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# Political Institutions and the Discovery of Diamonds in Zimbabwe

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*Author:*  
Shingie Chisoro

*Supervisor:*  
Halvor Mehlum

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Shingie Chisoro

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# Summary

Zimbabwe endows significant amounts of natural resources but it remains one of the poorest countries in the world. In 2006, the country discovered major diamond fields in a remote village called Marange located in the eastern part of the country. The discovery of such a valuable resource, with potential to generate great revenues for the state, was seen as an opportunity to re-build the crippled economy. Surprisingly enough, the discovery of diamonds worsened the economic and political crisis in Zimbabwe. The diamond fields became a battleground of the political elites, business elites and artisanal miners competing for diamond rents. The government's intervention in the diamond fields was haphazard and chaotic.

The study aims to establish factors why the supply of such a valuable resource failed to generate positive results in Zimbabwe yet other countries such as neighbouring Botswana succeeded. I argue that poor quality of institutions is the main factor explaining the country's long run poor economic performance. The discovery of diamonds in Marange provides evidence of waste and corruption of mineral wealth by political elites. I focus on the central role played by political elites in the domestic political economy in rent seeking activities. I argue that bad institutions in Zimbabwe encourage political elites to engage in rapacious rent seeking activities. Extraction of diamonds generates excess resource rents creating an atmosphere of extreme abundance that encourages political elites to engage in rent seeking (Herb, 2005). Such activities are harmful for economic growth due to a number of reasons. Rent seeking activities involve misuse of public funds from diamonds, reduction of output in the economy and stifles innovation.

I discuss the events in Zimbabwe through a rent seeking model by Mehlum et al. (2006). The model looks at how the quality of institutions in countries that have just discovered precious minerals affects the incentives of entrepreneurs that specialize in rent seeking and production activities. In their model, entrepreneurs freely allocate themselves between rent seeking and productive activities as determined by the relative payoffs. The gains from each activity are determined by the

quality of institutions as measured by rule of law, bureaucratic quality and corruption in government. When institutional quality is high, majority of entrepreneurs engage in productive activities. In this case, more natural resources result in higher total income. Poor institutions open opportunity for entrepreneurs into grabbing and due to negative externalities in rent seeking; more natural resources lower the aggregate income. Their model predicts that low institutional quality in resource abundant countries results in a resource curse, whereas good institutions lead to a blessing.

I build on the model by Mehlum et al. (2006) by introducing an additional assumption to capture the events in my context. In their model, they assume that entrepreneurs can freely move from production to grabbing and vice versa throughout the whole period depending on which activity is more profitable as given by the relative payoffs. In Zimbabwe, this assumption only applies to the initial stages in the discovery of diamonds as evidenced by the state allowing open access to any person wishing to dig diamonds. Later, the state decided to restore control of the diamond fields by evicting all players who were involved in the extraction of diamonds and restricting entry of any other interested groups. This left political actors dominating the space and setting the mining terms of interested mining companies. To capture this in my model, I impose the assumption that producers cannot freely switch from production to grabbing as the payoffs to grabbing increase. However grabbers are free to move from grabbing into production as the profits to production exceed profits from grabbing. Grabbers are political elites who use their political power to acquire control over diamonds. This applies to Zimbabwean politicians who restricted the entry of other players to reduce competition for diamond rents.

The model predicts that free movement of entrepreneurs has negative consequences for economic growth in countries with bad institutions. In this case, countries with poor institutions are better off without natural resources because the discovery of minerals pulls entrepreneurs from running productive firms into counterproductive rent seeking activities. The model predicts that restricted movement of entrepreneurs into grabbing has positive effects in countries with natural resources. The discovery of a resource in states with bad institutions that restrict entry of producers into rent seeking activities does not distort the existing state of affairs in the economy. The economy continues to run as if nothing occurred. The net result is that there is no change in total income following the discovery of the natural resource. In terms of growth, the country converges to the same income level as it had prior the discovery of the resource. Hence, the discovery of minerals has no negative effect on the economy of countries with poor institutions as long as producers do not abandon running productive firms in favour of rent seeking

activities.

Lack of reliable, logical, consistent and complete data on the size of diamond deposits and production output in Marange, motivated the use of satellite light density data as a proxy to the level of economic activity. Several scholars have used this method to overcome the problems posed by lack of access to data on income growth in many different parts of the world. Satellite light density at night is the amount of human generated light observed from outer space which shows the size of human settlements and industrial activity. Night time light data is provided by the National Geophysical Data Center of the United States National Oceanic and Atmospheric Administration (NOAA) website. The advantage of night light data is that it covers the whole world which makes comparisons between different regions possible.

To explore the effects of the discovery of diamonds in the country, I use changes in light intensity from the time of discovery in 2006 up to 2010, focusing on the region where diamonds were discovered, Marange and the nearby provincial capital city of Mutare. The night light images show sudden growth in economic activity in Marange beginning 2010. Growth in economic activity in Marange and Mutare proves that institutions in Zimbabwe are still functioning shown by the government's efforts to foster growth. There is evidence to support the idea that the country's institutions are not completely dismantled.

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# 1 Introduction

Zimbabwe, among other African countries endows significant amounts of natural resources and is a key natural resource exporter. In 2006, amid the free fall of the Zimbabwean economy due to government faulted land reform program and subsequent political violence, the nation discovered that it is home to significant deposits of diamonds which prompts investigation into why such vast minerals at the disposal of the nation cannot translate into economic development and wellbeing (Saunders et al. 2008 p.1). The aim of this paper is to establish why the supply of such a valuable resource failed to generate positive results in Zimbabwe yet other countries have succeeded.

In many cases, supply of natural resources comes with undesirable economic and political consequences. According to Hawkins (2009), it has always remained a puzzle how an export-driven natural resource sector that creates huge sources of income for the government and international corporations fails to foster or render economic development for the good of all sectors of the population particularly the poor. To this, economists have noted a trend that resource rich countries are associated with undesirable economic, political and social outcomes coupled with retarding economic growth, tendencies towards autocracy and civil war (Roser, 2006). Surprisingly enough, a majority of African resource-rich countries have lived up to that expectation because they top the world's poorest countries with political disorder a characteristic they all share.

According to international standards, Zimbabwe is not a resource abundant nation; however, it possesses a vast range of natural resources. The country has deposits of platinum, gold, nickel and the recently discovered new deposits of diamonds. (Hawkins, 2009 p.1). The main argument of this thesis focuses on the undesirable political, social and economic outcomes that come with the supply of valuable natural resources irrespective of whether a country is rich in natural resources.

## 1.1 Literature Review

The relationship between natural resources and development is not a new subject in the field of economics. Vast literature has shown empirical evidence of the existence of a negative relationship between resource rich countries and development (Gelb, 1988; Sachs and Warner, 1995; Gylfason et al., 1999). This phenomenon is known as the natural resource curse or paradox of plenty (Sachs and Warner, 2001 p.837). Resource curse refers to the self-contradictory assertion verified by observation and experience that resource abundant countries tend to grow less in the long run than resource poor countries (Andersen and Aslaksen, 2008 p.228). The main question that every research must answer is: What lies behind the natural resource curse as posed by Sachs and Warner (2001 p.833). Different scholars propose various explanations concerning complexity of the natural resource curse.

Sachs and Warner (1995, 1999, and 2001) and Van Wijnbergen (1984) made the early contributions in the literature explaining causes of the natural resource curse. Their explanation of the natural resource curse focused on the “Dutch disease”. The Dutch Disease model involves an economy with three sectors namely natural resource sector, manufacturing sector and non-traded sector. Discovery of new resources creates a huge demand for non-traded goods such as input costs and wages. An increase in supply of natural resources concentrates production in natural resources at the expense of the manufacturing sector. This causes a shift of capital and labour from the manufacturing sector to the natural resource sector. With economic growth driven by traded-manufacturing activities, a decline in manufacturing slows growth (Sachs and Warner, 1995 p.6).

Recently, this pure economic explanation of the natural resource curse is becoming unpopular with recent studies that focus on political institutions of a country (Robinson et al, 2006 pp. 450-451). The major setback of Dutch disease models is its failure to explain why particular countries do not experience the resource curse whilst other countries get trapped in the resource curse. The different experiences across many natural resource abundant countries have led to the growth of other explanations that concentrate more on the political institutions of a country (Mehlum et al. 2006; Robinson et al. 2006; Auty and Gelb 2001).

A wide range of literature exists on political economy models that look at the relationship between quality of institutions and natural resource abundance. The most relevant and recent work in this area includes Lane and Tornell (1999), Auty and Gelb (2001), Isham et al. (2002), Torvik (2002), Sala-i-Martin and Subramanian (2003), Herb (2005), Robinson et al. (2006) and Mehlum et al. (2006). The main idea common to all the above models is that quality of institutions is central to achieving substantial growth in natural resource abundant countries.

Models such as those by Robinson et al. (2006), Sala-i-Martin and Subramanian (2003) and Isham et al.(2002) focus on how natural resources create adverse incentives for political governments holding power. While models by Tornell and Lane (1999), Herb (2005), Mehlum et al (2006) focus on how the prevailing quality of institutions affects the decision of entrepreneurs that specialize in rent seeking and production. Discussing all of the above models is not the main goal in this thesis but I will briefly discuss two models that are popular and complementary to my approach.

Robinson et al. (2006) model refers to a politician holding office in the first period with the desire to be re-elected in the second period elections. Natural resources are a huge source of income that accumulates into the hands of government and the ultimate decision lies with the politician in office regarding quantity of the resource to extract and to leave for the future. The politician can either spend the resource rents or use the rents to influence election results. Weingrod (1968 p.379) refers to the “the ways in which party politicians distribute public jobs or special favours in exchange for electoral support,” as patronage.

Robinson et al argue that the discovery of natural resources is not beneficial to the economy if it is coupled with inefficient redistribution. Their model predicts that institutions play a central role in determining whether resource booms end up as resource curse or not. This is because natural resources increase the gains of staying in power by providing politicians with vast resources which they can use to influence the outcome of elections thus increasing resource mis-allocation in the rest of the economy. Countries that benefit from supply of natural resources are characterised by institutions that accept responsibility for their activities and have the ability to carry out their duties successfully. The resource curse is inevitable in countries that do not resemble such institutions.

### 1.1.1 Theoretical Perspectives

I base my study on views from Mehlum et al. (2006). The rent seeking model by Mehlum et al. (2006) looks at how the quality of institutions in countries that have just discovered valuable minerals influences the incentives of entrepreneurs that specialise in rent seeking and production activities. In the model, entrepreneurs allocate themselves between rent seeking and productive activities as determined by the relative payoffs. The gains from each activity are determined by the quality of institutions as measured by rule of law, bureaucratic quality and corruption in government. When institutional quality is high, then majority of entrepreneurs engage into the more profitable productive activities. In this case, more natural resources result in higher total income. Weak institutions make it possible

for entrepreneurs to grab and due to negative externalities in rent seeking, more natural resources lower the aggregate income. Their model predicts that low institutional quality in resource abundant countries results in a resource curse and good institutions lead to a blessing.

