

Master Thesis in Economics

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A Global Financial Crisis;

**“How is The Declining Bauxite Production Affecting Jamaica as a  
Developing Country?”**



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## **Abstract**

This is a paper researching the effects that is seen from the financial crisis in a developing country. The research question is focused on how Jamaica is dealing with the fact that the world demand for bauxite has decreased since the crisis evolved.

There are three main areas that are being discussed in the light of this research question. The first area is social implications, followed by economical- and environmental implications.

The paper is an analysis of the financial crisis and its effects on Jamaica and the findings of the paper are focused on the three main areas above. The social implications are mainly the risk of increasing crime and murders in Jamaica because of increased unemployment and increased food prices. The environmental implications look at the destructions from the mining, and the problems of not restoring the areas after the mining is finished. Finally, the economical implications is an analysis of the effects seen in the Jamaican economy, by mainly looking at the inflation, interest rate and increasing food prices in the country. The paper also addresses the problem of the monetary policies led in the country, and is focusing on the negative effects of keeping a high interest rate in a time of crisis.

## **Preface**

This paper is a master thesis in economics, written in the field of trade and international economy.

The degree itself is a Master Degree in Economics, where the first year was followed at the University of Stavanger, in Norway. The third semester were then followed by Copenhagen Business School in Denmark, before finishing the last semester of the degree while writing my thesis in Jamaica, as a student by the University of Stavanger.

The paper has its foundation in the Financial Crisis, with the focus on developing countries. It is based on a field trip to Jamaica, which were executed during the same semester as the paper was written.

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## **1 .0 Jamaica and bauxite**

The first part of this master thesis is aimed at giving a platform of information, providing the reader with relevant facts to get a better understanding around the main area of the thesis.

There are five sections in this part, each looking at certain areas of Jamaica or the bauxite industry. First is a description of why this area is chosen, and a brief introduction to the current situation.

The second part is the main indicators for Jamaica. It is showing the different facts and numbers that are relevant in this case, focusing to provide an overview of the country.

The third section introduces the bauxite industry. It looks at the extent of the industry in Jamaica and a few facts about the industry are listed.

The two last sections are more of theoretical nature where methodology and limitations are addressed. The methodology looks at how the paper is constructed while the limitations look at the restrictions that follow the thesis.

## 1.1 The Case

The idea for my thesis evolves around the Financial Crisis and its effect on developing countries.

The Financial Crisis originates from the US with its roots in the Subprime Crisis. The Subprime Crisis started as desperation from the credit agencies in finding borrowers for their money. When there was no longer any eligible, borrowers left to take on the loans the agencies started to structure the loans to fit the less fortunate so any one could have the possibility to buy a house.

These loans were, as it sounds, too good to be true. After a few years, more exact in 2005, so many borrowers had problems paying, that this speculative bubble burst. This led to a massive fall in the housing prices that had only experienced price increase thus far (BBC News 2007).

When the speculative bubble burst the Financial Crisis began. The Financial Crisis has affected the whole world on many levels, and has affected most countries BNP. Still, it is said that we have only seen the beginning of the effect this crisis is having on a Global Financial level.

This crisis has become a world recession and is now affecting the whole world on many areas (Telegraph 2009). Therefore, I am very interested at taking a closer look at the effect this crisis has had, and is still having, on developing countries.



My choice of Jamaica, as a developing country, felt very natural in this thesis because of its near distance to the US, and because it is a small island which will make it easier to have a look at recent changes.

The research question is the following;

**“How is the Declining Bauxite Production Affecting Jamaica as a Developing Country?”**

The research question is answered with a focus on these main areas;

- Social implications
- Environmental implications
- Economical implications

The thesis will be divided into four parts, each with several chapters, where the first part will provide a short introduction to my area of interest and reasons to why I chose it. It will also focus on the methodology and limitations in this part.

The second part gives an introduction to the theories used in the paper where different trade and macroeconomic theories are presented.

In the third part the main question is discussed. All the relevant areas will be addressed, and linked to part one and two. This part is, as mentioned, divided into the three areas of economical-, environmental- and social implications.

The final part is developed for the purpose of finding a connection between the research question and areas discussed before providing a conclusion. In the end there will also be given a few ideas for further research in the area.

This paper will introduce several different theories both in trade and in macroeconomics. The theories will be presented in the context of the research question and will also be explained in the purpose of illustrating a point in the same matter.

## **1.2 Jamaica**

«Welcome to Jamaica, we call this Paradise»

A recent conversation on the street with a local young woman gave me a perfect example on the Jamaican mentality in the time of this crisis. Every day you see people walking down the street, smiling, talking and living life as if nothing is happening.

«Unbearable» is the word the lady use when she wants to give me a word of description. She has feminine, nice clothes, some fake gold jewelry, sandals and a purse around her shoulder. I would never have picked her as a lady bearing the biggest burden on her shoulders, not knowing how to get money for food for her and her child. She tells me she has the money for the rent in her purse, but after that she does not know where the money to feed her kid for the following days is going to come from.

A common expression in Jamaica is «it is like it is». As from the experience above it shows that, even the people here are in a very difficult situation, their spirit and culture has taught them not to complain, but to survive.

### **1.2.1 Facts and figures**

Jamaica was discovered by Christopher Columbus in 1494. About 20 years later the Spanish starts the slave trade on the island, which then loses Jamaica to the English, in 1655. In 1962 Jamaica received their independence from British rule.

Today there are about 3 million people living in Jamaica, though most Jamaicans are living abroad (Harper, 2003). One of the reasons for this huge emigration is the lack of work in the country. Eighty percent of the people with a higher education move abroad. This emigration is a very high profit for the government, since about one point six billion US Dollars of the national income is generated through remittances.

The island has many green and tropical areas, while the south coast is dryer. The Blue Mountain situated just above Kingston, reaches 2200 meters over water. High up in this mountain is where the famous Blue Mountain coffee is grown.

The people consists of 90.9% African, 1.3% East Indian, 0.2% Chinese, 0.2% White, 7.3% mixed and 0.1% other.

Religious beliefs are mainly Christianity like Anglican, Baptist and other Protestant. In addition there are also Roman Catholic, Rastafarian and Jewish.

Jamaica is located in the Caribbean just below Cuba and measures 10.991 square kilometers. It has a tropical climate with a temperature between twenty-six and thirty degrees Celsius, all year round. Forty-seven percent of the country is land that can be used for agricultural production.

The employment, in 2006, is about one point twenty five million people divided between the three areas of agriculture, industry and services with the respective numbers of seventeen point one, seventeen point nine and sixty-four point nine percent. The high employment area of industry is responsible for about thirty percent of the GDP.

The children start school when they are three years old. In 2006 the enrolment status was seventy-eight percent.

In 2003 the poverty head count was 19.1% and the life expectancy age 71 (World Bank 2005).

The HIV rate is one point three percent of the adult population, and nine percent amongst sex workers (Ministry of Health 2008).

## Politics

As mentioned the country got its independence in 1962. About twenty years ago the People's National (PNP) party was elected and kept their position for the next eighteen years.

In 2007 the Jamaica Labour Party (JLP) wins the election and Bruce Golding is made Prime Minister (Bureau of Western Hemisphere Affairs, 2008)

## **1.2.2 Economy**

This following section consists of information about the currency, the interest rate, debt, governance indicators and trade.

Jamaica is a developing country with a national income of about (2007) ten point seven billion US Dollars a year (Bureau of Western Hemisphere Affairs, 2008).

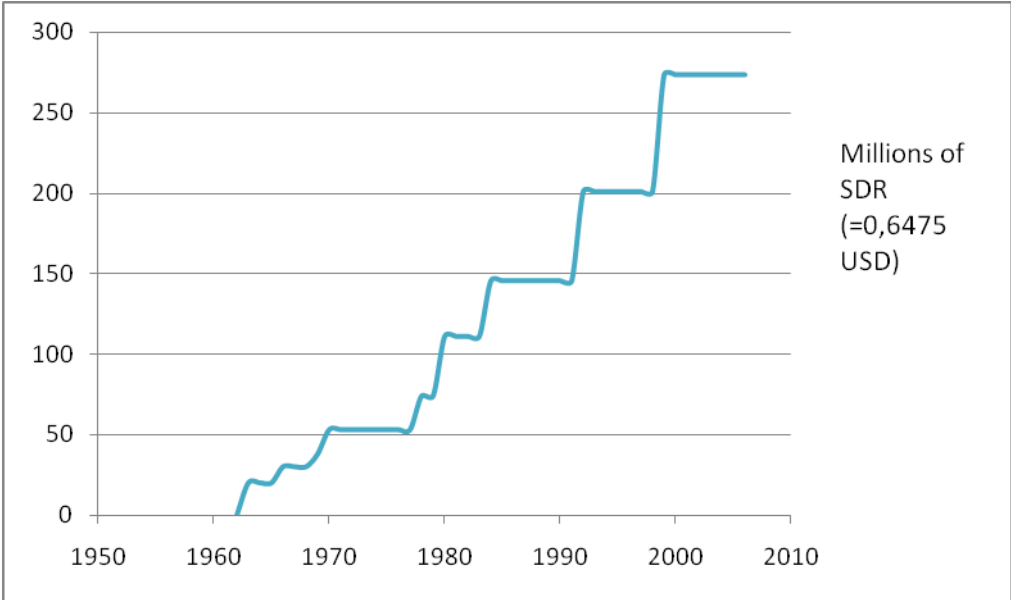
Currency

The Jamaican currency, the Jamaican dollar, has had a drop in value over the last twenty-nine years. Starting off in 1980 with an exchange rate of one point eight Jamaican dollar for one American dollar (World Bank. 2005) leading up till today where the rate is changing every day and has actually hit more than eighty eight dollars to one US dollar (Bank of Jamaica, 2009c)

Debt

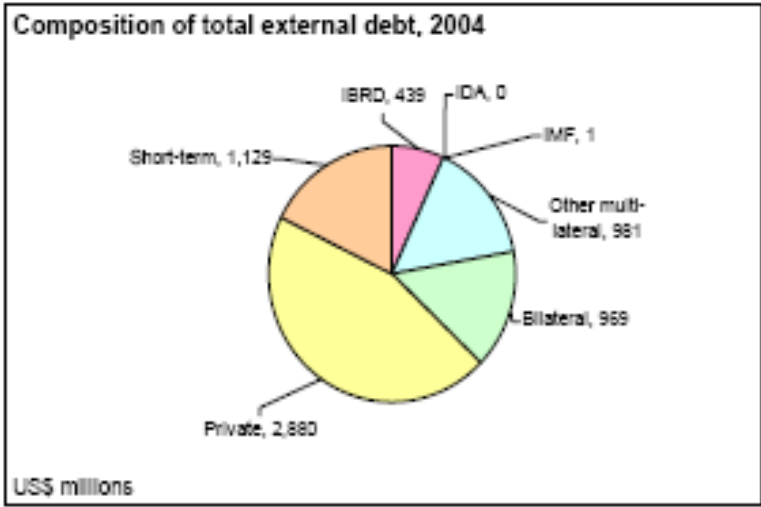
The debt to the International Monetary Fund (IMF) is all paid off, so the only relationship between Jamaica and the IMF is the member status where Jamaica pays the IMF a fee, but there is no outstanding debt. The table underneath illustrates the amount of money Jamaica has paid IMF from their independence in 1962 until today, in quota (UN data, 2006).

