishing, printing & reprod. of recorded						0.0	0.0%	9.2	8.7%	17.0%
Coke, petroleum products and nuclear fuel						377.1	0.0%	183.5	5.4%	10.2%
Chemicals and chemical products				1	1	344.2	0.0%	77.6	5.3%	10.6%
Rubber and plastic products						0.3	0.0%	74.2	10.4%	19.0%
Non-metallic mineral products						0.1	0.0%	92.0	10.3%	22.3%
Metal and metal products				1	1	36.7	0.0%	394.6	7.5%	16.4%
TERTIARY Other services				5	4					
Construction				4	4					
Wholesale and retail trade				3	2					
Hotels and restaurants				1	1					
Transport, storage and communications				4	4					
Business activities				5	5					
Mixed goods (trade data)						0.0	0.0%	0.3	7.9%	21.0%

Source: International Trade Center (2013) *Investment Map: For better foreign investment attraction and targeting.* Available at: http://www.investmentmap.org

8.14 Locations Competing for Investment Attraction in the Mining and Oil industries

Table 1. Competitive scenario in the industry of Mining and Quarrying

| Country | Foreign Direct Investment | | | | | Foreign Affiliates | | International Trade | | | | Tariffs | |
	Inward Flow	Yr.	Inward stock	Yr.	Δ p.a. since '08	# affiliates	# parents	Exports	Share in world	Imports	Yr.	Avg. faced	Avg. applied
Canada	17,243.4	2011	13,836.4	2010	23.2%			21,210.5	4.5%	5,579.1	2011	5.2%	0.0%
Australia	9,395.5	2010	148,656.8	2010	32.3%			117,035.9	24.7%	1,192.4	2011	5.2%	0.3%
Russian Federation	280.0	2010	1,157.0	2010	3.5%	125	74	20,413.3	4.3%	1,444.8	2011	4.8%	4.3%
Congo, Rep.						2	2	2,031.3	0.4%	34.4	2011	5.0%	6.4%
Botswana			546.2	2009	12.1%	1	1	3,833.5	0.8%	809.8	2011	5.0%	0.2%
Angola						4	4	532.2	0.1%	26.6	2011	5.0%	11.6%
Namibia			1,813.9	2010	22.0%	1	1	1,893.3	0.4%	274.0	2011	5.1%	0.2%
South Africa			58,569.4	2010	68.3%	29	13	23,687.1	5.0%	1,362.9	2011	5.1%	0.2%
Zimbabwe						1	1	362.7	0.1%	20.4	2011	4.7%	5.3%

Source: International Trade Center (2013) *Investment Map: For better foreign investment attraction and targeting.* Available at: http://www.investmentmap.org

Table 2. Competitive scenario in the industry of Extraction of Crude Petroleum and Natural Gas

| Country | International Trade | | | | Tariffs | |
	Exports	Share in world	Imports	Yr.	Avg. faced	Avg. applied
Nigeria	101,775.5	5.6%	52.2	2011	4.9%	5.0%
Angola	63,345.9	3.5%	0.4	2011	4.8%	20.0%
Algeria	54,803.0	3.0%	0.3	2011	4.9%	5.8%
Libyan Arab Jamahiriya	16,862.4	0.9%	0.0	2011	4.1%	0.0%
Sudan	12,482.9	0.7%	0.3	2011	3.8%	8.9%
Congo	12,376.5	0.7%	0.1	2011	4.6%	9.8%
Equatorial Guinea	11,780.5	0.6%		2011	4.6%	9.8%
Gabon	7,837.3	0.4%	0.0	2011	4.6%	9.8%
South Africa	158.1	0.0%	14,300.0	2011	4.9%	0.0%

Source: International Trade Center (2013) *Investment Map: For better foreign investment attraction and targeting.* Available at: http://www.investmentmap.org

8.15 Fiscal Indicators in Botswana and Equatorial Guinea

Fiscal Indicators - Botswana	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011
External debt stocks (current US$m)	553	717	458	454	389	420	440	1.707	1.797	2.396
Debt service on external debt (current US$m)	105	91	69	53	57	48	69	47	75	73
Principal repayments on external debt, public and publicly guaranteed (current US$m)	66	64	52	40	45	37	61	36	56	50
Interest payments on external debt (current US$M)	39	27	17	13	12	11	8	11	20	22
Total debt service (% of exports of goods, services and income)	4,3	3,1	2,0	0,9	1,0	0,7	1,1	1,1	1,4	-
Cash surplus/deficit (% of GDP)	19,1	4,9	-	-	11,2	4,6	-5,3	-10,8	-6,5	-1,7