Herb (2005) argues that the main problem with owning mineral wealth is that it generates resource rents, surplus earnings over and above all costs and normal profits. This is characteristic of alluvial diamond deposits, which go into production faster generating quick cash flow. Alluvial diamonds are highly attractive for their significantly low operating and capital costs. The supply of surface diamonds that can be exploited without much difficulty by means of simple mining techniques involving hand-digging and panning offers possibilities to invest in mining at low cost. This leads to extreme competition and conflict for resources among interested actors such as illegal miners, business elites and political elites (Saunders, 2009). The availability of such resource rents is associated with stunted growth because it creates an environment of extreme abundance that encourages political elites to maximize personal short-term gains trading future development goals. Powerful interested actors such as political agents engage in rapacious rent seeking behaviour causing deterioration in the quality and ability of the state to control and monitor the economy thus creating room to activities that do not promote growth (Herb, 2005).

Auty and Gelb (2001) concur that the characteristics of political institutions are central to determining the interaction between natural resource endowment and economic outcome. Resource abundant countries tend to be marked by political competition for resource rents leading to nations infested by conflict and exploitative behaviour that causes inefficient distribution of rents and dysfunctional economy. Point source resources such as diamonds have the effect of channelling all rents to the government causing a gradual crumbling down of the political economy. Point resources easily distort the economy unlike diffuse resources such as land (Auty, 2004).

Auty and Gelb (2001) also argue that resource abundant countries prefer the use of indirect redistribution mechanisms to allocate natural resource rents. The use of transparent mechanisms involving direct distribution is viewed as politically inconvenient and impractical because it allows the public to air out their opinions on the most suitable ways to distribute income, a process politicians are not prepared to undertake. The use of direct and transparent mechanisms in distributing rents implies that political regimes in resource abundant countries waive the use of wealth from natural resources as a tool that aids in affirming their political dominance and practice consistent economic policies aimed at fostering growth.

Citing Nigeria as an example, Sala-i-Martin and Subramanian (2003) illustrated how distinct resources such as oil and minerals have a negative influence on growth through their detrimental effect on institutional quality. They agree that poor institutional development characterised by corruption, weak governance, rent seeking and plunder, will remain a thorn in the side of fragile economies that own natural resources. In their paper, they claim that the main reasons behind Nigeria's long-run sub-standard levels of economic growth are waste and corruption. Their paper echoes the same sentiments as Herb (2005) that in order to address the resource curse, institutions should adopt direct distribution mechanisms of mineral rents to the public. However, this calls for a stark improvement in the quality of institutions.

The discovery of alluvial diamonds in June 2006 has stood as a major test in the quality of institutions characterising Zimbabwe. This is supported by Mehlum et al. (2006) who state that natural resources put institutions to a test such that countries with poor institutions experience negative growth while countries with good institutions associate natural resources with a stepping-stone towards development. The discovery of diamonds in Marange showed to great lengths the extractive nature of the political and economic institutions rooted in Zimbabwe.

According to Acemoglu and Robinson (2012 p.81), "Extractive political institutions concentrate power in the hands of a narrow elite and place few constraints on the exercise of this power." This means that power is not widely and openly distributed as much as is needed in society to ensure political institutions that exist solely to serve the people. Authority lies with a few individuals who are not prepared to put in place policies that restrict the manner in which they can use their power. "Extractive economic institutions are characterised by insecure private property rights, a biased system of law, lack of provision of public services resulting in a non-level playing field in which people cannot exchange and contract, significant barriers to entry of new businesses and lack of freedom by the people to choose desired careers" (Acemoglu and Robinson 2012, pp. 74-75). Powerful politicians can influence the type of economic institutions that prevail in a country in such a way as to enable them to draw as many resources as possible from the entire society.

The characteristics of economic and political institutions are vital in any society because they influence the incentives of businesses, individuals and politicians that all determine the success or failure of a nation. All societies are guided by specific economic and political rules that they have personally put in place. The state, in partnership with the citizens, ensures compliance to the set rules. Economic institutions are responsible for shaping economic incentives. This involves the

motivation to invest in education, to save, set up new businesses, and introduce new ideas and technologies. Political institutions decide on the type of economic institutions that prevail, set up policies that enable citizens to have an effect on their behaviour and give the citizens the power to hold politicians accountable for their actions. There exists a strong relationship between a nation's political institutions and economic institutions. Economic institutions are endogenous to the type of political institutions because the existence, survival, and persistence of particular economic institutions depend on political institutions. Hence economic institutions are a resemblance of the political institutions that exist in a country (Acemoglu and Robinson, 2012).

Inclusive economic institutions value individual talents of its people and they set up the necessary institutions such as schools to help build and nurture their talents. In addition, they provide necessities such as good infrastructure, health care, electricity, and clean water. Good economic institutions create a conducive environment for investment ventures, free of barriers to new investors and make available means of funding. Secure private property rights give investors the confidence to build big projects and achieve great things without any fear of losing their hard worked wealth through unlawful means. The role of political institutions is to ensure consistency, reliability, and dependability of prevailing economic institutions (Acemoglu and Robinson, 2012).

### 1.1.2 Diamonds in Zimbabwe: An Institutional Theory Approach

Various factors contribute to the failure of natural resource led growth in Zimbabwe. According to Roser (2006), social forces and external political and economic environments play a role in contributing to poor growth levels in resource rich nations. Zimbabwe's negative economic consequences of increasingly depending on natural resources are due to a number of mechanisms. Such mechanisms include long term declines in terms of trade of countries that export minerals, high volatility in export earnings due to large short and medium swings in the world market prices for minerals, and the Dutch Disease effects causing considerable real appreciation in the value of the currency. The latter has adverse effects on the other sectors of the economy like agriculture, manufacturing, and tourism which experience negative terms of trade weakening the incentives to create a diversified economy and the need to expand exports. In addition the country has experienced macroeconomic instability marked by hyperinflation rendering the local currency valueless and migration of skills and investors. Over the past years we have witnessed a huge out-flux of investors to neighbouring countries such as South Africa, Zambia and Malawi. Entrepreneurs especially in the mining industry are not

willing to invest in the country because it lacks consistent binding policies that guarantee secure property rights owing to the low levels of investment and less than average output levels (Hawkins, 2009; Frankel, 2010).

I argue that Zimbabwe's disappointing growth levels are mainly due to poor quality of political institutions. The government adopts economically unsound policies causing increased spending by the state. Increased availability of funds has also lured politicians into rent-seeking activities to finance patronage and fractional politics as evidenced by Zimbabwe's political system (Hawkins, 2009). Given my context, I choose to focus on the internal political consequences of natural resources as the main factor owing to poor economic performance in Zimbabwe. Such factors include the characteristics of the political government as evidenced by widespread corruption, low levels of democracy and lack of accountability (Herb 2005). Taking economic factors as given affecting almost any country, this allows me to focus on the internal factors which are a choice made by government.

In this paper, I take a complimentary perspective to the above scholars that focuses on institutional theory to explain the events in Zimbabwe. I share the same opinion with Mehlum et al. (2006) that the main pathway to success in resource abundant countries lies in the quality of institutions. With specific reference to Marange diamonds, the aim of this paper is to show how the quality of institutions in Zimbabwe has largely affected the extraction of the diamond resource, distribution of the resource rents, low levels of investment and the dwindling economic performance confirming the long-lived and familiar cycle of poverty. The study looks at how the country's political institutions have influenced the manner in which the economy has responded to the discovery of diamonds in Zimbabwe.

This thesis argues that Marange diamonds have been marked by inconsistent and unsound government intervention. Following a crumbling down of the government-mining sector, the state has been involved in corruption, chaotic mining operations, violence and illegal diamond trade. The government's haphazard approach to the mining of diamonds caused not only economic losses but land degradation, siltation of rivers and de-forestry (Sachikonye 2007; Saunders et al. 2008). I have a distinctive interest in Marange diamonds because they were discovered at a time when the Zimbabwean economy had collapsed as evidenced by sky rocketing inflation, high unemployment, poor delivery of public goods and services and fast shrinking Gross Domestic Product (GDP) just to mention a few. Marange diamonds posed a golden opportunity to re-build the country's economy within a short space of time given the large volumes of revenue generated from 2006 to the present date. Instead the event deepened the economic and political crisis which raises more questions than answers. Marange fields became a battleground of the poverty-stricken artisanal miners, greedy politicians and business elites competing



for possession of the precious stone (Sachikonye 2007).

The first sign of failure in public institutions is the emergency of rent seeking. Rent refers to an excess return that is higher than what a person would gain given a competitive market. The term rent-seeking can be defined as an expenditure of resources in order to gain by expanding one's share of existing wealth without the creation of new wealth or alternatively it is defined as activities that are aimed at creating, maintaining or changing rights and institutions which are responsible for the existence of a specific type of rent (Khan et al. 2000).

Mehlum et al. (2006) model helps to illustrate rent seeking behaviour in Zimbabwe. Not all scholars share the same opinion regarding the effects of rent seeking activities on the economy owing to the different definitions given to the term rent seeking. Some scholars such as Khan et al. (2000) claim that rent seeking activities play a big role in issues of development while some scholars such as Murphy et al. (1993) argue that rent seeking activities are bad for economic growth. However, most scholars do agree that certain rent seeking activities are harmful for economic growth. Rent seeking is not a problem exclusive to developing countries alone but is also existent in developed countries. The only difference is that rent seeking activities in developing countries have far-reaching negative consequences that usually take the form of illegal activities rendering them harmful for economic growth (Khan et al. 2000).

Some forms of rent seeking are used to enhance value for society whereas some forms of rent seeking reduce value for society. Destructive forms of rent seeking include bribing. Political activities of lobbying and advertising are termed legal forms of rent seeking (Khan et al. 2000). According to Murphy et al (1993) there is private and public rent seeking which are both bad for growth. Private rent seeking mainly takes the form of theft of existing stocks of wealth such as land, output and capital whereas public rent seeking mainly involves government officials with power to influence the success of the private sector, sucking wealth from the private sector through corruption and lobbying. Private rent seeking has the effect of reducing output in the economy following a shift of entrepreneurs from productive activities that are subject to rent seeking into more profitable rent seeking activities. Public rent seeking has the effect of stifling innovation in the economy which is central to economic growth. Entrepreneurs starting up their own firms need publicly provided goods and services such as permits, licenses, import quotas and state infrastructure. Government officials enact barriers such that innovators cannot easily get access to the necessary goods and services to start up their own firms and thus enhances chances of corruption and payoffs from corruption.