Figure 1.2.A Debt to IMF



The debt to GDP ratio in Jamaica is a hundred and thirty-five percent (World Bank, 2005). A major part of the debt is private debt, as seen in the figure underneath. The high inflation rate hits the country extra hard when the debt also is measured in foreign exchange. This effect makes the debt accumulate and increase without increasing the amount of money the country actually borrowed. Most of the debt is in American dollars, and as seen under the section of exchange rates, the rate has reached eighty-nine. That means that while the exchange rate was one point eight Jamaican Dollars to one American dollar in 1980 compared to eighty nine Jamaican dollars for one American dollar today the loans are getting extremely expensive to hold (Sheckleford, 2006).

**Figure 1.2B Debt compositions in Jamaica in 2004 (World Bank 2005)**

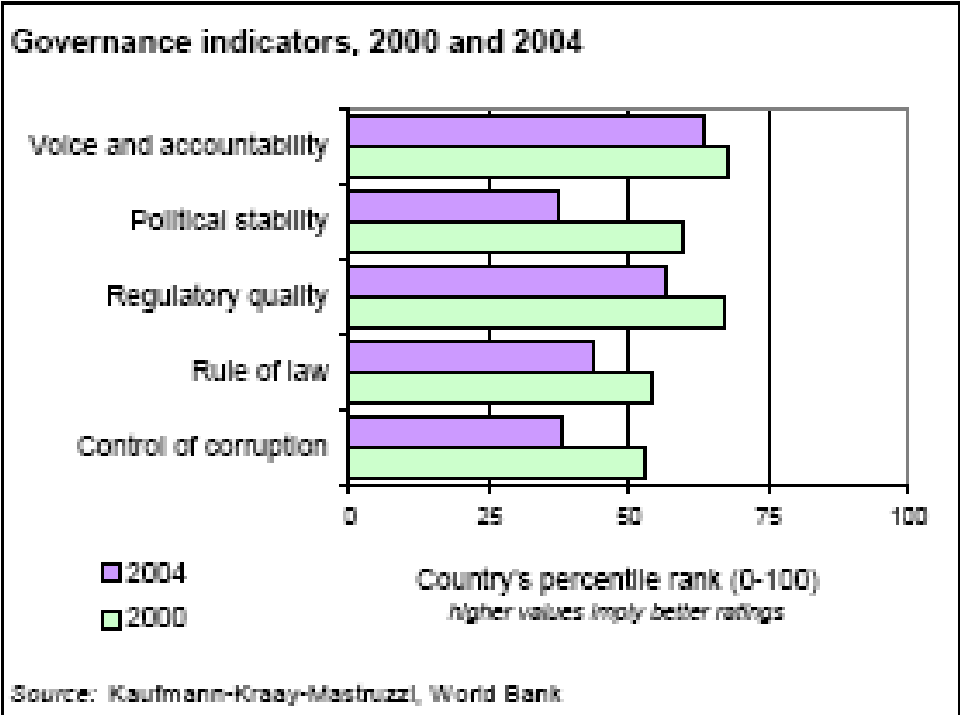


Governance indicators

The governance indicators describe how different factors are rated in 2000 and 2004. The rating is a scale between one and hundred, where a higher rank is a better rating.

All of the different rating has decreased from 2000 until 2004, and then especially the political stability and the handling of corruption. The area of corruption will be addressed in part three when it is discussed in connection with the financial crisis.

**Figure 1.2 C Governance indicators (World Bank, 2005)**



Trade

Jamaica is a country with many resources. Its natural resources include Bauxite, gypsum, limestone, marble, sand and silica. Agricultural products are sugar, bananas, coffee, citrus fruits, condiments and spices. They have different kinds of industry including Bauxite and Alumina, sugar, rum, cement, metal, chemical products, processed food and services like tourism (Bureau of Western Hemisphere Affairs, 2008).



The main export commodities are alumina, bauxite, sugar, bananas, chemicals, citrus fruit, rum and coffee. When it is added up the export counts for about one point five billion US Dollars.

Jamaica's trade extends to several countries around the world, where US is their largest partner by more than twenty six percent of the export income. The UK is responsible for another ten point eight percent, Canada nineteen point six percent, Japan one percent and Trinidad and Tobago zero point six percent. These are the main markets Jamaica is exporting to.

Looking at the import to Jamaica about four point seven billion US Dollars are spent a year on this activity. The main areas of import are machinery, transportation and electrical equipment, food, fuels and fertilizer.

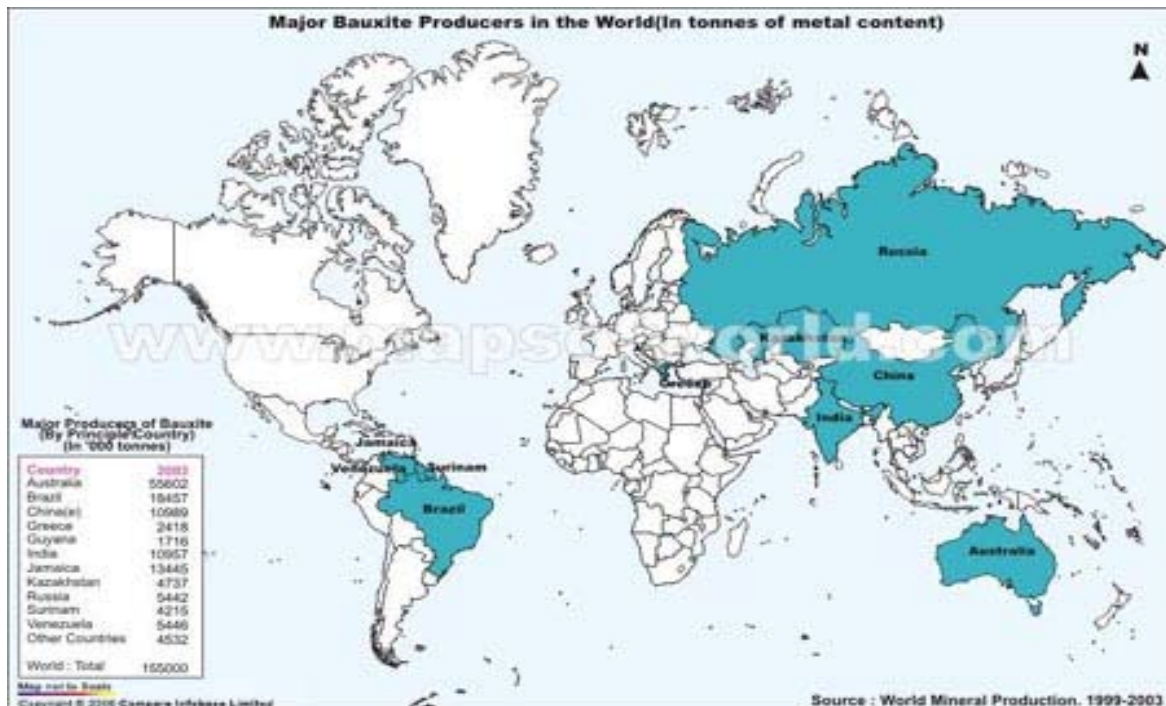
The most important countries of import is US with forty point one percent, Trinidad and Tobago with nine percent, Japan with four point five percent, the UK with two point four percent and Canada with two point three percent (Bureau of Western Hemisphere Affairs, 2008).

### 1.3 Bauxite

Jamaica is the third largest producer of Bauxite, and the fourth of Alumina in the world. The map underneath illustrates the worlds producers of Bauxite, figure 1.5A. The industry is responsible for about ten percent of the national income and is employing about 3400 people. In addition it generates a large income of foreign exchange, by being one of the two major contributors in the country (Jamaica Bauxite institute, 2008).

Bauxite is a rock which is mined out of the land, to further be refined into Alumina by the use of caustic soda and lime. It takes two to two and a half ton of Bauxite to produce one ton of Alumina. The Alumina is then melted into Aluminum by the help of fluorspar, cryolite, petroleum coke, pitch and a significant part of electricity. To make of ton of Aluminum two tons of Alumina is required.