Source: The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

Fiscal Indicators (% of GDP)	2008 - actual	2009 - actual	2010 - actual	2011 - actual	2012 - EIU estimates	2013 - EIU forecast	2014 - EIU forecast
Botswana							
Central Government Revenue	34,8	32,7	26,6	27,6	24,1	23	22
Central Government Expenditure	40,2	43	32,1	27,7	23,6	22,6	21,3
Central Government Balance	-5,4	-10,3	-5,4	-0,1	0,5	0,4	0,7
Net Public Debt	8,5	20,7	15,5	17	14,4	14,3	12,7
Equatorial Guinea							
Central Government Revenue	37	45,2	29,9	30,5	32,2	34,3	35,4
Central Government Expenditure	21,3	49	35	29,6	30,5	32,5	32,8
Central Government Balance	15,7	-3,8	-5,1	0,9	1,7	1,8	2,6
Net Public Debt	1	5,4	5,6	5,7	5,1	5,3	5

Source: The World Bank (2013) *World Bank Development Indicators - Data.* Available at: http://data.worldbank.org/indicator

8.16 Analysis of the quality of Institutions

Table 1. Corruption Perception Index in a subset of SACU members

	1998		2005		2012	
Country	Country Rank	CPI Score	Country Rank	CPI Score	Country Rank	CPI Score
Botswana	23	6,1	32	5,9	30	65
Namibia	29	5.3	47	4.3	58	48
South Africa	32	5.2	46	4.5	69	43

Source: Transparency International (2013) *Corruption Perceptions Index 2012.* Available at: http://cpi.transparency.org/cpi2012/results/

Notes
1. The Corruption Perception Index, recorded on a 0-10 scale until 2011, is presented on a 0-100 scale starting from the year 2012. Botswana's value of 65 can be translated to a 6.5 on the pre-2012 scale.
2. No value has been reported in reference to Equatorial Guinea.

Table 2. Credit Ratings in CEMAC and a subset of SACU countries

		S&P			Moody's
		Local Currency Rating	Foreign Currency Rating	T&C	
S A C U[49]	**Botswana**	A-	A-	A+	A2
	South Africa	A-	BBB	A-	Baa1
	Namibia	nr	nr	nr	Baa3
C E M A C	**Equatorial Guinea**	nr	nr	nr	nr
	Cameroon	B	B	BBB-	nr
	Central African Republic	nr	nr	nr	nr
	Chad	nr	nr	nr	nr
	Gabon	BB-	BB-	BBB-	nr
	Congo, Republic of	nr	nr	nr	nr

Source: Standard & Poor's Rating Services (2013) *Sovereigns Rating List.* Available at: http://www.standardandpoors.com/ratings/sovereigns/ratings-list/en/us

Notes
1. *Local Currency Rating* and *Foreign Currency Rating* may differ because an obligor's capacity to repay foreign currency obligations may be lower than its capacity to repay obligations in its local currency due to the sovereign government's own relatively lower capacity to repay external versus domestic debt.
2. A *Transfer and Convertibility* (T&C) assessment is the rating associated with the likelihood of the sovereign restricting access to foreign exchange needed for debt service

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[49] The countries displayed in the first section of the table are three out of the five countries composing the South African Customs Union. They are the only ones represented because they are the most comparable in terms of development and institutional quality.

Table 3. Doing Business Statistics

Year 2013	Ease of Doing Business Rank	Starting a Business	Dealing with Construction Permits	Getting Electricity	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Resolving Insolvency
Botswana	59	99	132	90	51	53	49	39	147	68	29
South Africa	39	53	39	150	79	1	10	32	115	82	84
Namibia	87	133	56	87	169	40	82	112	140	41	59
Eq. Guinea	162	182	107	86	103	104	150	173	136	61	185
Cameroon	161	125	95	63	158	104	128	176	157	172	150
CAR	185	170	147	173	132	104	139	181	182	177	185
Chad	184	181	127	149	140	104	158	184	180	167	185
Gabon	170	157	110	135	170	104	158	146	135	153	145
Congo,Rep.	183	180	149	170	156	104	158	182	181	162	136