Rent seeking refers to a wide range of activities. To clearly capture the context in which I discuss this phenomenon, I tailor down my definition of rent seeking to focus on a very specific type of rent. I highlight the necessary political and institutional conditions that are conducive for such forms of rent seeking. My interest lies in natural resource rents. To explain the events in Zimbabwe I focus on the ‘rentier state’ approach. According to Matti (2010) the ‘rentier state’ approach explores the interaction between resources and political institutions. In this context, “rent seeking is the use of government revenue without benefiting society” (Matti, 2010 pp. 3-4). Extraction of resources generates billions of dollars which accrue directly to the government enhancing the chances of funds misuse. Misuse of funds is practiced in an environment of extractive institutions where citizens do not have the power to hold politicians accountable for their actions. “A rentier state is a state in which rent seeking is the core function of the government” (Matti, 2010 pp. 3-4). This means that the state solely exists to make personal gains through unlawful ways.

I have a particular interest in resource rents which due to their external nature do not need stringent levels of public accountability and transparency. Such type of rents that are easy to grab quickly determine the type of institutions that exist in a country whereby strong institutions are able to withstand the temptation of easy money whereas weak institutions will fall into the trap and succumb to pressures of looting. Resource extraction creates huge sources of income which desperately need grounded institutions to keep a clear record of the revenues. ‘Rentier states’ lack the political will to fight corruption. Instead political elites are in favour of deteriorating institutional quality and they further work to dismantle institutions so as to carry out their rent seeking activities without any hindrances. The idea that rents refer to incomes that are usually higher than what a person would gain in a competitive market has the effect of further motivating agents to find ways of creating such rents and maintaining the rents (Khan et al. 2000).

Building on the rent seeking model by Mehlum et al (2006), I aim to show the active role played by powerful agents in the domestic political economy in rent-seeking activities. Political agents do not play a passive role in cases where there is a lot to gain, instead they dominate the space. I include an additional assumption to the model to capture the ideas in my context. In their model they assume that entrepreneurs can freely move from production to grabbing and vice versa throughout the whole period depending on which activity is more profitable as given by the relative payoffs. In Zimbabwe, this assumption only applies to the initial stages in the discovery of diamonds as evidenced by the government allowing open access to anyone wishing to dig diamonds. Following that the state decided to restore control of the diamond fields by evicting all players who were involved in the

extraction of diamonds and restricting entry of any other interested groups. This left political elites dominating the space and setting the mining terms of interested mining companies. To capture this in my model, I impose the assumption that producers cannot freely switch from production to grabbing as the returns to grabbing exceed profits from production. However grabbers are free to move from grabbing into production as the profits to production exceed profits from grabbing. Grabbers are political elites who use their power to gain control over diamonds. This applies to Zimbabwean politicians who restricted the entry of other actors to reduce competition for diamond rents.

In the model, I look at the economy of Zimbabwe as a whole. The economy comprises of entrepreneurs who emerge from the same pool who are distinguished by their activities. A proportion of entrepreneurs is made up of producers who engage in the production of goods and services in different sectors of the economy. Profits from production are not subject to rent seeking. This means that wealth and property from production cannot be stolen or unlawfully seized from the rightful owner. The sudden discovery of diamonds increases the level of income in the economy producing large volumes of revenue. Diamond rents create opportunities for rent seeking. This encourages the other proportion of entrepreneurs to engage in rent seeking activities. Rent seekers comprise of all persons that are interested in diamonds such as artisanal miners, unauthorized traders, business elites and political elites. This creates tension among the interested players who are competing for the same limited resource rents. Competition for diamond rents evokes insider and outsider identities as a way of claiming access to diamond rents and restricting access of the other.

Insiders are politicians who manage to secure their place as grabbers by use of their political power which they can also use to tilt institutions to enhance profitability of their activities. Outsiders are producers who want to shift from productive activities into more profitable rent seeking activities. Insiders use different methods to ensure that outsiders do not get access to diamond rents. With restricted entry into grabbing, producers continue to produce output in different sectors of the economy or migrate to other countries.

I discuss the implications of free entry and restricted entry into grabbing and show how the two assumptions are related to the allocation of entrepreneurs and payoffs to grabbing and production. I look at the effects of the discovery of diamonds on the economy under the set of assumptions and different types of institutions and show how the overall outcome of events depends on the quality of institutions. With the aid of satellite light density data, I measure the growth in economic activity in Marange and the nearby city of Mutare and also use the data to assess the quality of institutions in Zimbabwe. Lastly, I use the model as a lens

through which to examine the causes and key factors owing to the poor economic performance in Zimbabwe.

The thesis is divided into five chapters. Chapter two gives a brief economic history of Zimbabwe and the important sectors of the economy. Chapter three gives a background of Marange diamonds followed by a section on the characteristics of diamonds. This chapter also includes a section on satellite light density data which is used as a proxy to the level of economic activity in Marange diamond fields and the nearby city of Mutare. Chapter four introduces the model. Chapter five contains implications of the model and its relevance to Zimbabwe's economic history.

## 2 Economic History of Zimbabwe

To enhance understanding of the following sections, I give a brief background into the major economic events shaping Zimbabwe from the time the country attained its independence to the present. The main idea is to show how the economy has progressed over the years and highlight factors that have influenced the present economic and political outcomes.

Though Zimbabwe attained independence from Britain in 1980, the country did not inherit purely extractive institutions which were established by colonizers for the purposes of simply extracting resources. She became a settler colony with inclusive institutions. The colonial settlers developed infrastructure, set up industries and capitalist firms, and the country enjoyed good state services, a strong working class and high incomes. The new government under the leadership of Robert Mugabe “inherited one of the most structurally developed economies and effective state systems in Africa, and decisions were more strongly influenced by policy theory rather than pure clientelism” (Brett, 2005 p.92).

Between the years 1980 and 1990, the new regime adopted a corporatist system with the state controlling most of the economic activities. Corporatism involves the organization of society into corporations that are controlled by the government. The state forms different industrial and professional corporations led by workers and employers acting as organs of political representation and controlling activities of the persons within their jurisdiction. After independence the new government carried over with colonial policies and worked to address the racial imbalances of the colonial period. Prices, allocation of resources and investment were controlled by the government. Protectionism was used to safeguard local infant industries. Davies and Rattsø (2000) define protectionism “as a tariff equivalent of a quota raising the price of importables above the world market level”. The new regime established a minimum wage and stripped off the employers’ ability to dismiss employees. Health and education were freely accessible to all. Subsidies on all

basic consumer goods were introduced. Government spending and tax revenue increased. The government retained sole ownership of public utilities such as electricity, water and public transport, and agricultural marketing agencies (Brett, 2005).

The corporatist policies resulted in significant gains which included a decline in economic inequality, widespread access to education and health care, reduced food prices in the cities, GDP growth, protection of local industries from external competition, low interest rates due to financial regulations, rising wages and low inflation (Brett, 2005).

However, the corporatist policies also posed challenges to the economy. In the late 1980s tension started to grow between the regime's socialist ideology and capitalists. New investors wasted a lot of time and incurred transaction costs in the process of obtaining licenses to set up businesses and be able to dismiss individual workers. The government's management of the interest rate artificially kept interest rates down which suppressed savings. The state developed a natural tendency to borrow which reduced supply of capital to a limited number of borrowers. Protection of domestic high cost companies raised input costs to exporters leading to shrinking exports. Severe shortages of foreign currency made it impossible to purchase foreign technology. Political elites did not encourage the growth of strong African investors in fear of losing their grip on power. Countrywide provision of public services increased government spending which led to persistent budget deficit, high taxes and high public debt. Lack of credit following fiscal deficit, high taxes, poor allocation of resources by the state and shortages of foreign currency stifled private investment. Controls over wages and employment deterred companies from hiring new workers which increased unemployment. All these problems posed threats to the legitimacy of the new regime especially from the eyes of the urban working people who were affected by rising unemployment and falling wages. A series of economic challenges called for the need to set up new economic reforms which was first raised by the business elite (Brett, 2005).

By the late 1980s, the government decided to implement new economic policies to address the country's economic crisis. It was in 1991 that the government yielded to pressure from the international community and business elite to adopt a five year Economic Structural Adjustment Programme (ESAP). The main goal of ESAP was to create jobs through the "removal of price controls, removal of wage controls, reduction of government expenditure, a 40 percent devaluation of the Zimbabwean dollar, removal of subsidies on basic consumer goods, liberalization in the foreign currency allocation system, removal of protection of non-productive import substituting industries and increased profit remittance abroad, and a radical restructuring of the various parastatals and other public enterprises" (Sichone,

2002; Brett, 2005).

The rapid changes to various structures that came along with ESAP involved costs and benefits. The benefits of ESAP entailed significant economic growth, that includes increased foreign exchange reserves and growing employment. According to Mumbengegwi (2002, p.201) ESAP increased capital formation, share of exports in GDP and reduced rural-urban inequality.

However ESAP just like any policy, imposed costs on the economy and it did not take time to notice the downfalls of ESAP. In late 1997 the country started experiencing a series of macro-economic problems. These included a drop in growth, employment, wages and social service spending. The budget deficit and inflation remained high. Stiff external competition and high real interest rates forced many industrial firms specializing in footwear and textiles to shut down. Scholars claim that apart from the costs emanating from ESAP as a policy, negative externalities and internal political factors increased the incidence of a failed program (Brett, 2005).

During the time ESAP was implemented, the country experienced severe droughts in 1992, 1993 and 1995 which greatly compromised the success of ESAP. Drought reduced agricultural output, exports and state revenue. It also affected the manufacturing industry which depended on the agricultural sector for inputs. The state increased spending in form of drought relief programmes. The withdrawal of the much needed financial support from the International Monetary Fund (IMF) in 1994 undermined the effectiveness of ESAP (Brett, 2005).

In 1998 in the midst of ongoing economic problems, counterproductive political decisions were taken by the government. The government sent the Zimbabwean army to intervene in a civil war in the Democratic Republic of Congo (DRC) which heightened the economic problems in the country. This was costly for the government not only in terms of the millions of dollars spent in the war but also forfeited the opportunity to receive aid from the international economic aid (Brett, 2005).

In 2000, unexpected social problems in the form of disgruntled war veterans who claimed compensation for their involvement in the liberation war forced the government to overlook its fiscal constraints and pay out large sums of money to every person who claimed to be a war veteran. This had the effect of increasing inflation (Brett, 2005).

In the same year there was growing dissatisfaction among many Zimbabweans and war veterans who claimed an equal share of the economic pie especially land. This forced the government to further take drastic and radical measures which had far

reaching consequences on the economy. In 2000 the government embarked on a land reform program aimed at ensuring equitable distribution of land among the landless majority. The acquisition of land involved the violent eviction of many white farmers from the productive farms mainly by war veterans. This adversely affected the commercial agricultural sector which was mainly controlled by white farmers (Brett, 2005).