**Figure 1.3A World map of Bauxite producers.**

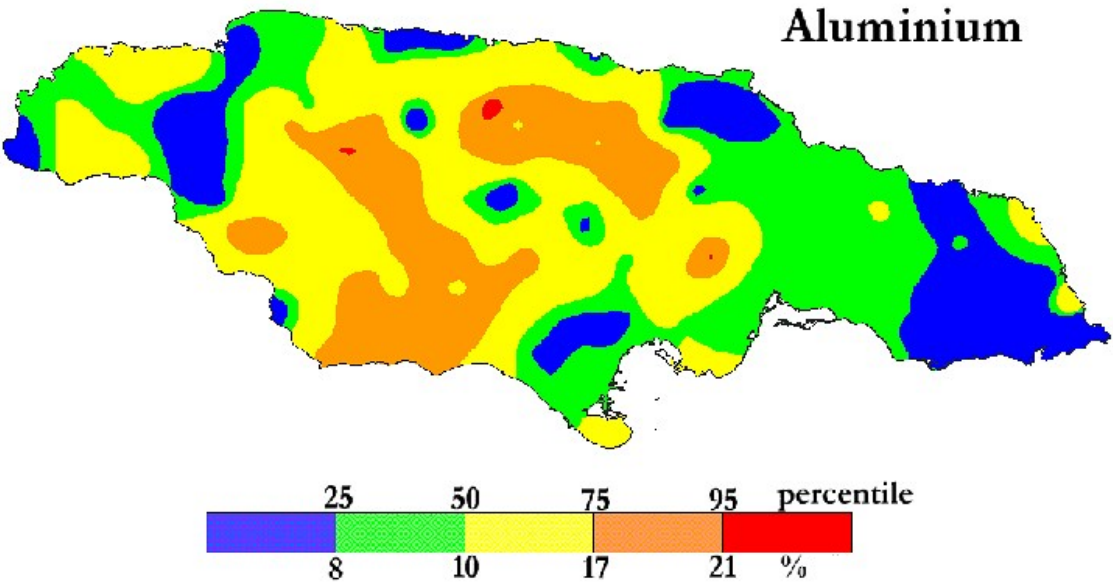


The Jamaica Bauxite Institute (JBI) was created as a support to the government to oversee the production of Bauxite, and deal with the sovereign aspects of their participation. It also had a function of technical support to the two other organizations, Jamaica Bauxite Mining Ltd and the Bauxite and Alumina Trading Company. These organizations served the job of monitoring, evaluating and conducting research on the industry being executed in Jamaica.

The illustration underneath highlights the areas where Aluminum, which is made from bauxite, can be found on the Island. The red and orange is where the concentration is highest and the yellow, green and blue indicates a lower concentration in the earth.

It is five factories build around the island, mainly focused in the areas with the highest concentration of Aluminum.

**Figure 1.3B Aluminum**



Up on the north coast is Kaiser Jamaica Bauxite Company Ltd., located in Discovery Bay, where fifty-one percent is owned by the government and the remaining forty-nine percent is owned by a Russian company by the name of Kaiser. The plant produces Bauxite, and does not process it into Alumina before selling it.

The second company on the island, also a solely Bauxite producing company, is named Lydford Mine, or JBM, because it is whole owned by Jamaican Bauxite Mining Ltd. The plant is located in Lydford, St Ann.

The first of the three Alumina producing companies is Jamalcan and is located in Ewarton, St. Catherine. Ninety-three percent of the plant is owned by Alcan, a Canadian company, and the remains are held by the Government.



**Picture 1.3A Jamalcan** (Lancashire, R.J., 1995)

Jamalco, the second of the Alumina producing companies, is located in Halse Hall in Clarendon, at the south coast of the island. Alcoa and C.A.P (The Government) have the company shared between them fifty- fifty.

Finally, the partly Norwegian owned company, Alpart. Alpart is located in Nain, St. Elisabeth which is almost in the middle of the country. The Norwegian company Hydro owns thirty-five percent of the plant and the Russian company Kaiser holds the remaining sixty-five percent.

All of the plants were established between 1952 and 1969. They have all been running until now, except a few years of break in the middle of the 1980s where Alpart had to close for a while because of financial problems.

## 1.4 Methodology

The way of collecting information, in the work of answering a research question, is deciding the shape of the thesis. There are many different techniques to choose from, and the way that are selected may be crucial for the outcome in the end.

In the beginning of this paper the main focus was to gather as much information as possible about one country, with the focus of getting «the bigger picture» and understanding the different aspects of the country.

In the second round the focus moved over to choose the material with importance for the paper and present it in the context of the research question. The thesis is based on analyzing the phenomena of the financial crisis, and its effect on Jamaica. The analysis is done with background in trade and macroeconomics. The trade theory is the foundation while the macroeconomics is used to explain the effects seen today.

### Design

The design that was decided for the data collection was a fieldtrip to Jamaica, where all information was gathered and processed first hand. This includes a whole lot of weaknesses for the paper, but also a very different view than the thesis could have gotten by another choice of collecting.

The duration of the fieldtrip was four months and the total time for the thesis was six months, meaning that the actual writing and processing took place during the trip. The first six weeks were dedicated to get to know this small country. It started off from the minute the flight landed at the airport and the impressions came flowing.

The first meeting in Jamaica, with the bauxite company Alpart, was scheduled two days later in a city named Mandeville. So, with a mix of experiencing the country traveling from place to place to reading the daily news and following the events, this paper was made.

During the trip, a visit to the World Banks office in Kingston, an interview with Alpart and contact with the Peace Corps, were some of the events that filled some blank pages.

The design of the methodology could be described as a mix of primary and secondary data because of the many different sources and channels the information was gathered from. A variety of observations, unstructured interviews, statistics and theoretical material was used in the process.

First of all there is a solid ground of theoretical information that the paper is built on, for even having the possibility of making any assumption of what this crisis will bring for a country like Jamaica.

The second ground work is all the recent reports and articles released as an effect of a world in this state. Every little change in for example the US economy is reported and analyzed for the purpose of seeing what will come next. Not to mention the incredible access on the internet to national and international changes in exchange rates, stock markets, oil prices and much more.

At last is the extraordinary privilege of experiencing Jamaica while all of this is going on. Talking to the people living here and hearing how the daily life is influenced was a great inspiration in collecting data and choosing focus areas. At the same time a handful of

interviews were set up to represent the various aspects. The interviews are executed in an unstructured way, where the subject of the interview is guided through regular conversation giving the possibility of talking as openly as possible.

A very limited part of the interviews executed are repeated or used as sources since they would not be empirically strong enough. They have mainly been used as guidance in the thesis. Talking to people who are directly affected provides different views and opinions on the subject and helps shape the paper.

### Population

The thesis is focused on describing an ongoing situation in the world, the financial crisis, and how it is affecting one particular country. The country I have chosen to analyze, Jamaica, is located in the middle of the Caribbean and has a worldwide industry of bauxite. The research question is designed to consider the effects that this country is facing in this time of a crisis and the population selected will be Jamaica as a whole. Seen as one entity.

### Measurement

The thesis has the purpose of describing a situation and highlights the factors that are expected to influence the situation. These factors can be things like volatility in the interest rate or a family dad being cut from work because of savings. The theoretical aspect is used to illustrate what is expected to happen to a developing country in crisis, and the practical side is represented by changes that have already happened.



## Analysis

The fourth section is the main part for the analysis. The important aspect is to identify the actual problem areas that a developing country is facing in a crisis, and especially then with the eyes on the fact that the country is decreasing the only industry that exist.

## **1.5 Limitations**

There are unfortunately many limitations to a paper which is based on telling something about what will come. Nobody knows what will come, if the financial crisis will pass rather fast or if a major global recession will shake the world.

When a research question is chosen, it also excludes every other alternative. All the information that is gathered after that is usually seen from that point of view.

The paper is, as every other paper, subjective because the author chose what to focus on, which sources to use and what to write. Another point is to which degree the information is asymmetric. It is never possible to have all the information, or information that is unbiased. The information that is published will bear signs of the channel it comes from and what the purpose of the information is.

The field trip has strengthened the information in many ways by, mainly because it generates a constant flow of information, because the crisis is going on right now. And to state the obvious, working and observing in the country of interest for the thesis.

## **2.0 Theoretical overview**

The main purpose here will be to present the different theoretical views and then draw parallels to the situation that is being faced today.

There are two main areas that will be addressed in this part, trade and macroeconomics. The section that evolves around trade is a foundation for the research question, and is presented to give an understanding of how the globalization is affecting the developing part of the world. The macroeconomics are used throughout the whole paper, the IS-LM model is the main part of this section and are used to connect the theory and current events presented in this paper.

## **2.1 Trade theory**

To place the research, the empirical parts, in a reasonable context and making sense out of the data collected, this part is developed. The theory presented here is surrounding the topics concerning globalization, trade and the challenges met in times of a crisis.

Next is a presentation of the early theories of globalization and free trade. The different theoretical views, seen from both the political left side and the right side, are introduced.

All of the subjects presented are in the context of the paper. In that matter there will be areas that are not covered. The main focus will be on developing countries, and then Jamaica in particular.

Trade theory is presented in this paper to give a short introduction to how we came to today's situation of globalization. The different perspectives of the theories behind it, seen from multiple views are presented to create a foundation for the rest of the paper and areas discussed in the main part.

The chapter will only provide a brief introduction to each topic, anybody who is interested in a deeper understanding is asked to follow the sources to educate themselves.

### **2.1.1 Significance of free trade**

“When USA sneezes Europe gets pneumonia (Munthe, 1994, p161).”

Living in today’s society, almost any societies get a little bit of the world right where we are. The clothes we wear are made abroad, usually in a country with low salaries, the bananas are imported from Jamaica or any other banana growing country and even the bread we eat are sometimes made in a country far away.

The industrial revolution made the international trade start moving, basically because a country produce what it can produce the most of and then sell what the nation itself do not use. Looking at any countries balance sheet will reveal to which extent the country is self sufficient or dependent on trade. Smaller nations are often more reliant on trade than the bigger nations because of the limited space to produce different products.

International trade is justified by the idea of everybody sharing the work, each nation doing what is most efficient for the global economy, and not necessarily what is the most beneficial for the individual nation (Austvik O.G. Bredesen, I & Vårdal, E., 2002).

### **2.1.2 Historical main features**

The industrial revolution, as briefly mentioned over, was where international trade had its first roots. But, before this time when there still were too many barriers to get the international trade going, every country was self sufficient.

First people did not have any currency, like Gold, so they would trade amongst each other what they needed. It was not much of infrastructure, before the eighteen hundred, and therefore every society or village made what was needed and wanted to then swap it for another good.