Source: Doing Business (2013) *Historical Data Sets and Trends Data.* [online] Available at: http://www.doingbusiness.org/custom-query

Table 4. Polity IV Statistics

Year 2011	Democracy[1]	Polity[2]	Openness of Executive Recruitment[3]	Executive Constraints[4]	Political Competition[5]
Botswana	8	8	4	7	9
Namibia	6	6	4	5	9
South Africa	9	9	4	7	9
Cameroon	1	-4	4	2	6
Central African Republic	1	-1	0	3	6
Chad	1	-2	0	2	6
Congo Brazzaville	0	-4	0	2	3
Equatorial Guinea	0	-5	0	2	2
Gabon	4	3	4	4	6

Source: INSCR Data Page (2013) *Polity IV: Regime Authority Characteristics and Transitions Datasets.* [online] Available at: http://www.systemicpeace.org/inscr/inscr.htm

Notes

1. Eleven-point authority coding on an increasing scale from 0 (i.e. non democratic) to 10 (i.e. democratic).

2. As a second measure of democracy, *Polity* is represented on a twenty-one point scale from 10 (i.e. strongly democratic) to -10 (i.e. strongly autocratic).

3. Four-point scale variable: 1 = executive recruitment is closed, 2 = dual executive-designation, 3 = dual executive-election, or 4 = executive recruitment is totally open.

4. Seven-point scale variable taking values from 1 (i.e. executives' unlimited authority) to 7 (i.e. Strongest constraints on Executive authority).

5. Index of political competition ranging from 1 (i.e. absence of competition) to 10 (i.e. perfect political competition).

Table 5. The World Bank GINI coefficient in a subset of countries

Country Name	Year (last data available)	GINI
Botswana	1994	60,96
Namibia	2004	63,90
South Africa	2009	63,14
Equatorial Guinea	N/A	N/A
Cameroon	2007	38,91
Central African Republic	2008	56,30
Chad	2003	39,78
Congo, Rep.	2005	47,32
Gabon	2005	41,45

Source: The World Bank (2013) *GINI Index*. Available at: http://data.worldbank.org/indicator/SI.POV.GINI

Notes
The GINI index ranges from a value of 0 (perfect income equality) to 100 (perfect income inequality).

Table 6. Global Peace Index in a subset of countries

Country Name	2007	2008	2009	2010	2011	2012
Botswana	1,786	1,792	1,643	1,641	1,701	1,621 (31th)
South Africa	2,399	2,412	2,437	2,380	2,362	2,321 (127th)
Namibia	2,003	2,042	1,841	1,864	1,843	1,804 (49th)
Equatorial Guinea	2,059	1,964	1,801	1,948	2,028	2,039 (87th)
Cameroon	2,093	2,182	2,073	2,210	2,101	2,113 (97th)
Central African Republic	-	2,857	2,733	2,790	2,850	2,872 (151th)
Chad	-	3,007	2,880	2,964	2,745	2,671 (145th)
Gabon	1,952	1,878	1,758	1,981	2,067	1,972 (75th)
Congo, Rep.	-	2,417	2,202	2,192	2,157	2,148 (104th)

Source: Vision of Humanity (2013) *2012 Global Peace Index*. Available at: http://www.visionofhumanity.org/gpi-data/