The following years 2002-2004 were marked by severe food shortages. This was worsened by dry weather conditions in 2002 coupled with deteriorating irrigation system. The rural sector was mainly affected during this period as the eviction of white farmers led to the loss of service sector support and access to cheaper agricultural products from the farms. In the cities people travelled to neighbouring countries such as South Africa, Botswana and Mozambique to buy all sorts of groceries ranging from bread to cooking oil. The price of food commodities sky rocketed beyond the means of the majority (Coomer and Gstraunthaler, 2011).

Severe economic problems forced the government to abandon its initial policies on taxation and prices. For example shortages of food and basic commodities encouraged some businessman to exploit customers by overcharging commodities. Late 2002, the government re-imposed price controls on all basic goods. Control of prices forced many firms to shut down since the set prices were below production costs and reduced investment incentives. The state resumed management of the exchange rate by closing all foreign exchange bureaus and authorizing only banks to take part in foreign exchange deals (Brett, 2005; Coomer and Gstraunthaler, 2011).

During the same period, supply of electricity, water, transport and health services was erratic. The country experienced chronic power cuts due to worn out infrastructure and lack of equipment. Many homes had no access to clean running tap water in their homes and they resorted to fetching water in buckets. Every sector of the economy technically seized to function (Doran, 2009).

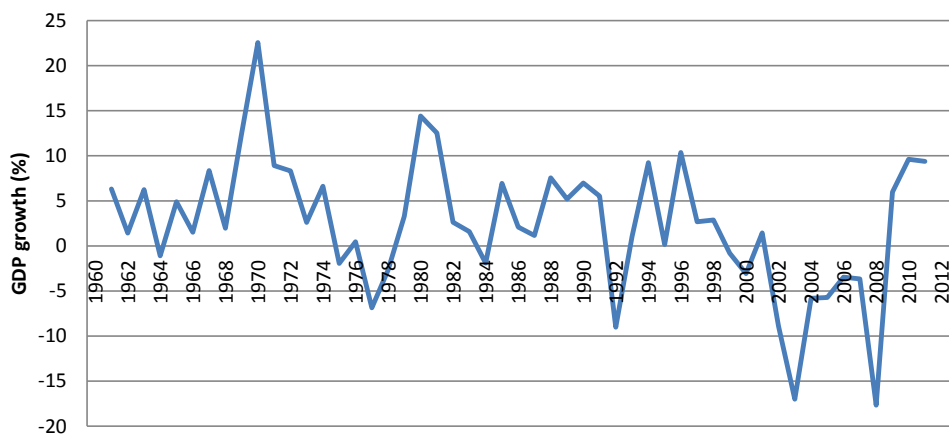
Every preceding event seemed to pave way for more serious economic problems. In 2004-2009 the economy was gripped by hyperinflation rendering the local currency valueless. The Zimbabwean dollar was officially phased out in 2009 paving way for dollarization. The country adopted the US dollar and South African Rand for all its transactions (Kairiza, 2009). Dollarization stabilized prices, imposed fiscal discipline and improved revenue performance. However dollarization imposed challenges on the economy such as shortage of credit and coins for daily transactions (Coomer and Gstraunthaler, 2011).

At the peak of unresolved economic problems political instability took its toll in 2008. The emergence of opposition party politics led by Morgan Tsvangirai caused



a political clash in 2008 elections. Mugabe responded by deporting military forces in all parts of the country in a bid to silence any form of opposition. This led to countrywide political violence whereby many atrocities were committed. Opposition politicians were arrested. Supporters, human rights activists, journalists and university students were bitten and terrorised by the military forces (Dube, 2012). Political violence disrupted the way the economy functioned leading to capital flight and loss of international support. It was after 2008 that the economy started to show signs of recovery as shown by the trends in GDP. The country continues to experience economic and political hurdles which will make the journey to full recovery long.

Figure 2.1: Annual growth in GDP



Source: World Bank Data 2013

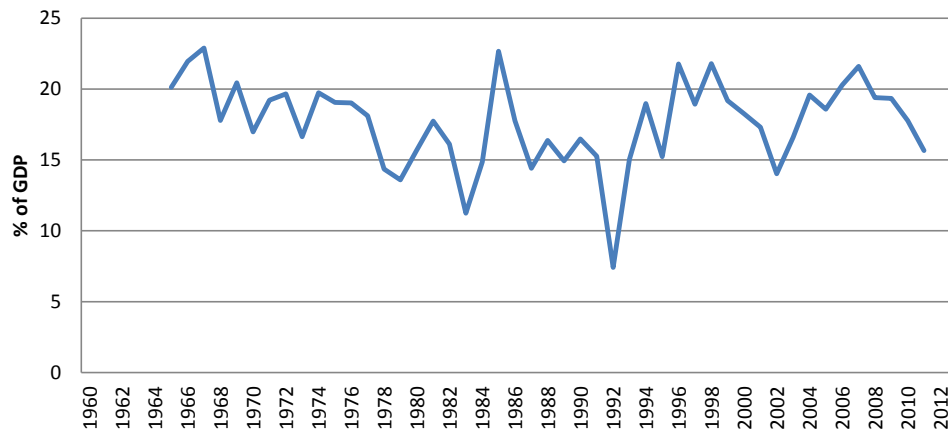
To summarize the country's economic performance from 1980 to the present, I use trends in GDP. GDP is not a conclusive measure of a country's economic state given the difficulties encountered in measuring GDP, however it remains an important variable in studying economic growth (Henderson and Storeygard, 2012).

## 2.1 Key economic sectors

In this section, I focus on the main economic sectors that drive the economy of Zimbabwe. I highlight how the different sectors of the economy contribute to the country's GDP. Zimbabwe unlike resource abundant countries such as Botswana, DRC and Zambia which heavily depend on minerals, successfully built a diversified

economy comprised of a strong manufacturing sector, vibrant commercial agricultural sector, booming tourism industry and a thriving mining sector (Hawkins, 2009).

Figure 2.2: Agriculture as a percentage of GDP



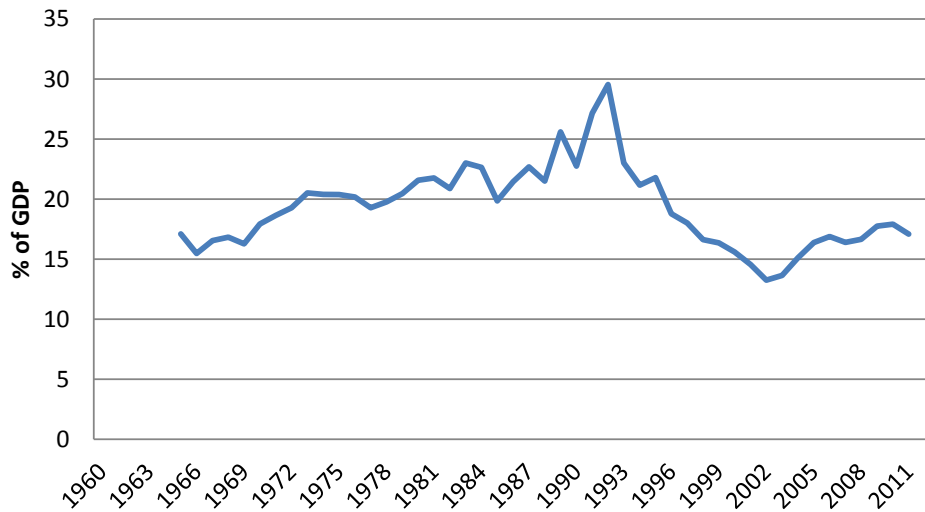
Source: World Bank Data 2013

Since 1980 agriculture has been the backbone of the Zimbabwean economy earning its name as the breadbasket of Africa. Agriculture represents an average of 15 per cent of GDP. Agriculture is an important large source of foreign currency contributing 40 per cent of total foreign exchange earnings with tobacco being the main export product. Other important agricultural products that are produced for export include sugar, tea, coffee, fruit and vegetables just to mention a few. Zimbabwe has a dualistic agricultural sector with commercial farms producing approximately 70 per cent of output and the semi-subsistent farmers in the communal lands producing the remaining output. Agriculture is key to the manufacturing sector because it supplies 40 per cent of the inputs used in manufacturing (Doran, 2009). 70 per cent of the population directly depends on the land for survival. The agricultural sector employs roughly 24 per cent of formal employment. (Weiner et al. 1985; Thirtle et al.1993). As shown in the graph agriculture's contribution to GDP was affected by recurring years of drought and the land redistribution programme in 2000. Share of agriculture in GDP has been falling since 2007 to the present.

In addition, tourism plays a central role in the economy. Zimbabwe is well known for its natural beauty hosting one of the Seven Wonders of the World, the superior "Victoria Falls", located in the northern part of the country. This puts the country on the world map making it a perfect holiday destination. In addition, the country

is adorned with a beautiful landscape filled with a wide range of wildlife. The warm weather which runs throughout the year makes it possible to engage in a wide range of outdoor adventures such as white-water rafting, hunting and botany (Coomer and Gstraunthaler, 2011). From 1980 to 1999, the tourism industry doubled its rate of growth from 20 percent to 40 percent recording the fastest growing industry in the country. Tourism during the same years accounted for 8 percent of GDP open to improvement. However political instability coupled with social and economic crisis in the year 2000 marked the decline of the tourism sector. These events largely affected the flow of tourists into the country owing to a huge drop in earnings from the industry. Contribution of tourism to GDP fell from 8 percent to 3.3 percent by 2005 (Tourism in Zimbabwe, 2007).

Figure 2.3: Manufacturing as a percentage of GDP

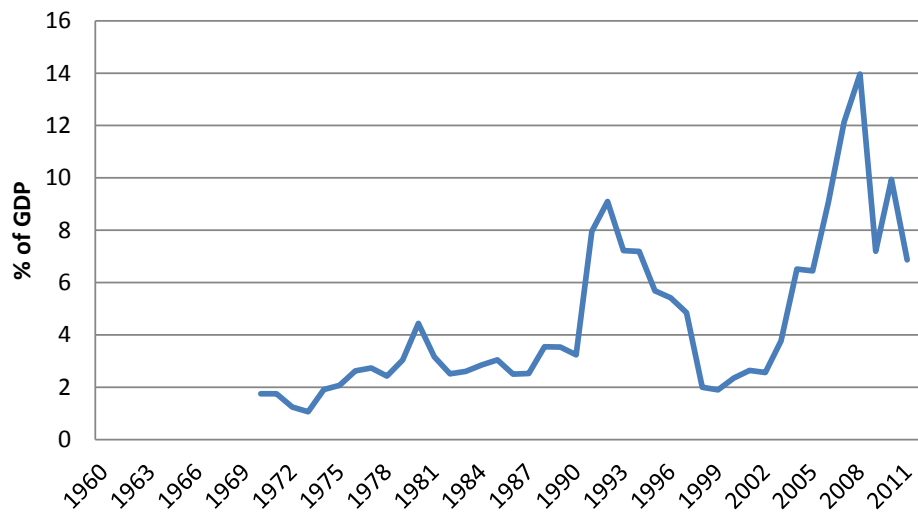


Source: World Bank Data 2013

Equally important is the manufacturing sector. In 1980, manufacturing accounted for the largest share of GDP and an important sector for employment. Easy access to raw materials from the agricultural sector including the availability of a well trained workforce and developed infrastructure contributed to a fast growing manufacturing industry ranked second to South Africa in Sub-Sahara Africa. All the shocks to the agricultural sector were equally absorbed by the manufacturing sector given that the latter obtains 40 per cent of its inputs from the agricultural sector (Doran, 2009). There has been a decline in the contribution of manufacturing to economic growth since 1992 up until 2002 with slight improvement observed after 2002 to the present.