After some time gold came in use as a currency, where a country's wealth were measured in how much gold it was in possession of. By now some countries had begun trading with each other, mainly neighbor countries, because they had a currency to pay with. Import was not seen as a good thing for the country, because it drained the gold reserves. Export on the other hand was a very good thing which did lead to an increase in gold for the nation. So, as today, a country's goal was to limit the import and maximize the export. If any imports were done it were raw materials not processed goods, and the other way around when it came to export.

### **2.1.3 Absolute advantages, comparative advantages and Heckscher-Ohlin**

In 1776 Adam Smith presented his theories around the positive effects of trade. After a period of time several theorist came into the picture, like Karl Marx and David Ricardo. They both developed theories about globalization, but with two different outcomes. Where David Ricardo supported Adam Smith's theories and presented new theories built upon Smiths assumptions, Karl Marx presented the opposite views of international trade (Austvik et.al, 2002).

Adam Smith is seen as the father of capitalism, and stated that if everybody got to seek their own interest the world would be the most efficient. The idea is that if every country can trade freely with each other then each country would get maximum profit. He also meant that trading with finished goods were just as important as raw materials.

## Absolute advantages

Smith presented the theory about «absolute advantages» in one of his first books; highlighting that it is possible for countries, if every country produce only what is most profitable for them, to gain from the trade.

## Comparative advantages

David Ricardo was inspired by Smith when he developed the theory about «comparative advantages», which stated that a producer should measure how much better he is in an area of production and then chose to focus on the one he has the biggest advantage.

The theory of «comparative advantages» is based on the assumption that the factor prices will even out (Austvik, 2002). Which means free trade is supposed to lead to same prices of capital and work power all over the world (Reinert, 2004)

One example where this theory has been used is in the 1990's in Mongolia. Reinert (2004) discusses this example and states that the countries who are applying this theory, comparative advantages, are doomed to stay poor. He also highlights the fact that this kind of theory is the one used by the IMF and the World Bank today. The situation in Mongolia is based on the fact that they were advised to stop all kind of industry and instead collect feathers. The country became almost totally deindustrialized, except from production of alcohol, and invested in the collection of feathers. This kind of trade is not a profitable decision for a country. The model assumes full employment, so does the World Bank's models, but the fact is that a decision like this leads to more poverty like the case with Mongolia.

## Heckscher-Ohlin

Later on two Swedish economists, Eli Heckscher and Bertil Ohlin studied this theory to figure out what made one country have a bigger advantage than others. They called this for the Heckscher-Ohlin model. According to Heckscher- Ohlin's theory about comparative advantages a country should specialize in the one field that has the highest efficiency compared to another country. And, that this efficiency is found by looking at which product that is made of the material that the country has most of.

### **2.1.4 Globalization**

The Washington institutions assumptions about globalization are different from the earlier theory discussed, because they argue for the existents of perfect information and no fixed cost. If this was the case then all the people in the world would possess the same information at all time, and there would be no economies of scale. This would lead to a world with no other trade than raw materials. In real life this is not how things work, we see a global market with a huge gap in the information, asymmetric information, which leads to the differences we have in the world today. A world where people specialize in being rich, or on the other hand, poor (Reinert, 2004).

After looking at the different perspectives of world trade it is natural to wonder why it is not possible to specialize in raw materials. Why is it so crucial for a country to find some kind of industry if they want to increase their income?

There is not one accurate answer for a question like that, but there are several factors that implies why. First of all there is, like mentioned earlier, a problem with expanding, or even holding a fixed level of production without increasing the fixed cost. In the search for new



land to grow, the quality will decrease and even the sales price decrease or the amount produced to achieve the same amount of a good product increases.

The second element is seen in which countries around the world that always have been, and still are, poor. The countries with most farming and least industry are the once with most food crisis and world hunger. And of course the volatility in the weather and therefore the different outcome of the harvest every year has significant effect on the income from year to year (Reinert, 2004).

President George W. Bush claimed that free trade is the best hope for poor to escape poverty (Anderson, S. Cavanagh, J & Lee, T., 2005). Seen in the light of the financial crisis we might say that is exactly the opposite of what is happening now. Some might even say that because of the crisis, started by the US, the poor get poorer. Endless headlines in the papers these days report that the world economy is declining, and that poor countries are facing severe problems as a result of this (Gleaner, 2009d).

Globalization also hurt the poor in ways not predicted or foreseen. Between 1998 and 2004 2-3000 Asian farmers committed suicide because of trade liberalization. When opening for competition in a marked a big amount of economic distress can arise and have consequences not predicted. As in the case over where big amounts of palm oil flooded in to the country and put the farmers in an impossible position (Anderson et.al, 2005).

As in Jamaica where large parts of the Bauxite industry are cut down as a result of the crisis, leading to increasing unemployment. On the other side, Jamaica would maybe never have any of this industry at all if it was not for the possibility of exporting their goods. When a country chose to integrate with the rest of the world they will have to face the ups and downs of the actions they decide to take. The positive effects; flow of foreign currency to the country, a variety of commodities and competition in the price level, against the possibly bad

effects. Which we see can have major consequences for a country's economy, leading to a big drop in the value of the local currency, meaning a severe inflation which again increases the food prices (Caribbean centre for money and finance, 2008).

The effects of the crisis, like decreasing employment, makes people move abroad looking for work. One of the consequences of people fleeing the country is the increase in remittances.

Another effect can be seen in less organized work. The usual jobs do no longer exist and people get creative in the way they earn their income. This type of creativity leads to less taxes being paid, since lot of this new work often contains illegal or unreported ways of creating an income. Again the effect here will weaken the public services and decrease the amount that is invested in social welfare.

When a, already, poor country is put in a position like this they will start seeking for some kind of support, even by loans or donors. By seeking outside of the country for help they end up in a very vulnerable state and may be willing to accept conditions and additional rules they usually would not engage them self in. This can for example be cutting all subsidies to the farmers in the country, like a loan from the IMF would require (Ghai, 1992).

The industrialized countries always will possess more power compared to the developing countries. Even if the globalization gives the producers of raw materials a possibility to export their goods, the developed countries will be the once to set the price (De Vylder, S. Nycander, G.A. & Laantza, M., 2001).

## Technology and innovative changes

Very few models take into consideration the effects of new technology, science, education or other advantages a nation may develop. If for example Jamaica developed an alternative way for stable generation of power, they could solve many reasons for being a developing country today.

As Lowe (2000) discusses, the possibilities of the sugar industry for a Caribbean country is yet to be further explored. Today, these countries use the same technology in this industry as they did fifty years ago, with very little interest of exploring the alternative use of the derivatives. Lowe (2000) states that many other countries have certain factories build in this purpose only. Finding better ways to use the sugar and its waste. New ways that could give a distinctive difference in price, compared to what is generated from the industry today.

The most important point here is that the models used on developing countries today, by the IMF and the World Bank do not account for innovation, synergy effects or economics of scale (Reinert, 2004).

### **2.1.5 The International Monetary Fund and the World Bank**

The World Bank is an organization which mainly focuses on helping developing countries in long term financing. Every year this organ supports around one hundred developing countries. The money for this support is financed by developed countries, and partly by commercial loans in international markets. About one hundred and eighty countries are members of the World Bank today.

The IMF, The International Monetary Fund, has hundred and eighty two member countries which includes almost all the countries in the world. The IMF's main purpose is helping to stabilize economies around the world to build a strong global money market. Their advice supports free trade and economical growth.

A member country in with payment problems can borrow money from the IMF. These loans are often restricted with demands of changes in policies. These changes are aimed at removing the underlying problems that created payment problems in the first place.

Every member country must pay a fee to be able to receive a loan. These fees are calculated on basis on the country's ability to pay. The higher fee a country pay, the more money can they receive in loan when needed. At the IMF's internet page ever country's status is enclosed, and made available for the public. Jamaica's latest status with the IMF is positive, with no obligations of paying a loan but simply a positive balance for paying their fee (IMF, 2009). This is a recent happening, since they have used more than 20 years paying off their last loan.

## **2.2 Macroeconomic theory**

The macroeconomic view of this paper, the second part of part two, will give an introduction of the bigger picture. The main purpose will then be to show the connections between factors in the world that are affecting Jamaica and then especially changes that arise from the crisis. This will be illustrated with a model that represents an open economy in a small country that interacts with the world through import and export.

This part will give an introduction to the ideas behind currency and monetary policies. Also it will look at the theory representing an open economy using import and export to balance the demand of the country.

First is a look at how changes in demand is affecting the currency and what happens when inflation occur. Some different suggestion to what kind of actions may be taken to affect the demand of the country's currency. Second is a model illustrating the theory of what will happen when, as in Jamaica's case, the exportation suddenly faces a serious drop.

### **2.2.1 Multiplication effect**

“An increase in the income in a country will lead to higher import. This import-leak increases the income in the exporting partner countries (Munthe, 1992, p166)”.

This statement describes the effect that a change in one country's national income has on their trading partners abroad. Further on is the multiplication effect that can measure to which

degree a change in one country's income, like the US, will have on a developing country, like Jamaica.

In addition there is also an important part which explains that the bigger part of the national income that is generated from export, the more will a country feel these changes that happens to its trading partners. So, to an economy that to a very large degree is dependent on foreign trade compared to a more self sufficient economy, a reduction in demand for its goods can have huge impacts on the national income (Munthe, 1992).

Jamaica is very dependent on the export of their goods, particularly Bauxite and Alumina, and import of, among other things, caustic soda to be able to produce these export goods in the first place. A more thorough discussion about this issue will be addressed in the main part in this thesis.

### **2.2.2 Governmental expenses**

The governmental expenses in a country is the amount of money the government inject into the country, like social welfare, schools, retirement homes, hospitals and subsidies. The amount injected changes as the economy faces upturns and downturns all depending on the amount of private expenses. The higher amount of private expenses, the lower amount is governmental expenses, which again is reflected in the state of the economy. In a booming economy private investors will be attracted and see their shot to harvest some profit, while in a down going economy the risk will increase and the return decrease so the investors will move their money somewhere else. This is also where a country can experience inflation or deflation, which will be addressed in the next chapter, 2.2.3.