Notes
Given the GINI data unavailability for Equatorial Guinea, this second table represents the inequality measures as presented by the organization *Vision of Humanity*. The index, ranging from 0 (totally peaceful country) to 5 (extensive lack of peace in the country) allows the reader to establish a comparison not only in geographical, but also in temporal terms.
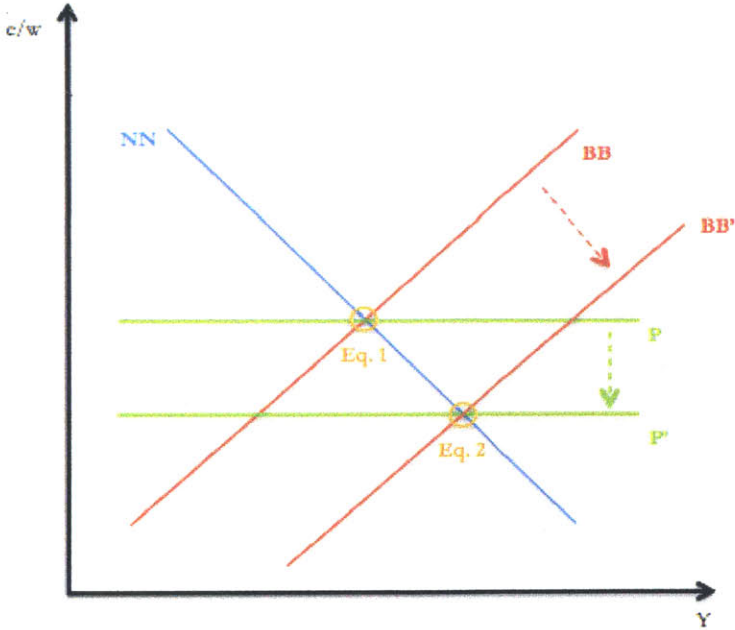
8.17 Dynamics of investment inflows according to the BB-NN model

Graph 1. General representation of the BB-NN model
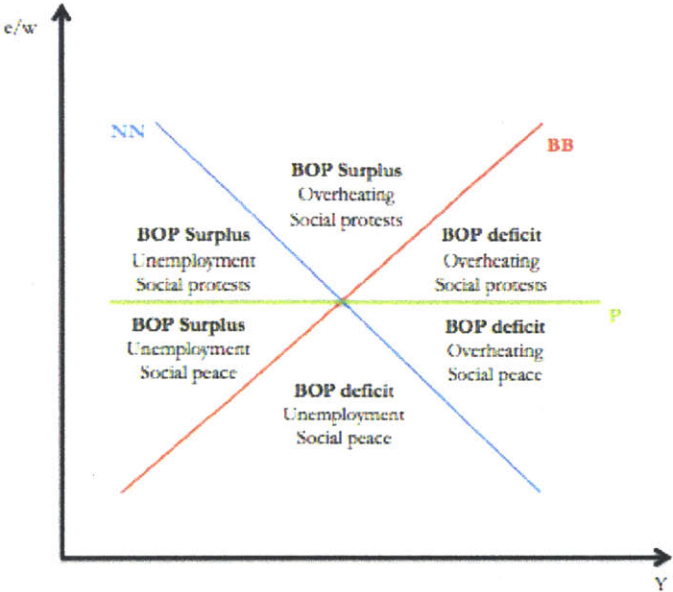
Source: author's analysis

Graph 2. New equilibrium derived from FDI inflow

Source: author's analysis

8.18 A Game Theory perspective on PPPs

Matrix 1. Standard PPP game (literal form), period 1

In reference to Matrices 1 to 8: the colored numbers in the matrices represent the preferred payoff of the corresponding player (i.e. same color).

		Private Party	
		Invest	**Not Invest**
Public Party	**Cooperate**	(a-c, b-d)	(-c, b_{ST})
	Not Cooperate	(a, -d)	(0, 0)

Notes

For the purpose of this analysis:
a>b>d>c=b_{ST}

In the matrix, the first payoff is related to the government and the second one to the company.
**Please refer to paragraph 6.4 for a proper explanation of the letters' meaning.*

Source: author's analysis

Matrix 2. Standard PPP game (numeric form), period 1

		Private Party	
		Invest	**Not Invest**
Public Party	**Cooperate**	(3, 1.5)	(-1, 1)
	Not Cooperate	(4, -2)	(0, 0)

Notes

a = 4
b = 3
b_{ST} = 1
d = 1.5
c = 1

Please consider that these numbers are used as an example and are not meant to correspond to reality.

Source: author's analysis

Matrix 3. Standard PPP game, period 2, if (NC, NI) in period 1

		Private Party	
		Invest	**Not Invest**
Public Party	**Cooperate**	(3, 1.5)	(-1, 1)
	Not Cooperate	(4, -2)	(0, 0)

Source: author's analysis

Matrix 4. Standard PPP game, period 2, if (C, I) in period 1

		Private Party	
		Invest	**Not Invest**
Public Party	**Cooperate**	(6, 3)	(2, 2.5)
	Not Cooperate	(7, -0.5)	(3, 1.5)