Mining industry in Zimbabwe is now regarded as the anchor of economic growth

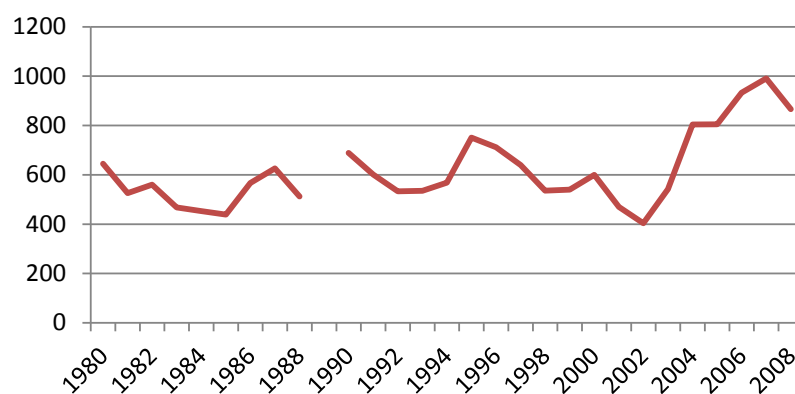
Figure 2.4: Total natural resource rents as a percentage of GDP



Source: World Bank Data 2013

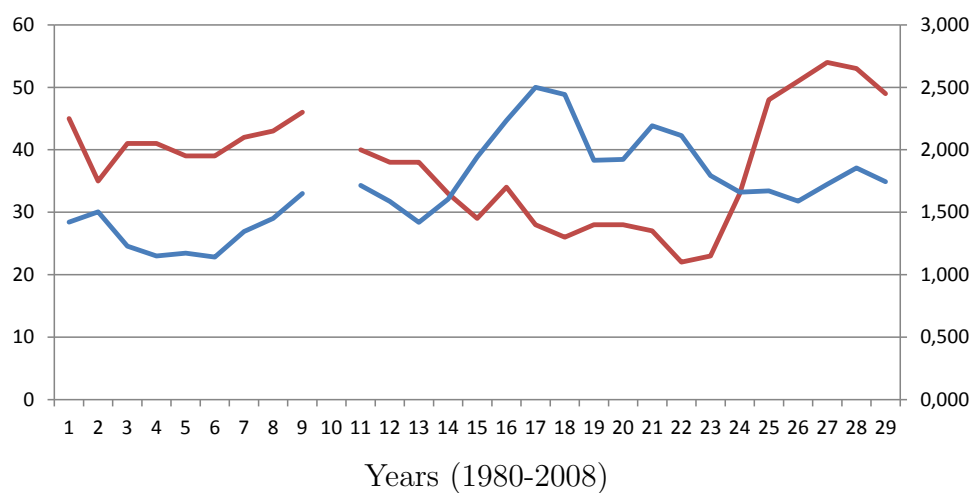
following the collapse of the commercial agricultural sector in early 2000 (Doran, 2009). Zimbabwe owns more than 40 different types of minerals with the most valued minerals being gold, nickel, latterly platinum and ferrochrome. Figure 5 shows the importance of natural resources to the export economy contributing an average of 40 per cent of total exports. Hawkins (2009) claims that natural resources have the capacity to bring into the country total revenue of US2 billion in export earnings per year with room to expand. As shown in figure 4, minerals account for 5-6 per cent of GDP. This shows that minerals do not account for a large share of GDP which renders their contribution to growth barely adequate, however natural resources remain an important source of foreign currency earnings and tax revenues ( Chachage et al 1993; Hawkins 2009).

## Value of mineral exports in US\$ millions



Source: Central Statistics Office, Harare: International Monetary Fund and the Reserve Bank of Zimbabwe

Figure 2.5: Share of mining in total exports (red) and total exports (blue)



Source: Central Statistics Office, Harare: International Monetary Fund and the Reserve Bank of Zimbabwe

### 3 Background of Marange Diamonds

Several scholars and researchers have written on the recently discovered diamonds in Zimbabwe focusing on a range of issues. In June 2006, alluvial diamond deposits were officially discovered in Marange district of Manicaland province in the eastern part of Zimbabwe. The diamond fields are concentrated in Chiadzwa village of the district, 100 kilometers southwest of the provincial capital city of Mutare. The diamond fields are claimed to cover an area of 66 000 hectares of land (Katsaura, 2010 p.101). Chiadzwa village was inhabited by clusters of family rural subsistent households of approximately 3000 who were relocated to a nearby farm called Transau (Madebwe et al. 2005).

Masiya and Benkenstein (2012 p.2) and Cross (2012) claim that alluvial diamond deposits were initially discovered in Marange in 2000 by a geologist working for a South African company, De Beers Limited. The company held a legally binding Exclusive Prospecting Order over the diamond fields in partnership with Zimbabwe Ministry of Mines, which expired in June 2006. During the same year of 2006, a London listed company African Consolidated Resources (ACR) secured claims over a designated area of the diamonds fields. To start up their mining operations, ACR put forward their plan to form a 50/50 joint venture with the state. The Ministry of Mines dismissed the joint proposal leading to a loss of ACR's claims on the diamond fields to Zimbabwe Mining Development Corporation (ZMDC). The fact that no proper complete prospecting of diamonds was carried out in Marange, official estimates of the amount of diamond deposits contained in Marange will never be known but speculated.

In 2006, the Zimbabwean government proceeded to declare the diamond fields open to anyone wishing to dig diamonds with the government as the main buyer of the output through the state-owned company, Minerals Marketing Corporation of Zimbabwe (MMCZ). This led to a diamond rush in September 2006. Informal diamond mining activity grew so rapidly, such that in mid-December thousands

of unregulated illegal artisanal miners were exploiting diamonds in Marange. The emergence of a black market offering better prices for the informal miners' diamond output overthrew the government's position as the sole buyer of the diamond output. In late 2008, the government decided to restore state control over the diamond fields by carrying out a military operation to evict informal miners out of the diamond fields (Saunders 2009; Doran, 2009).

It is then that formal mining firms were granted rights to commence production in partnership with Zimbabwe Mining Development Corporation (ZMDC) (Sachikonye, 2007). Different sources cite different number of diamond mining companies operating in Marange. However, the widely cited companies include Anjin, the largest Chinese mining company owned in a 50/50 joint venture with the state. The second company is Mbada, formed by the government in partnership with a South African firm called Grandwell Holdings. The last company is Marange Resources wholly owned by the government (Cross, 2012).

### 3.1 Alluvial Diamond Industry

In this section, I describe the special characteristics of alluvial diamonds, the areas where it is found and how it is mined. Alluvial diamonds are Africa's major natural resource, and they are mainly found in countries such as South Africa, Namibia, Angola and Sierra Leone. Unlike gemstones which are valued for their clarity and colour, industrial diamonds are valued for their hardness and heat conductivity. Alluvial diamonds emerge from the primary source of diamonds known as the kimberlite. Natural forces such as water and wind transport diamonds to other places such as the base of a river or an ocean. These deposits are known as alluvial diamond deposits. Alluvial diamonds are secondary diamonds that are near the surface. Deposits of alluvial diamonds are not concentrated in a single specific area but they stretch over large areas of land (Ross 2006, p.278; World Diamond Council, 2012).

Primary diamonds from kimberlite are obtained from deep underground-shaft mines that entail capital-intensive methods of mining, skilled labour and high investment in technology rendering extensive involvement of the government in partnership with huge corporations inevitable. This highly capital-intensive process of extracting primary diamonds from the primary source kimberlite can also be extended to alluvial diamond deposits. Alluvial diamond mining refers to the way in which secondary diamonds are separated from deposits of clay, sand and gravel. Industrial alluvial mining also entails formal procedures and involvement of the state in partnership with mining corporations (Ross 2006, p.273, World

Diamond Council, 2012).

However, the fact that alluvial diamonds are scattered over large areas that cannot be clearly distinguished means that they can only be mined by individuals in an informal manner. This is termed small scale informal alluvial diamond mining which involves digging and separating diamonds from the mud, sand and gravel using simple tools such as shovels, sieves and pans. Informal mining is highly intensive in unskilled labour. It is claimed that roughly 10 percent of the world alluvial diamonds are extracted through formal ways, whereas 14 percent is mined informally (World Diamond Council; Ross 2006 p.278; Auty, 2004 p.42).

Alluvial diamonds have a high value to weight ratio. They are of extremely low weight and yet highly pricey which makes them a lootable resource. Diamonds possess distinct features that set them apart from other voluminous commodities such as copper, oil and sugar. Alluvial diamonds are highly attractive for their low capital, production and operating costs. Their extremely high prices generate quick cash flow even in an environment of rising production and transport costs. Alluvial diamonds are important because they are easy to extract and transport (Auty 2004 p.42).