Governmental expenses is usually funded by tax, that is paid by the working people of the nation ,tax from any operating business and tax from import and export. In times of a down going economy, as a financial crisis, it is to be expected that the unemployment rate is increasing, which leads to less tax payments and lower income to the government. This can be funded by introducing additional taxes, like a 8.75 Jamaican Dollar tax on every liter of gas sold as is suggested in Jamaica now (Dunkley, 2009) Other options are using saved funds, or as a last possibility; loans from institutions like the IMF, which will be discussed further in part 3.

In the crisis in the 80's, when Jamaica did chose to cooperate with the IMF and agreed on the loan and its restrictions they experienced a lot of trouble following these restrictions. Many of the policies that had to be changed had severe consequences for the nation (Bakan, 2007). As is to be discussed in the main part among other effects, Jamaica had to cut the subsidizing of the dairy farmers which had major consequences for the farming.

### **2.2.3 Inflation**

«Inflation is a process where prices are increasing (Munthe, 1994, p 346) ».

This means that the increase in the prices must last for a certain period, and reach a certain level to be called inflation. This time period and level will change from case to case, where every situation must be examined individually. The main signs of recognition are that the price increase is general, meaning it concerns all types of goods. The second is the time period, it should be a lasting price increase to call it inflation, and usually this would mean more than a year. The last important sign is that the increase has to be at a significant level, this level can be ten percent a year or even less. The combination of the factors together is what tells if it is an inflation or not (Munthe, 1992).

Johan Maynard Keynes and Milton Friedman represent two different schools in the policies of stabilization and macroeconomics which today is called Keynesianism and Monetarism.

The two schools are of different perception of how to stabilize and control the inflation in a country. Their time perspective is a main characteristic difference, where Keynes focuses on the short term effects Friedman is more absorbed with the long term effects. Keynes is more interested in the financial aspect while the monetary policies are what concerns Friedman in the sense that he believes in its efficiency.

A very important feature is their political stands that reveal that Keynes is a believer in the state and the public system. Friedman on the other side is more for the free markets which, he means, will eventually regulate themselves.

The Monetarists look at the demand for money as a stable phenomena where interest has no or little effect on the final demand. They do not believe that the demand for money is interest elastic. While in the matter of investments and interest the monetarist's present the view that the elasticity is very large. They recognize that a change in interest rate will have a huge effect on the investments, but is not in the opinion of using any financial effects in the stabilizing policies. This is because they believe to have found that one formula for stabilization, which in short terms is said to be, that the amount of money should increase with growth in the national income. This is the theory that Bank of Jamaica is basing their monetary policies on, which will be addressed later on in this part.

Keynes, on the other side, has a different view on the areas mentioned above. He believes the demand for money is very affected by the interest rate but that investments are not. This is the totally opposite view from Friedman and both states to be able to prove their side.



## Stagflation

«Stagflation means a combination of inflation and a stagnating production, which leads to unemployment (Munthe, 1992). »

The decreasing demand for bauxite is leading to a higher unemployment rate, and the production has been cut severely while the prices in Jamaica have increased significantly the last year (Caribbean Centre for Money and Finance, 2008). This is a very difficult situation that affects the whole nation and will require that the government take action to control these phenomena's so the people in the country do not have to suffer.

### 2.2.4 IS-LM analysis

This analysis is a theoretical equilibrium in investments, savings, money and interest. It is also called equilibrium between the product market and the money market. It is a model where IS is the product market and the LM is the money market. The two markets can be observed separately and they will be explained individually before put together in one illustration to show the different effects from a shift in the various sectors.

The IS curve is based on the assumptions that if the interest rate decreases the investments will increase and the national product increase (Munthe, 1994, p 276).

$$r \downarrow \Rightarrow I \uparrow \Rightarrow R \uparrow$$

While the LM curve tells us that when the amount of money increases the interest rate decreases (Munthe, 1994, p278).

$$M^T \downarrow \Rightarrow r \uparrow$$

When both of these illustrations are working together in equilibrium the curves will create simultaneous equilibrium in the money market and the product market. This is shown in the model underneath illustrating both the IS and the LM curve.

In addition another curve has been added that opens the model for the influence of currency. This straight grey line is the payment balance and it shows that in this case the BB curve is very slack. Usually the steeper the line is the higher will the marginal imports adjustability be. And, the lower the capital imports interest elasticity will be.

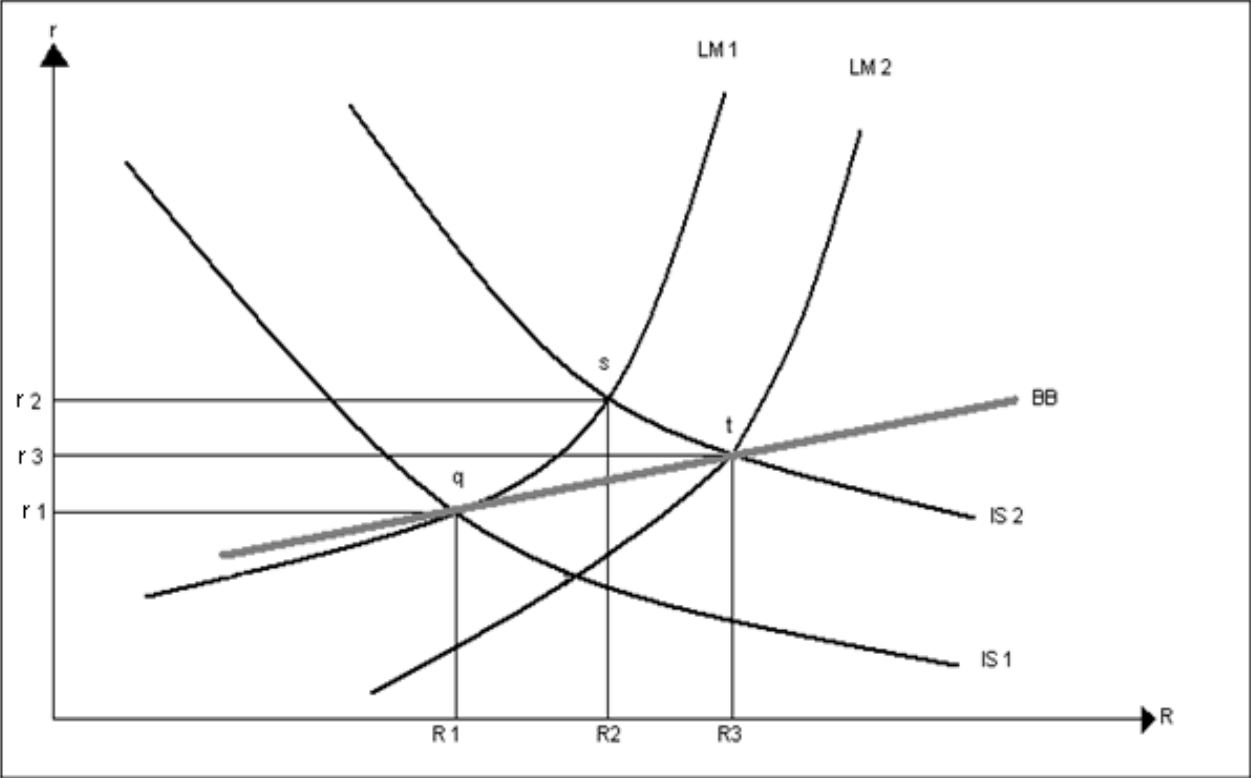
The curve for the product market, the IS curve is represented by savings (S) and investments (I) which again is a function of the interest  $I(r)$ . In our model this curve starts high up than sloping downwards, illustrating that when the interest rate is high the national income is low and opposite. This is the same assumption that where shown in figure (IS) over.

The curve is sloping downward because the lower the interest rate is, the higher will the real investments be. The less the saving are, which are very high when the interest rate is high, the higher is the real investments.

The amounts of investments are divided between public and private investments. It is assumed in this model that the public investments are given from outside of the model, while the private investments are given from the inside. In addition to being a product of these

elements tax and governmental expenses will be affecting the functions and shifts in the model. It is possible to look at the IS curve as  $(I+G)$  and  $(S+T)$ , this being translated into investments plus governmental expenses and savings plus tax.

**Model 2.2A ISLM model with payment balance line.**



(Munthe, 1994, p 282)

The money market, LM curve, is a product of interest rate, money amount (demand and supply) and national income. L is the demand for money and the M is the supply of money. The assumptions behind this curve are that the lower the interest rate is the higher will the demand for money be. So, the higher the national income the higher is the interest. This curve will then be, as shown in our model, sloping upwards. Another way of saying it is that the higher the interest rate and the national income is the higher will the demand for money be. The shape of the LM curve is decided by a set amount of money. If this amount is decreased or increased the curve will be shifted. This is only natural since the curve is a function of demand and supply for money.

Placing both curves in one model shows simultaneous equilibrium in the two markets. The values for the interest rate and the national income will then be set in the intersection between IS1 and LM1, noted with a «q». This equilibrium is then of the assumptions that the demand in the product market equals the supply in the same market and that the demand for money equals the supply for money.

Shifts in the two curves are now being introduced. It is a positive shift in the IS curve, which is caused by an increase in demand in the product market. The first thing that happens is that the interest rate increases from  $r_1$  to  $r_2$ , to what is denoted as «s». An increase in the interest rate creates an import of currency to the country, which means that the amount of money increases in the country. This increase leads to a shift in the LM curve, and the interest is then being pushed down to  $r_3$  and the national income increases again to  $R_3$ . This creates the new equilibrium with the IS curve at the intersection denoted with «t».

It is now time to introduce the third market, the balance of payments. In our model this market is denoted by BB, the straight grey line. The model now shows equilibrium in three markets at once. The positive shift in the IS curve, «s», is above the BB line which tells that the supply of money is bigger than the demand and therefore that we are looking at a surplus in the market.

The shift that is illustrated is a positive shift and will therefore lead to a high conjuncture, which means a boom in the economy. A financial crisis would be the opposite, leading to a low conjuncture, like is seen today. If a negative shift was introduced instead both the curves would have shifted inwards leading to a down going economy, and a decreasing BNP (Munthe, 1992).