Source: author's analysis

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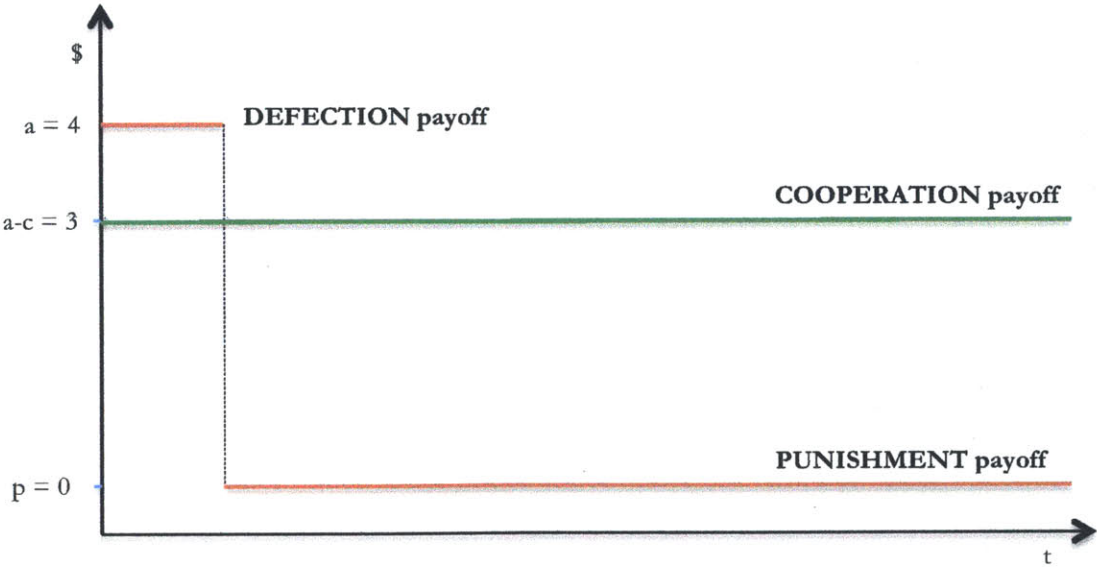## Figure 1. The Αυτοματον (Automaton) of the Repeated PPP Game
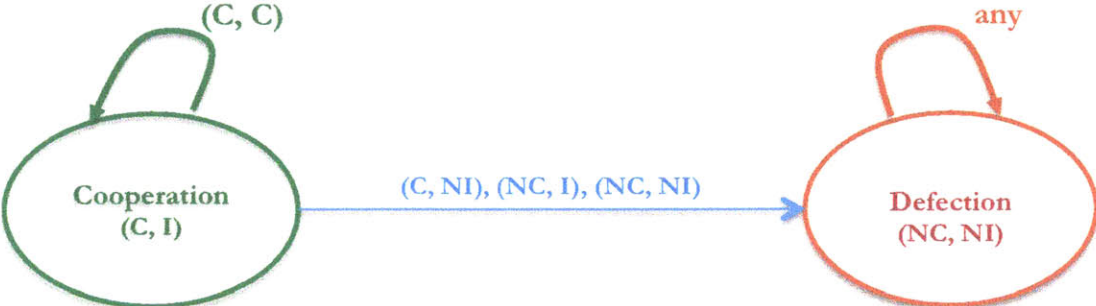
Source: author's analysis

<u>Notes</u>
The letters included in the picture above represent the players' strategies:
C = Cooperate
NC = Not Cooperate
I = Invest
NI = Not Invest

Figure 2. The Government's choice in the Standard game framework

Source: author's analysis
Please, to understand the meaning of the letters, make reference to Paragraph 6.4.

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Matrix 5. Augmented PPP game (literal form), period 1

<table>
<tr><td rowspan="2">Public Party</td><td colspan="2" align="center">Private Party</td></tr>
<tr><td>Invest</td><td>Not Invest</td></tr>
<tr><td>Cooperate</td><td>[a+x(b-d)-c, (1-x)(b-d)]</td><td>[xb_ST-c, (1-x)b_ST]</td></tr>
<tr><td>Not Cooperate</td><td>(a-xd, -(1-x)d)</td><td>(0, 0)</td></tr>
</table>

Source: author's analysis

Notes

For the purpose of this analysis:
$a>b>d>c=b_{ST}$

In the matrix, the first payoff is related to the government and the second one to the company.
**Please refer to paragraph 6.4 for a proper explanation of the letters' meaning.*