### 3.2 Satellite Light Density Data

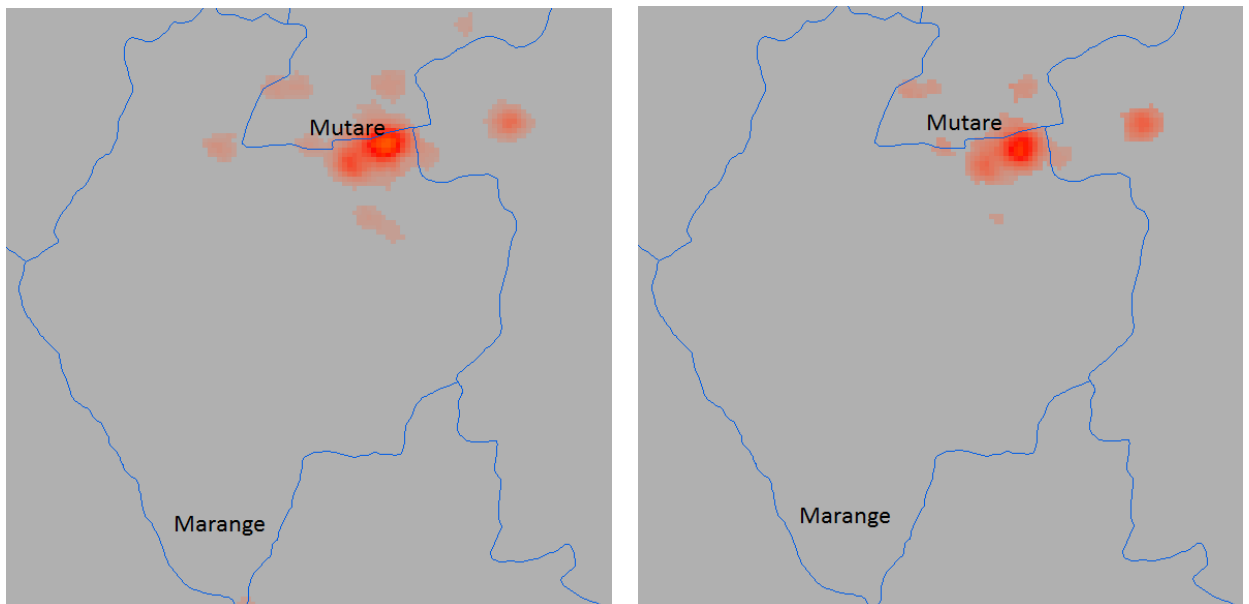
Lack of access to reliable, logical, consistent and complete data on the size of diamond deposits and production output prompts the use of satellite light density at night as a proxy to the level of economic activity in Marange diamond fields. According to Chen and Nordhaus (2010) measures of night time lights are regarded as a suitable substitute for measuring output levels. The lack of official data is exacerbated by the fact that diamonds are easily lootable and thus extremely difficult to calculate their accurate share in exports. I have chosen this method because it conveys information about economic growth in situations where there are no measures of income growth. First, this method sets in well with my study, given that Marange is a remote marginalized area in a developing country which lacks data on income growth. This makes night light data a critical tool for someone not on the ground. Secondly, in events such as the discovery of minerals, night light data enables the evaluation over a specific time period of regional or local levels income growth (Henderson et al. 2012 ).

I start by defining night light data and how it is used as a proxy to measure economic activity. Night light data is satellite images on lights taken at night. Satellite data on lights at night can be used as a proxy for measuring GDP growth.



The brightness and amount of light that is captured beyond the earth's atmosphere is used as a proxy for the level of economic activity on a particular spot. Brighter and larger images of lights correspond to high levels of economic activity. Night light data is accessed from the National Geophysical Data Center of the United States National Oceanic and Atmospheric Administration (NOAA) website. Lack of access to data on income growth in many developing countries has motivated researchers to develop new methods of acquiring data. Recent papers that have adopted the use of night light data as a measure of economic growth include Chen and Nordhaus (2010), Michalopoulos and Papaioannou (2011) and Henderson et al. (2011, 2012).

Figure 3.1: Changes in night light images from 2006-2007

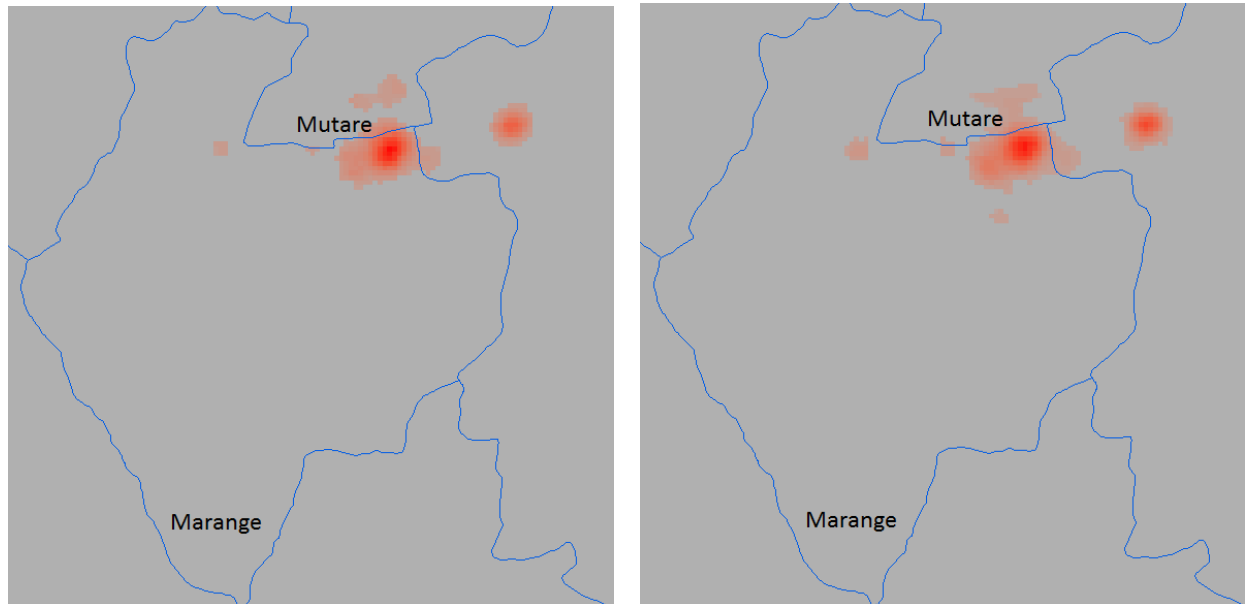


Source: National Geophysical Data Center of the United States National Oceanic and Atmospheric Administration (NOAA)

I use changes in night lights as a measure of economic activity in Marange. This raises the question of how exactly lights at night are related to economic activity? The amount of human generated light observed from outer space shows the size of human settlements and industrial activity. Light enables the consumption of a wide range of goods in the evening and production activities that take place at night. Light images captured at night show that people own the lights, it is accessible and they have the income to purchase the electricity. Access to electricity enlarges investment ventures that can take place during the evening. Availability of lights shows that the government is able to supply public goods to the people given that

electricity is a public good mainly supplied by the state. Brightness offered by lights ensures security of property and wealth (Henderson et al. 2011).

Figure 3.2: Changes in night light images from 2008-2009

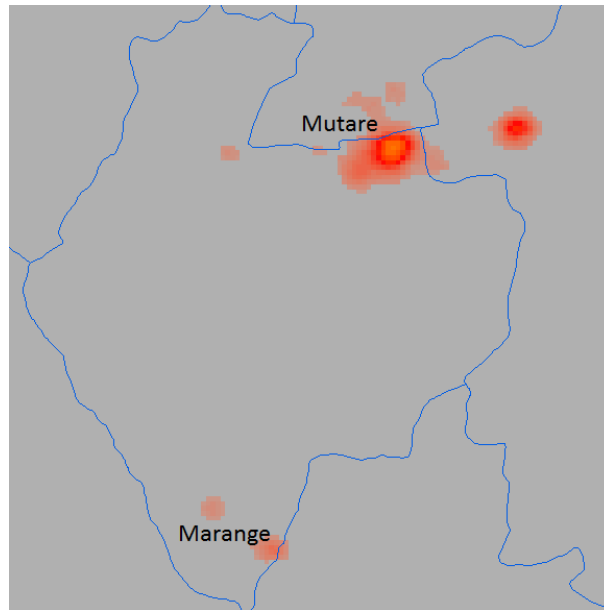


Source: National Geophysical Data Center of the United States National Oceanic and Atmospheric Administration (NOAA)

To explore the effects of the discovery of diamonds in the country, I use changes in light intensity from the time of discovery in 2006 up to 2010 focusing on the particular region where the diamonds were discovered, Marange and the nearby provincial capital city, Mutare. The map in the figure shows Manicaland province bordering with Mozambique from the eastern side. The big chunk of light represents Mutare. Marange diamond fields are located at the bottom south of the province. This method allows me to clearly observe the gradual changes in income growth from 2006 to 2010.

As seen from the images the provincial capital city of Mutare reflects more light in 2006 than 2007. The decrease in light is attributed to the growing economic hardships in 2007. Larger light images in Mutare in 2006 are partly explained by the illegal diamond trading activities that began around 2006. Mutare the closest city to the diamond fields emerged as the beehive of illegal trading activities in diamonds. This suits in well with the line of events given that 2006 was marked by huge numbers of informal diamond miners infesting the diamond fields. The artisanal miners sold their merchandise to business elites and local people who were

Figure 3.3: Changes in night light images in 2010



Source: National Geophysical Data Center of the United States National Oceanic and Atmospheric Administration (NOAA)

flocking into the city from all over the country including foreigners from different parts of the world in search of the precious mineral. At one point Mutare became one of the most expensive cities to live in Zimbabwe due to a lot of cash that was floating around.

As we progress from 2007 into 2008 the amount of light continues to shrink. This is evident of worsening economic hardships experienced across the country during the same time which reduced the amount of economic activity on the ground as shown by trends in GDP. During the same time the supply of electricity was erratic. The whole country was undergoing chronic power cuts which sometimes left cities in complete darkness. However to a lesser extent the banning of illegal diamond mining could also have contributed to the drop in light as illegal trade in diamonds was put to an end.

Throughout the years 2006-2009, Marange diamond fields were marked by complete darkness but it does not necessarily mean that there was no activity taking place at Marange. It shows that there was no development in terms of infrastructure such as roads, buildings and tower lights which was convenient for informal miners who could only dig for diamonds during the night. Darkness was used as a security measure by artisanal miners who wanted to keep their identities anony-

Figure 3.4: Marange diamond fields: Changes in night light images from 2009-2010



Source: National Geophysical Data Center of the United States National Oceanic and Atmospheric Administration (NOAA)

mous and their output a secret from potential thieves and powerful agents who were known for grabbing their diamonds.

By 2010, the first images of light were first captured in Marange which were also coupled with an increase in light images in the city of Mutare. Growth in economic activity is attributed to the commencement of industrial alluvial diamond mining carried out by huge corporations in partnership with the government. The corporations developed infrastructure in order to carry out mining operations. They established roads, airstrips, buildings, flood lights and fencing to safeguard the diamond fields from illegal miners and enable secure storage and transportation of their output.

## 4 Model

I consider the whole economy, in which identical entrepreneurs engage in either of two activities. An entrepreneur can choose to be a producer in any of the sectors of the economy producing output  $y$  for sale on the market. We assume an unforeseen and sudden discovery of diamonds in the economy which creates excess rents that are subject to rent seeking. Diamond rents denoted by  $D$  drive some entrepreneurs into rent seeking. Grabbers can expropriate diamond rents  $D$  using all their ability and rent seeking technology to seize as much rents as possible. Hence, the total number of entrepreneurs in the economy is denoted by  $N = N_p + N_g$  where  $N_p$  are producers and  $N_g$  are grabbers.