### 2.2.5 Monetary and financial policies

In the planning of a national budget the government will have to decide which kind of policies it will use to affect the outcome of the budget. Possible financial policies can be changes in for example tax or subsidies, which is a way to regulate the incomes or the expenses to balance the sheet. This sort of policies work slow, and will not have the immediate effects like changes in the monetary policies will, like change in interest rate or supply of money.

The financial decisions are usually made when the budget is made, even though it is fully possible to implement any financial policies during the fiscal year as well. While monetary policies, on the other hand, is steered during the whole period of the fiscal year, also affecting the outcome of the budget. New planes for changes in for example interest rate can be revised from day to day, as the government steers toward the final goal of the budget (Munthe, 1992).

Bank of Jamaica describes monetary policies as;

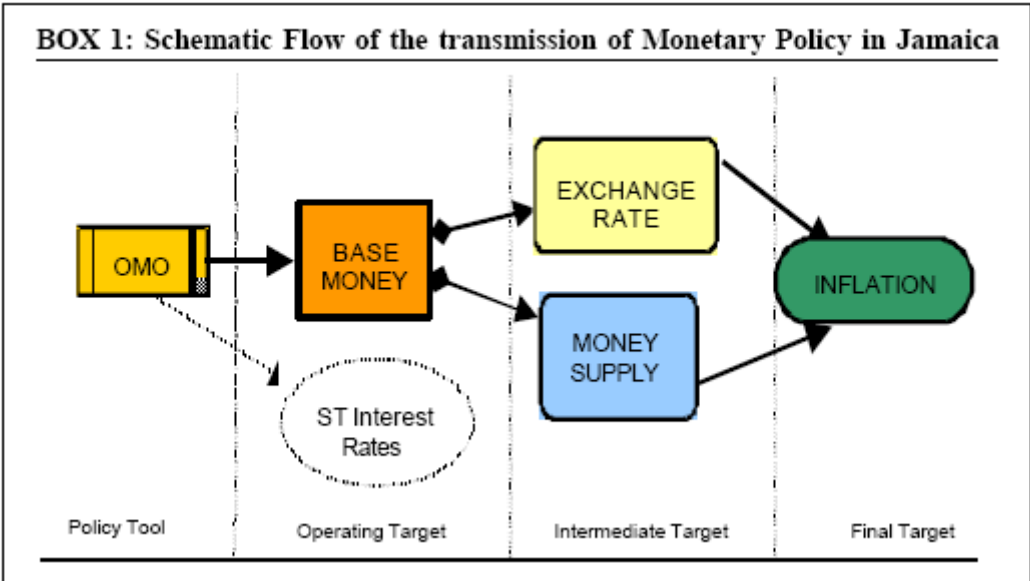
*«Monetary Policy refers to actions taken by the central bank to influence the amount of money and credit in the economy. In doing so, the central bank can determine the level of consumption or investment spending, and hence influence the rate at which domestic prices grow, and the level of growth in the economy.»*

(Lattie, 2000, p 1)

Inflation, interest rate and money supply

According to Steigum (2004) will the interest rate be dependent on the expected level of the inflation. If the inflation is calculated to reach five percent in the long term, and the interest rate is set to zero the nominal interest rate will be minus five. The interest rate set by the national bank will therefore have to take into consideration the calculated level of the long term inflation rate. As will be showed in the table of inflation rates later in this chapter, Jamaica’s inflation rates has been very volatile and reached as high as eighty present. The Bank of Jamaica has set a very high interest rate, more than twenty-two percent as mentioned earlier, which than again might be explained by the high inflation rate. The Bank presents a model, with the purpose of explaining their choice of policies, in the box underneath.

**Model 2.2A Monetary Policies in Jamaica**



The model is reflecting how the domestic prices are affected, and then what the different actions taken will lead to. There are two assumptions underlying the model, which are the foundation of the Banks actions.

The first assumption is based on the relationship between money supply and domestic prices. The equations presented, relationship 1, says that in the long run the changes in money supply will equal the changes in domestic prices.

*Relationship 1 (Lattie, 2000, p 9);*

$$\Delta MS = \Delta P$$

The second equation looks at both the supply and demand for money in relationship to the prices. The bank of Jamaica uses this equation as guidance to control the amount of money in the market. They mean that as long as the supply of money matches the demand of the market this will regulate the prices.

The direct translation of the equation tells that changes in the money supply (MS) should equal changes in the demand for money (MD), which then will keep the price changes (P) to be smaller than or equal to zero.

*Relationship 2 (Lattie, 2000, p 9);*

$$\Delta MS = \Delta MD \Rightarrow \Delta P \leq 0$$

The second relationship has also been mentioned in the chapter about inflation, stating the connection between theory and policies applied by the Bank of Jamaica. Further on the model assumes that the interest level is the second influence on the inflation. If there is made any changes in the amount of money in the market that will show through one of the two channels. Either through the price level or the exchange rate.

The next table shows the relationship between the amount of money and the inflation rate in the time period of 1986-1999.

**Table 2.2A Inflation and Money Supply**

**Table 1: Comparative Inflation and Money Supply (M2) Growth**

Years	Average Inflation %	Avg. M2 growth	Inflation Ranges (%)
1986-1989	11.1	21.6	8.4 (1987) – 17.2 (1989)
1990-1995	38.8	40.7	25.5 (1995) – 80.2 (1991))
1996-1999	9.9	17.1	6.8 (1999) – 15.8 (1996)

*Data Source: Statistical Digest, Bank of Jamaica*

The most remarkable number in this table is the inflation rate in 1991 of more than eighty percent. The average in this time period is corresponding with the money supply, but as the 1991 number states, the volatility in the period (1991-1995) is high. In the total time period of fourteen years the inflation ranges between less than seven percent to more than eighty.

The paper from the Bank of Jamaica, which this model and the numbers are based on, states that the control of the money amount is the way to control the inflation, in cooperation with the interest rate. They support this statement by the fact that this theory was implemented from 1996, and that it has been effective in the work of reducing the inflation.



## 2.3 Overview part 2

The theories presented are aimed at giving the foundation for the further analysis of the research question. The trade theories look mainly at free trade, globalization and what consequences these phenomena's bring for developing countries. The main points of the chapters presented in this part, part 2, will now be shortly listed to give an overview and short summary.

The three theories, absolute advantages, comparative advantages and Heckscher-Ohlin, are mentioned to give an introduction to the main theories and theorists. They give the background to see how free trade was introduced in the first place, and why it is so mainly accepted today.

Further on is a brief introduction of the effects of technology and innovative changes, which are rarely applied into the theories, like the once mentioned. Still, the disadvantages of not having any technology or on the other hand the effects a new technology can have on a country are crucial to recognize.

This chapter is rounded up by presenting the two major organs, the IMF and the World Bank, which are institutions with a very important role in today's world economy, and especially then the future of some developing countries.

The macroeconomics introduced in this part has the purpose of explaining "the bigger picture", and that is done, mainly, by the illustration of the ISLM model. This model intends to explain what certain changes in a economy will lead to for a country, all depending on how influenced it is by the rest of the world. The main purpose of describing this model is to explain the role of export for a developing country in a situation of free trade.

### **3.0 Analysis**

This part will be used to present the information gathered and processed during the field trip. Part II has introduced the theoretical work that this part is based on, and will be important parts in understanding the underlying problem areas that Jamaica is facing right now. The focus will be at the different effects seen already and then at last the expected effects to come later depending on the time line and escalation of the present crisis.

Part three is divided in three areas; economical-, social-, and environmental implications.

The producing of Bauxite is a worldwide industry, where Jamaica has a significant part of the market. Jamaica is listed as the third biggest Bauxite producer in the world and the fourth in Alumina production (Jamaica Bauxite Case).

### **3.1 Social implications**

Jamaica is an island with major problems in crime, murders and drugs. There is an average of three murders per day in the country, adding up to almost one thousand one hundred a year. Out of these murders more than two hundred are made by the police. Amnesty also recognizes this problem to get worse during the crisis, since people who are already poor will suffer harder in a time like this (The Gleaner, 2009d).

Increasing food prices, higher interest rate, unemployment and less tourism are factors that affect the people of Jamaica, and make the possibility of even more crime a real treat. These are also some of the areas that will be addressed in the proceeding sections.

#### **3.1.1 Health**

This section can be discussed from two sides; health implications from bauxite production and health related problems from a developing country getting poorer. In the section of Caustic Soda the health problems associated with mining and bauxite production are addressed. The main concerns are for the people living in near distance to a bauxite mine or an area where the red mud from the mining is being kept.

The problems related to poverty are hard to measure, but it is obvious that people with less money have bigger problems paying for health care, and when the country's income decreases the government will have less money for expenses. (WHO, 2009) expresses their concern around more poverty as a consequence of the financial crisis. They highlight the problem area of possible less spending in the health sector. They also mention that countries taken under the roof of IMF will have bigger possibilities of having to restrain their spending in this area because of the restrictions following these loans.

### **3.1.2 Unemployment**

In one year, from April 2007 till 2008, the unemployment rate increased by two point five percent. The main areas that was affected was Construction, Electricity, Gas and Water, Wholesale and Retail, and Hotel and Restaurants (Caribbean Centre for Money and Finance, 2008)

The bauxite industry is a part of the country's work market, but it is not a huge percent of the total number. About seven percent of the total market were employed in the Bauxite industry in 1979.

Alpart, one of Jamaica's bauxite producers announced in a press release that they are closing down their production, with effect from end of April. This is leading to unemployment of 900 full time workers plus 200 part time workers that has already been let go. The workers of the bauxite mines are one of the best paid workers in Jamaica (The Gleaner, 2009b).

West Indies Aluminum Company Limited, Windalco are also, with Alpart, another producer of Bauxite that has announced temporarily close down of their mine (The Gleaner, 2009a).

The problems continue when Rusal, a third bauxite producing company, in the same period of time, cut their production in half and start decreasing working hours. So far this year the industry is behind its budget with a forty percent decline (The Gleaner, 2009b).

On the other side this decline will make the government rethink the industry that has been chosen for the country, and maybe look at other possibilities that might even be better for the future of the Island.