Matrix 6. Augmented PPP game (numeric form), period 1

<table>
<tr><td rowspan="2">Public Party</td><td colspan="2" align="center">Private Party</td></tr>
<tr><td>Invest</td><td>Not Invest</td></tr>
<tr><td>Cooperate</td><td>(3.75, 0.75)</td><td>(-0.5, 0.5)</td></tr>
<tr><td>Not Cooperate</td><td>(3.25, -0.75)</td><td>(0, 0)</td></tr>
</table>

Source: author's analysis

Notes

$a = 4$
$b = 3$
$b_{ST} = 1$
$d = 1.5$
$c = 1$
$x = 50\% = 0.5$

Please consider that these numbers are used as an example and are not meant to correspond to reality.

Matrix 7. Augmented PPP game, period 2, if (NC, NI) in period 1

<table>
<tr><td rowspan="2">Public Party</td><td colspan="2" align="center">Private Party</td></tr>
<tr><td>Invest</td><td>Not Invest</td></tr>
<tr><td>Cooperate</td><td>(3.75, 0.75)</td><td>(-0.5, 0.5)</td></tr>
<tr><td>Not Cooperate</td><td>(3.25, -0.75)</td><td>(0, 0)</td></tr>
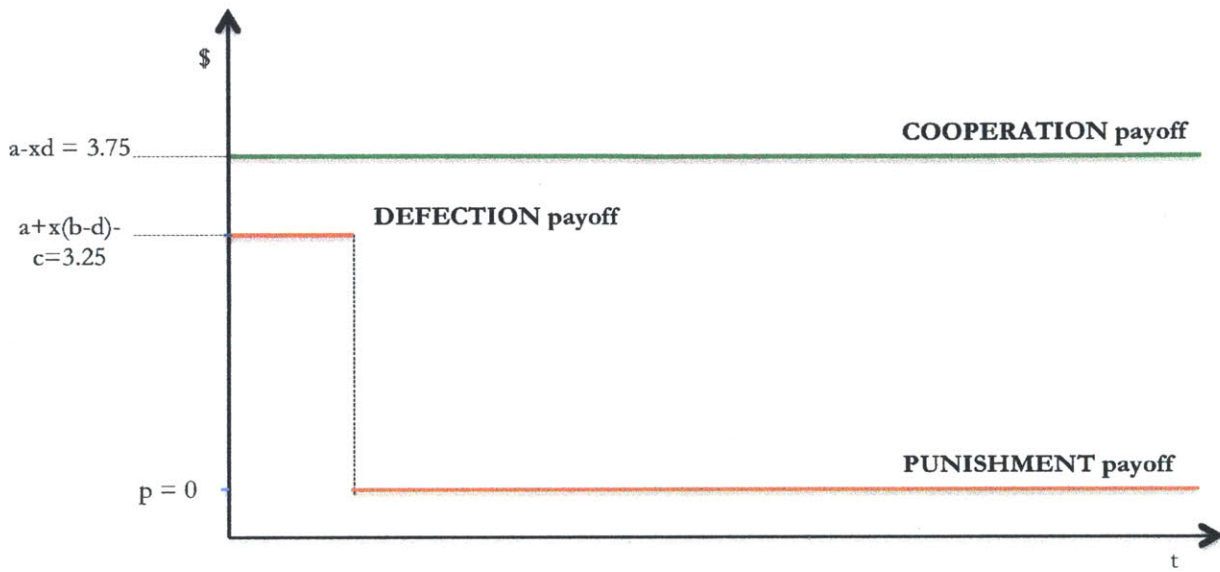</table>

Source: author's analysis

Matrix 8. Augmented PPP game, period 2, if (C, I) in period 1

<table>
<tr><td rowspan="2">Public Party</td><td colspan="2" align="center">Private Party</td></tr>
<tr><td>Invest</td><td>Not Invest</td></tr>
<tr><td>Cooperate</td><td>(7.5, 1.5)</td><td>(3.25, 1.25)</td></tr>
<tr><td>Not Cooperate</td><td>(7, 0)</td><td>(3.75, 0.75)</td></tr>
</table>

Source: author's analysis

Figure 3. The Government's choice in the Augmented game framework

Source: author's analysis
Please, to understand the meaning of the letters, make reference to Paragraph 6.4.

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