Diamond rents are greater than profits from production. Rent seeking draws producers out of production in search of higher payoffs from grabbing. The degree to which rent seeking activities flourish is dependent on the quality of institutions that prevail in the country. We assume the quality of institutions is captured by the parameter  $\lambda$ .  $\lambda$  captures the extent to which institutions tolerate rent seeking activities over production.  $\lambda$  enables us to observe how much of the diamond rents are captured by producers compared to grabbers.

The parameter  $\lambda$  runs from zero to one. A very low value of  $\lambda$  resembles extractive institutions that allow rent seeking with a value of zero showing institutions that are totally subdued to the interests of grabbers such that grabbers are able to seize all profits from diamonds, each getting  $\frac{D}{N_g}$  of the diamond rents. A higher value of  $\lambda$  shows inclusive institutions that encourage investment and foster secure private property rights. A value of  $\lambda$  as high as one completely erodes all profits from pursuing rent seeking activities. Good institutions have the effect of equalizing the gains from production and grabbing such that each entrepreneur gets  $\frac{D}{N}$ .

$\frac{1}{\lambda}$  is a measure of the degree to which an entrepreneur gains if they decide to pursue grabbing activities. A country with a lower value of  $\lambda$  poses greater gains to grabbing which is met by a flow of producers from production into more gainful rent seeking activities. In such a situation grabbing and production are rivalry activities striving to outdo one another for profits. As the value of  $\lambda$  increases, gains

from grabbing start to drop and there is no incentive for producers to shift from productive activities into grabbing. This resembles a situation where production and rent seeking mutually exist to complete each other.

The rent seeking factor  $S = S(\alpha, \lambda)$ , captures the interaction between quality of institutions  $\lambda$ , fraction of producers  $\alpha = \frac{N_p}{N}$  and grabbers  $1 - \alpha$ .

$$S = S(\alpha, \lambda) = \frac{1}{1 - \alpha + \alpha\lambda}$$

The factor  $S$  decreases in the quality of institutions  $\lambda$  and increases in the size of producers  $\alpha$ .

The payoff to each grabber is given by

$$\pi_g = S \frac{D}{N}$$

The grabbers' payoff is higher the lower the quality of institutions. As the value of  $\lambda$  increases from zero to one, profits for grabbers start to decline. Hence grabbers prefer weak institutions that are dismantled. The payoff for grabbers is also increasing in the fraction of producers  $\alpha$ . An increase in the number of producers reduces competition for rents.

Each producer's share of the resource rents is given by

$$\pi = \lambda S \frac{D}{N}$$

The total payoff to each producer involved in production  $\pi_p$ , is the sum of profits from production  $\pi$  and the share of the diamond rents  $\lambda S \frac{D}{N}$ , to give

$$\pi_p = \pi + \lambda \pi_g$$

Producers' payoff is greater the better the quality of institutions. Good institutions enable them to efficiently capture a larger share of the diamond rents.

## 4.1 Allocation of entrepreneurs

Following the discovery of diamonds, I look at internal and external factors that determine the allocation of entrepreneurs between producers and grabbers. I treat payoffs to each activity as an internal factor that is observed by every entrepreneur

and is associated with the allocation of entrepreneurs. But the question still remains that is it that simple that every entrepreneur can always flow to the most profitable activity as they wish or with every profitable activity there always exist some external forces aimed at keeping others out in order to maximize gains. Are payoffs the only factor driving the allocation of entrepreneurs between grabbing and production or there is more to it? We assume that there are external factors beyond the control of some entrepreneurs that restrict them from simply switching to the most profitable activity with higher returns. To capture this idea we impose the assumption of restricted entry into grabbing. We look at how the assumption of restricted entry into grabbing affects payoffs and the allocation of entrepreneurs between production and rent seeking. To this, we begin by relaxing the assumption of restricted entry and assume that there is free entry into and out of grabbing. We also study the effects of free entry on payoffs and the allocation of entrepreneurs between production and rent seeking. In all cases we assume all entrepreneurs are profit maximizers always seeking to join the more profitable activity if possible to do so.

## 4.2 Free entry

Building on Mehlum et al. (2003) model, we begin by looking at the long-run equilibrium where we assume all entrepreneurs, producers and grabbers are free to move from production into grabbing and vice versa. With free movement the only factor that determines the allocation of entrepreneurs between grabbing and production is the payoffs in the two activities. In this section we look at how payoffs from production and rent seeking influence the decision of entrepreneurs either to become a producer or grabber. Following the assumption that all entrepreneurs maximize profits, they are bound to flow to the most productive activity:

$\pi_p > \pi_g$  implies change in  $\alpha$  is positive

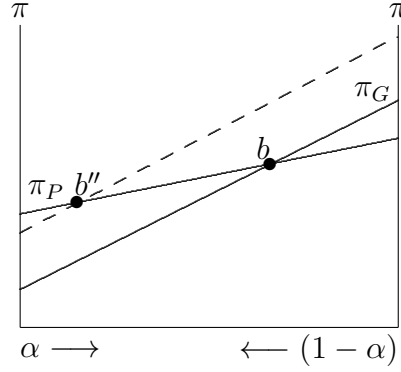
$\pi_p < \pi_g$  implies change in  $\alpha$  is negative

In order to achieve a stable share of producers and grabbers over a period of time, the profits must be equal in both activities

$$\pi_p = \pi_g$$

At the point of equilibrium  $b$ , the equalization of profits in both activities means that there is no gain to any entrepreneur by switching activities.

Figure 4.1: Rent seeking and free entry



Let us now take into account the discovery of diamonds in the economy. How does the assumption of free movement affect payoffs to production and grabbing and the allocation of entrepreneurs between the two activities? The discovery of diamonds presents a new source of income in the economy. The question of which profit curve will be shifted upwards depends on the quality of institutions. Deterioration in the quality of institutions captured by a low value of  $\lambda$  results in an upward shift of the grabbers profit function which responds positively to a decrease in  $\lambda$ . The dashed line in the diagram shows completely grabber friendly institutions with  $\lambda = 0$ , causing an entire shift in the grabbers profit curve accompanied by no change in the producers profit curve. Assuming free entry into grabbing,  $\pi_g > \pi_p$  leads to a new equilibrium  $b''$ . This is characterized by a flow of producers into grabbing in search of higher profits. The overall effect of this movement is to drive profits all the way down to equilibrium  $b''$ . Equilibrium  $b''$  has lower profits, very few producers and an increased number of grabbers.

### 4.3 Restricted entry

Let us assume an economy with purely extractive institutions captured by  $\lambda = 0$ , that discovers diamonds. In this case diamonds provide a new source of income for grabbers which is met by an upward shift in the grabbers' profit curve while the producers profit curve remains constant. Grabbing is regarded lucrative given that the returns to grabbing greatly exceed the returns to production. With  $\pi_g > \pi_p$ , it is the desire of every entrepreneur to specialize in rent seeking activities. However, the discovery of a precious mineral such as diamonds which presents an extremely large source of income always comes with restrictions on who can gain access into the most profitable activity, in this case grabbing. With every profitable activity,

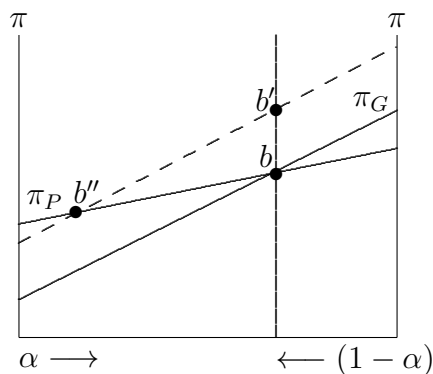


not every entrepreneur is able to take part in it. This is exacerbated by the fact that it is in the best interest of entrepreneurs that have secured their places as grabbers to restrict entry of other players so as to maximize personal gains for an extended period of time.

Situations of social crisis and limited resources evoke insider and outsider identities for self categorisation. Insiders mostly have a superlative description of themselves against the outsiders. Identities are used as a way of claiming access to particular benefits at the same time restricting access of the others. We refer to entrepreneurs who are already grabbers as insiders. Insiders are politicians who use their political power to secure their places as grabbers. Outsiders are producers in different sectors of the economy. Entrepreneurs in the economy are now denoted by  $N = I_g + O_p$ . Given that the free movement equilibrium  $b''$  leaves both insiders and outsiders worse off than they were prior discovery of diamonds, there is an incentive for insiders to shut entry of new entrepreneurs into grabbing. Hence, insiders will restrict entry of producers into grabbing. We assume that the size of insiders is strictly less than the size of outsiders.

We now look at how the assumption of restricted entry into grabbing affects the allocation of entrepreneurs and payoffs to grabbing and production. An upward shift in the grabbers' profit function following discovery of diamonds results in two different equilibriums for grabbers and producers.

Figure 4.2: Rent seeking and restricted entry

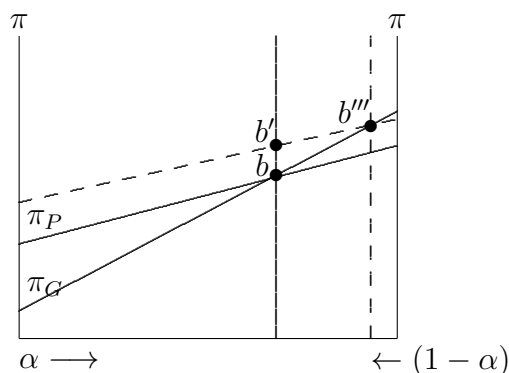


The profits for producers remain unchanged at equilibrium  $b$  following a shift in the grabbers profit function. Profits for grabbers are pushed all the way up to equilibrium  $b'$ . Despite the fact that grabbers get the whole share of the resource income, equilibriums  $b$  and  $b'$  resemble higher profits for producers and grabbers respectively compared to equilibrium  $b''$ .

## 4.4 Free entry and restricted entry

In this section, I assume free entry of grabbers into production as returns to production exceed returns to grabbing and restricted entry of producers into grabbing as the returns to grabbing increase. An increase in the producers' profits follows an improvement in the parameter  $\lambda$  capturing better institutions. This leads to an upward shift in the producers profit function coupled with no change in the grabbers' profit curve. A movement in the producers' profit function results in two different equilibriums depending on whether insiders decide to shift to productive activities or not. If grabbers do not switch to production their profits remain at equilibrium  $b$  whereas profits for producers rise to equilibrium  $b'$ . With  $\pi_p > \pi_g$ , insiders as profit maximizers are bound to flow to the more profitable production activities. Such a movement gives a new equilibrium  $b'''$ . In the diagram this is shown by the movement from the solid vertical line to the dashed vertical line. Equilibrium  $b'''$  has higher profits for insiders and outsiders, very few grabbers and vast number of producers. Equilibrium  $b'''$  is superior to all the above equilibriums because all entrepreneurs reap the highest payoffs. Equilibrium  $b'''$  creates an incentive for producers not to restrict entry of grabbers as the profits to production increase.