### **3.1.3 Crime**

In 2005 Jamaica had more than sixteen hundred murders, and was then called the murder capital of the world (BBC Caribbean, 2006). With an average of more than four murders a day Jamaica is in the lead on the list of most murders a year. The problem is most severe in Kingston, because a huge part of the murders are between political gangs situated in the capital of the country.

In an interview (The Gleaner, 2008) with former trade minister of Jamaica the problems with crime and the financial crisis is addressed. Clark states that this is an obvious problem that will get worse in a time like this when opportunities like employment are decreasing.

Clarke is referring to the last crisis in Jamaica in the 1990's where the murder rates grew from 400 a year in 1992 till 1600 in 2007. He also looks at the connections between remittances and crime, and implies that a certain part of the remittances in Jamaica is generated from crime. This is because the amount of remittances grew from one hundred and sixty million US Dollars from 1992 till almost two billion US Dollars in the same period of time as the murder rates escalated.

So far there are only speculations if there will be an increase or decrease in the murder rate as an effect of the financial crisis. The only fact is that there have been raised concerns around the subject and that this is an area that is being followed closely by the government of Jamaica (JLP, 2009).

### **3.2 Environmental implication**

Jamaica measures less than 11,000 km<sup>2</sup> and holds almost three million people, the island has several attractions like YS Falls, Milk River and the Blue Lagoon. As many of the illustrations in this paper shows, there are not only beautiful things to see in Jamaica. The mining industry that has been going on since early 1950's (JBI) has left scars all over the island.

#### **3.2.1 Land destruction**

In a column printed in the Jamaican Observer (Maxwell, 2009a) concerns about the destruction from the mining industry are having on Jamaica were expressed. First is the fact that nineteen percent of all farm land in Jamaica is being owned by Bauxite companies, withholding people the possibility to farm on this land.

Another huge point is that there is limited land on this island, and some day there will not be any more Bauxite to find. Not only is it important to have a plan for «life after Bauxite», but it is crucial to take care of the land that is still here, before the whole island as John Maxwell, author of the column reminds us, becomes nothing but a beach.

#### **3.2.2 Red mud**

Around the island one can find huge ponds of red mud with toxic waste that the Bauxite companies have stored on the island. If any of these ponds were to rupture catastrophic consequences would follow.

These are all very important facts in considering what this industry is bringing to the island. It is not said that Jamaica's only possibility is Bauxite, and maybe this time of crisis will lead the government to consider other ways of using the land.



Picture 3.2A Red Mud Pond Nain in St. Elizabeth (2004)

When one ton of Alumina is produced, about one ton of red mud will be left. In 1993 about eleven million tons of bauxite was produced. As mentioned in part one it takes about two tones to produce one ton of Alumina which means that in 1993 more than five million tons of red mud was left after the production only that year (American University, 1995).

Even if the industry has been a blessing for the country so far, there are many farmers that have lost their land and been forced into alternative ways of surviving. In a country like Jamaica, with already one of the world's highest murder rates (BBC Caribbean, 2006), driving people away from their land and in to cities like Kingston, will assumingly not help decrease this rate.

### 3.2.3 Caustic soda

Caustic soda used in the production of Bauxite is left in the «red mud» that is being stored in pools on the island. This toxic waste is a huge concern for the Jamaican people living anywhere near these pools. The stinking smell coming from these pools is only a minor concern, where the fear of the toxic waste polluting the drinking waters is a whole other. Every year the Bauxite companies pay out money in replacement of ruined clothes, clothes that are ruined by the contamination in the air in these areas. Researches carried out, looking at people's health in the areas around the mining fields and pools has stated a higher number of asthma, sinusitis and allergies among these people (Maxwell, 2006b).

Nobody is sure how long the Bauxite will last; the speculations range from 30-150 years, but as already mentioned this industry is very bad for the island in many ways. The pollution of the drinking water is a major point, and so is the destruction of the land. The Bauxite industry is affecting the whole eco system on the island, and still people fight hard for the peacock countries not to be mined apart (Maxwell, 2006d).

The dust coming from the mining is a great concern, when it is being shipped around the island blowing off the trucks or just the wind grabbing it from the mines, and gives people respiratory problems. If the Bauxite was not polluted the companies would not keep losing law suits from the locals, to repay clothes destroyed by the air around the mines (Walker, 2007).

There are two alternatives in the way of disposing the red mud, either on land or in the water. Jamaica has chosen the land alternative, so the factories leave the toxic, slurry mud on land all around Jamaica. The pools they dump the mud in are only lined around the walls and not the floor, which allow the waste to seep into the ground and contaminate the ground water.





Picture 3.2B Battersea Red Mud Disposal Area, 2007.

There has been made many attempts to develop other alternatives in handling the mud. A third option, which is highly recognized by Alcan, is «dry stacking», unfortunately is this not an alternative for Jamaica. The process consists of drying the mud, but since the mud in Jamaica consists of much more water than what is regular it would demand huge areas to follow through such a project.

Instead there have been explored different ways of making use of the mud, like bricks, material for road building and actually up to three hundred different ways has been developed. Neither of the alternative ways is nor has been applied because of economical reasons (Lowe et. al. 2000).

### **3.3 Economical implications**

April 6th 2009; (CANA News, 2009)

«Prime minister, Bruce Golding, cuts his salary by fifteen percent».

As described in part I today's financial crisis has its roots from the Subprime crisis that began in the US in August 2007. Today, in Jamaica, the effects have become very visible and are giving the country severe difficulties, and some huge challenges. The latest news tells about Bauxite mines closing down, and the Prime Minister cutting his salary, but before getting to this point the crisis has been building up over a period of time. In the beginning signs were seen by the increasing inflation and soon rising food prices which made the life harder for the people of Jamaica. The politics lead by the government has in some way been controversial in the actions of consequently increasing the interest level over the entire time (Seaga, 2009a).

Recently a paper about the already seen and expected effects from the Financial crisis, around the world was published (Institute for Developing Studies, 2008). The study included fourteen developing countries, asking twenty-one academics and policymakers about their view. Six main points of which areas that were expected to be influenced was created, and included; export, interest rate, remittances, foreign investments, foreign aid and the exchange rate. Only few months later, most of these points are actual facts the Jamaican economy is facing today, as this is being written.

The prices of Aluminum has decreased with sixty-six percent in about eight months and the government is now searching for alternative ways to generate the income to cover the deficit in the budget. (The Gleaner, 2009a)

### 3.3.1 Export

As this thesis is focusing on, the first point is decreased export. The term of export is off course more expanding than just the export of Bauxite. The total export of goods and services accounts for a little more than fifty one percent of the total Gross Domestic Product (GDP) in Jamaica (World Bank, 2005).

The export of currency is also an important factor for a country, the demand after a country's currency is crucial for its value, which in this case is the Jamaican dollar.

The importance of export is also reflected in the IS-LM model illustrated in part 2, the chapter of macroeconomics. First of all it is seen in the Balance of payment line, where this line will be affected if a country has a negative balance of payments. Jamaica's balance is very dependent on export of their goods, as this is more than fifty percent of the country's GDP as mentioned above. In addition it is important to look at the total import of the country, and in Jamaica's case their mining industry is heavily dependent on import to be able to mine at all. The industry needs large amounts of oil to run the electricity needed to mine and also huge amounts of caustic soda to process the bauxite into Alumina, as described in chapter 1.5. The other areas of import is also described in part 1, and listed with amount of US\$ used on the import on different goods as food and services.

The numbers under neat shows Jamaica's balance between export and import, telling that their trade balance is negative. This is also called a trade deficit.

If a country's import is higher than their export the value of their currency will be pushed down (Austvik, 2002, p 232). This is one of the main indicators for the IMF, so a country can turn to them for a loan of foreign currency to help them decrease the inflation.

**Figure 3.3A Trade balance in goods and services (UN data, 2006b)**

Year	Value (US\$)
2006	-2,315,800,000
2005	-1,973,700,000
2004	-1,372,8

The other area on in the IS-LM model that is affected by the export of a country is on the demand of money, which is reflected in the LM line. The demand for the Jamaican Dollar decreased significantly and lead to an inflation, which will be discussed in the following section (Edwards, 2009).

### **3.3.2 Inflation**

The theoretical description of inflation is described in part 2, and gives a definition of the phenomena saying it is measured as a combination of rise in prices, seen over a period of time and affecting all goods and services.

Inflation is affected by the demand of the country's currency. So, immediately when foreign investors remove their money because of the increased risk, the value of the Jamaican dollar will fall. With this fall in value inflation becomes a reality (Munthe, 1992). As in Jamaica where the inflation has made the food prices jump (see figure 3.3B and 3.3C) under) every single person on the island has felt the crisis on their personal economy.