Figure 4.3: Diamonds and Producer-friendly Institutions



## 5 Implications of the model under different institutions

### 5.1 Free entry under Grabber-friendly Institutions

The model shows that the discovery of a new resource in countries with weak institutions that allow free movement of entrepreneurs into rent seeking has undesirable consequences for all entrepreneurs and the entire economy. Availability of higher natural resource rents in countries with a weak legal system has the effect of increasing the gains to grabbing and eroding profits to production. As all entrepreneurs are driven by the desire to make profit, it is natural for every entrepreneur to shift from less profitable production activities into rent seeking activities which offer higher returns. The effect is to pull entrepreneurs from productive activities into rent seeking activities. This reduces the size of producers in the economy. Producers are important in any economy because they invest current wealth to generate more wealth. Producers create economic value by producing goods and services. Hence the discovery of a mineral coupled with a shift of producers into grabbing leads to a reduction in output in the economy. The economy is not able to generate new profits and continues to spend current profits circulating in the system.

Rent seeking activities involve spending existing income without generating extra wealth. Movement of producers into grabbing creates an economy that is largely dominated by rent seekers which creates new problems for the economy in addition to those mentioned above. Rent seekers are known for wasting resources. This means that they will squander the higher income owing to the discovery of the natural resource. A wastage of the resource rents that is coupled with very few entrepreneurs remaining in productive activities to generate new profits results in a fall in total income. The few producers cannot replace income wasted by grabbers at a faster and larger pace to keep profits in production and aggregate income from falling. A larger proportion of entrepreneurs engaging in rent seeking activities

causes greater competition for the small profits generated by few producers. The overall effect stemming from reduced production and persistent grabbing is to further push down the aggregate level of income in the economy such that the drop in total income exceeds the increase in income generated by the natural resource (Torvik, 2002). In terms of growth, the country converges to an income level that is lower than the initial level before discovery of the mineral (Mehlum et al. 2006). The model predicts that countries with poor institutions are better off without natural resources when entrepreneurs have the freedom to switch to the most profitable activity which has bad consequences for economic growth.

## 5.2 Restricted entry under Grabber-friendly Institutions

The model shows that the discovery of a mineral in countries with bad institutions has desirable effects when producers are restricted entry into grabbing. The increase in income created by the natural resource has no effect of pulling entrepreneurs from running productive firms into rent seeking activities. The restriction of producers into rent seeking implies that there is no decrease in production profits and output levels in the economy. In this case, grabbers seize the entire resource income owing to the discovery of minerals. This explains why grabbers would like to remain few by restricting entry of outsiders. It avoids competition among grabbers and they are also able to secure large shares of the fixed pie.

The discovery of a mineral in this case only benefits the economy in terms of maintaining the levels of production by not pulling producers into grabbing activities hence keeping the total income constant. Producers continue to produce steel, clothing and footwear, food commodities and chemicals. However the higher natural resource rents wholly accrue to insiders. Although it is in the interest of the economy that grabbers restrict entry of producers into grabbing it has the effect of creating huge inequalities in the society. Ray (1998) claims that inequalities in society are not entirely bad for economic growth. Inequalities in society are necessary for growth in the initial stages of development. The rich people in society have a higher marginal propensity to save. This means that as their incomes increase so do their savings rate. For each extra dollar of income that accrues to the rich they tend to save even more. In this case, it is in the best interest of the economy to channel more resources towards the rich than the poor. High rates of savings foster investment, which is needed for growth. However, inequality among individuals seeds grievances and resentment among the disadvantaged people which ends up in undesirable political outcomes (Acemoglu and Robinson, 2012 pp.40-41).

The discovery of a resource in states with bad institutions that restrict entry of

producers into rent seeking activities does not distort the existing state of affairs in the economy. The economy continues to run as if nothing occurred. The net result is that there is no change in total income following the discovery of the natural resource. In terms of growth, the country converges to the same income level as it had prior the discovery of the resource. The model predicts that the discovery of minerals has no negative effect on the economy of countries with poor institutions as long as producers do not abandon running productive firms in favour of rent seeking activities.

### 5.3 Free entry under Producer-friendly Institutions

Countries with inclusive economic and political institutions reap the highest possible benefits from the discovery of a resource when there is free movement of insiders into production and restricted entry of outsiders into grabbing. The higher returns to production following the discovery of a mineral in producer-friendly institutions lures or pulls grabbers from rent seeking activities into production. In this case there is an incentive for producers to allow entry of insiders into the more profitable activity of running productive firms. Producers will not restrict the entry of grabbers into production due to a number of reasons. A shift of entrepreneurs from grabbing increases the total number of entrepreneurs engaged in productive activities. An economy that is dominated by producers has the effect of increasing output levels in the economy, which raises profits to production. With few grabbers remaining in the economy it reduces the chances of extortion among producers. The higher income from the discovery of the resource is not wasted. The net effect is to further push up the aggregate level of income in the economy such that the increase in total income exceeds the increase in income created by the natural resource (Torvik, 2002). A country with good institutions converges to a higher income level achieving substantial growth (Mehlum et al. 2006). The model predicts that discovery of minerals has the most desirable effects in countries with a strong legal framework that attracts entrepreneurs into running productive firms.

### 5.4 Relevance of the model to economic events in Zimbabwe

In this section, I use the model as a lens through which to identify key factors and particular causes owing to the observed substandard levels of economic and political development in Zimbabwe. I start by referring to the country's economic

events from 1980 to the present day and then proceed to use Marange experience as a confirmation of the general pattern of political decisions in Zimbabwe.

As shown by the country's economic performance from 1980, the corporatist and liberal policies adopted by the state had their own successes and failures. Many scholars agree that poor economic performance experienced under the adopted policies was due to a stream of factors. Some factors such as economic challenges posed by the policies, sudden withdrawal of development funds by the international economic aid and occurrences of droughts were to a larger extent beyond the control of the government. However other factors are crucial to attaining successful economic policies. The effectiveness of policies not only requires great flexibility and skill but it also depends to a larger extent on the nature of political institutions, state relationship with civil society, and the ability of the state to establish order and security, pass laws and enforce them. A strong complementary relationship between economic and political institutions is vital to the success of any program. Hence it is not purely a matter of the government having adopted wrong policies that were doomed to fail (Brett 2005).

This therefore brings me to the central theme of my paper, which focuses on the political factors as an important factor explaining the country's poor economic performance for the past two decades. The failure of political institutions to generate long-term stability and sustainable growth because of abandoning their duty to ensure consistency, reliability, and dependability of economic institutions crippled the economy. Political institutions favour economic policies that protect their political interests and enable them to meet their political budgets. The corporatist ideology adopted in 1980 meant that the government could use state funds to allocate jobs, contracts, and rents to its supporters. This type of economy did not threaten the survival of the regime. It was until late 1980s that the economic problems posed by corporatist policies started outweighing the benefits, leading to the adoption of a market economy in 1990. The adoption of a market economy in 1990 generated economic institutions that threatened the survival of the current political regime by diverting resources away from the government to the rich capitalists. The market economy in sharp contrast with corporatist ideology drastically reduced the amount of resources needed to finance the state at the same time putting an end to the practices of patronage (Brett 2005).

The country's macro-economic crisis began late 1997 and comprised of persistent rising budget deficits, external debts and loss of support from the international community. All these problems put a strain on the ability of the political institutions to pay their political debts. This forced the political elites to adopt counterproductive policies that were insensitive to the current needs of the economy. The country's economic events show evidence of political elites' misuse of

public funds. Such events include printing of money to pay out war veterans, chaotic and miscalculated seizure of land from white farmers, costly involvement of the government in the DRC war and funding of political violence in 2008. The government used public funds for political endeavours which did not benefit the society. The success of consistent economic policies aimed at ensuring growth depends on the existence of strong and good political institutions able to enforce secure private property rights, mobilize funds and ensure consistency of economic institutions (Brett 2005).

The economic meltdown after 1997 following the political counterproductive decisions taken by the state cannot be blamed on economic institutions failing to adopt and maintain good economic policies aimed at fostering economic growth. According to the annual trends in GDP there is evidence that the economy was performing much better before 1997 which means that ESAP generated some positive economic outcomes. The sudden drop in GDP after 1997 cannot be attributed to a pure failure in economic policies but to the conscious decisions taken by the government to engage in unproductive ventures. This shows an antagonistic relationship between the country's economic and political institutions (Brett 2005).

The discovery of diamonds in Marange is an example of the general pattern of the extractive nature of existing political institutions. The chaotic and haphazard government intervention in Marange diamonds shows how economic and political elites abandon their duty to serve people in order to enrich themselves. This supports the idea by Chabal and Daloz (1999) who argue that African politics thrives on confusion, uncertainty and chaos. This sets in well with Marange experience which shows extreme measures taken by the government just to protect their political interests. The inconsistent and unsound decisions taken by the government in the extraction of diamonds and the use of state violence to evict civilians is characteristic of a government that benefits from a political economy of disorder.

However, although political institutions in Zimbabwe are far from good they are not completely dysfunctional. The night light images in Marange show significant signs of economic growth. This shows evidence of institutions that are still functioning in that they are able to organize and contract international corporations to start formal diamond production for the good of the economy. Commencement of industrial alluvial diamond mining in Marange entails extensive government intervention and investment, a characteristic of good institutions. The government was successful in putting an end to unproductive illegal mining in the diamond fields and restoring order. This supports the idea that the state is able to establish order and security in times of social unrest. Hence the institutional parameter  $\lambda$  in the model is not entirely zero.

The economic benefits of the discovery of diamonds on the local and national economy are very difficult to assess given the lack of reliable data on revenues and lack information on the distribution of diamond proceeds. The night light images support development of infrastructure in the local village and the prospects of employment to the local people. Opportunities to engage in unregulated mining supported by foreign black market buyers in 2006 increased the liquidity of many local villagers who could comfortably feed their families (Saunders, 2009). On a national level diamonds have contributed to the national fiscus.

Overall, lack of strong and accountable political institutions in Zimbabwe has greatly reduced the benefits that come along with precious minerals such as diamonds. The government should adopt transparent policies regarding mining operations and distribution of diamond rents. Political institutions should work together with economic institutions to set up economically sound policies on how to spend mineral wealth. This means that political elites should desist from misusing public funds and work to improve the economy.

## 5.5 Conclusion

My contribution in this paper is to show the positive contribution of good political institutions in countries endowed with natural resources so as to fully reap the advantages that come with natural resources. A strong relationship between economic and political institutions is necessary for resource endowed countries to channel wealth from natural resources towards economic development for the good of all sectors of the population. Abundant resources without the existence of inclusive institutions able to faithfully manage the few resources at its disposal will not foster growth. This seals the importance of establishing good political institutions that work in harmony with economic institutions to ensure the use of resources that benefits society.



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