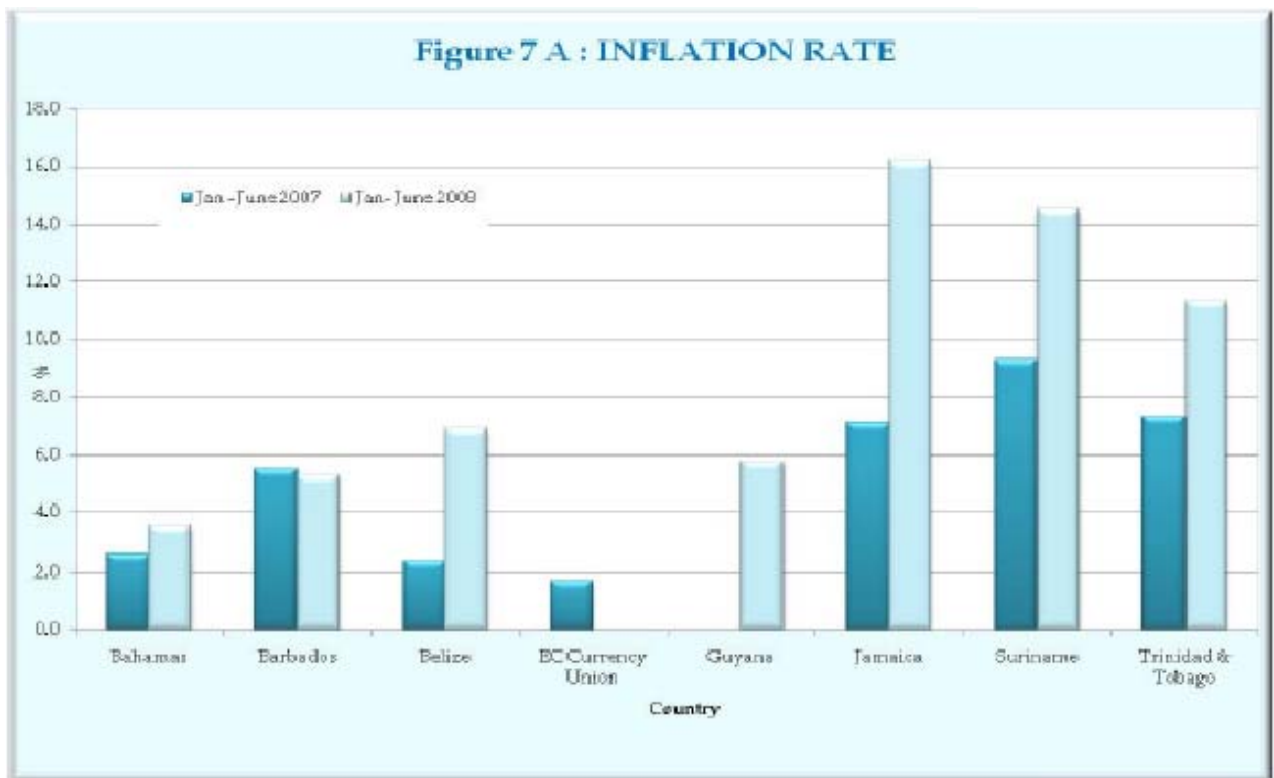


Figure 3.3.B Inflation rate (Caribbean centre for money and finance, 2008)

The figure above, 3.3B, is an illustration of how inflation in Caribbean has developed from 2007 to 2008. The poles represent two different time periods, where the darkest one is for January until June of 2007 while the lighter color is for the same period of time the year after, 2008. The pole for 2007 representing Jamaica is set to about seven percent, and then with an increased rate the following year, just above sixteen percent. This is an increase of more than fifty percent in a year. Almost all areas of Jamaican industry, including agriculture, mining, manufacturing and transport, and storage and communication, faced a slowdown in growth. In addition to the dry spell, bananas, sugar and coffee production were still not fully recovered after the destruction by Hurricane Dean. Regardless of this entire decline Jamaican tourism did manage to keep its position.

The next figure, 3.3C, looks into what this development in inflation has meant for the price of food, health, transportation, housing and clothing. Food prices, being represented by the purple line with squares on it shows that this is the area where the inflation has hit the hardest.

For the period of time this diagram is representing the food prices grew from a seven percent till thirty two percent in seventeen months, meaning that the prices increased with twenty five percent in the time mentioned. For a country like Jamaica, with a poverty head count of more than nineteen percent, an increase of one fourth of the food prices could have tremendous consequences. And then especially in terms of higher crime, which is a big issue in the country (The Gleaner, 2009e).

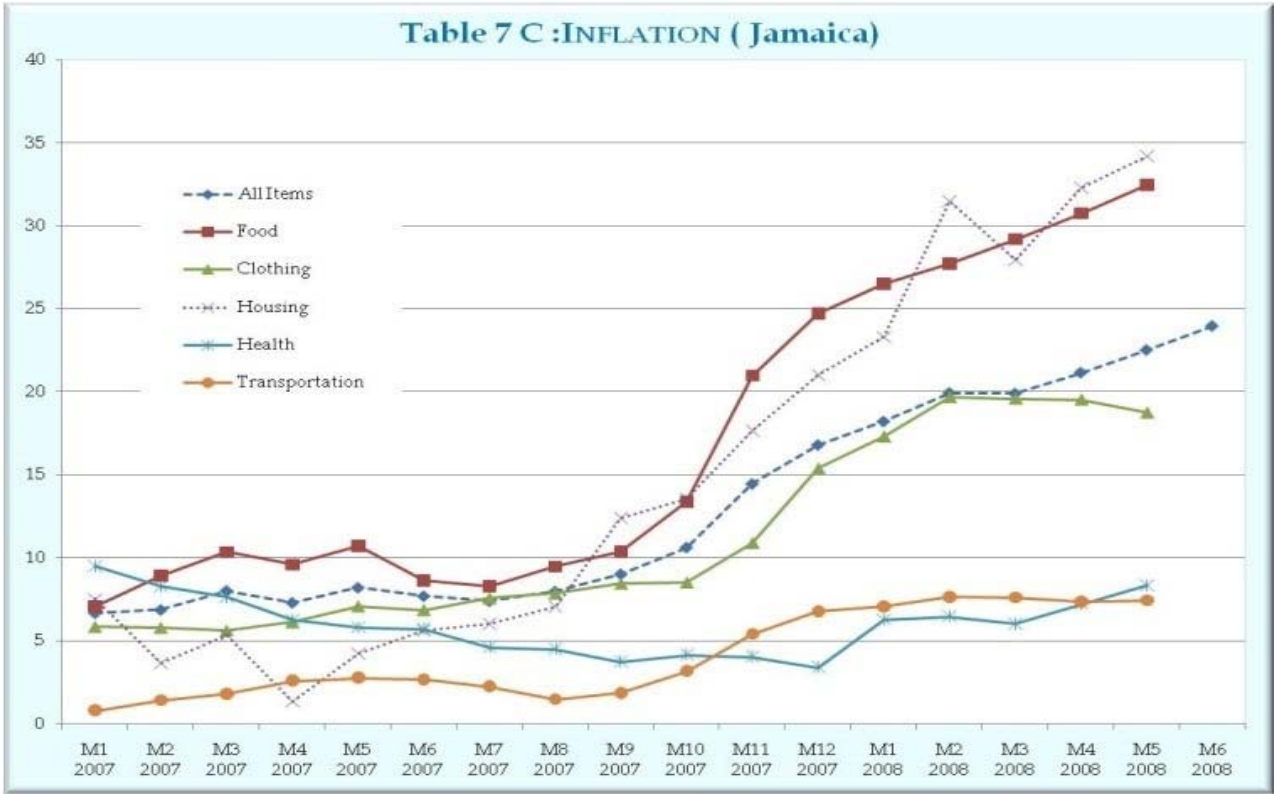


Figure 3.3.C Inflation rate (Caribbean centre for money and finance, 2008)

When the prices of the goods in a country increases it means that it takes more of the same currency to buy the same amount of goods compared to other periods. The Jamaican dollar has been hit very hard from this inflation and the exchange rate with American dollars is now at a record high rate. This can be explained as an effect of less investments, meaning less demand for a country's currency, will their money be less worth compared to other currencies and the exchange rate will be affected.

### 3.3.3 Interest rate

Bank of Jamaica has used an unordinary policy in the fight against inflation. Where others keep decreasing their interest rate, Jamaica increases their rate. The rate reached as high as twenty-two point sixty seven percent during the first week of April 2009, declining from twenty-four percent (Gordon, 2009). The sense making behind this policy is simple, and is according to textbook economics the best way to decrease inflation and increase demand for your currency (Munthe, 1992). In the mean time what is really happening is that the risk of investing in a developing country is too high for anyone to invest, and the once suffering is the people of the country. So, today the situation has put a lot of people in a very difficult place with both a high inflation and increased inflation which has hit food prices hardest.

If we take a look at the IS-LM model introduced earlier, an understanding of the effect of the interest rate can be made. First it is important to remember that the IS line already consists of a function of the interest rate, and in addition, as just stated, the demand for money is very elastic with the interest rate.

The other important fact is that the vertical line in the model is the level of the interest rate. This means that the interest rate can affect all the different factors in the model since a shift in this variable will change the position of the other.

The section of monetary policies in part two addresses Bank of Jamaica's focus in the work of controlling the inflation in the country. The information that the Bank has published, and that part is based on, is very absorbed in controlling the amount of money, not the interest rate. As a matter of fact, the interest rate is barely mentioned in the pamphlet at all. The main tool for steering the price changes in the country, according to the Bank, is the amount of money in the market.

Jamaica is now choosing their own policies and ways to control the inflation, exchange rates, and other areas that will be affected by the globalization. On the other side, if their deficit increases even more, the government has so far been clear when stating that a loan from the IMF is not impossible (Caribbean Net News, 2009)

### **3.3.4 Remittances**

There is about three million people living in Jamaica today, and even a higher number of Jamaicans are living abroad. In 2007 fifteen percent of the national income was money coming from remittances (Bank of Jamaica, 2009a). The latest updates on Jamaican remittances states that the compared to last year, in February, remittances flowing in to the country are down with more than eighteen percent.

### **3.3.5 Foreign Exchange**

The Bauxite and Alumina industry has a big effect on the country's amount of foreign exchange. In 1979 Bauxite was responsible for twenty percent of Jamaica's foreign exchange and Alumina fifty percent. Compared to industrialized countries, like Australia, where half a percent of the foreign exchange is from Bauxite, five point three percent is from Alumina and zero point six percent is from Aluminum. The industrialized countries have a far less dependents towards the industry, than the developing countries do (Hashimoto, 1982).

Bank of Jamaica's policies is to a large extent focused on the exchange rate when making decisions. One of their main aims is to provide a stable exchange rate for the country by using the supply for money as a tool. This means, as stated in the theoretical part about monetary



policies, that Bank of Jamaica’s control their inflation and exchange rate by adjusting the amount of money that is supplied (Lattie, 2000).

A random selection of exchange rates between the Jamaican dollar and the American dollar is provided in the table underneath. It is very evident that the rate has had tremendous changes since their independence, with an exchange rate increasing continuously.

**Table 3.3A Selected years of exchange rates, annual average** (Bank of Jamaica, 2009b).

YEAR	USD	VS	JMD
1971	USD\$1.00	=	J\$0,77
1981	USD\$1.00	=	J\$1.78
1991	USD\$1.00	=	J\$12.22
2001	USD\$1.00	=	J\$46.08
24.04.2009	USD\$1.01	=	J\$89

**3.3.6 Monetary and stabilization policies**

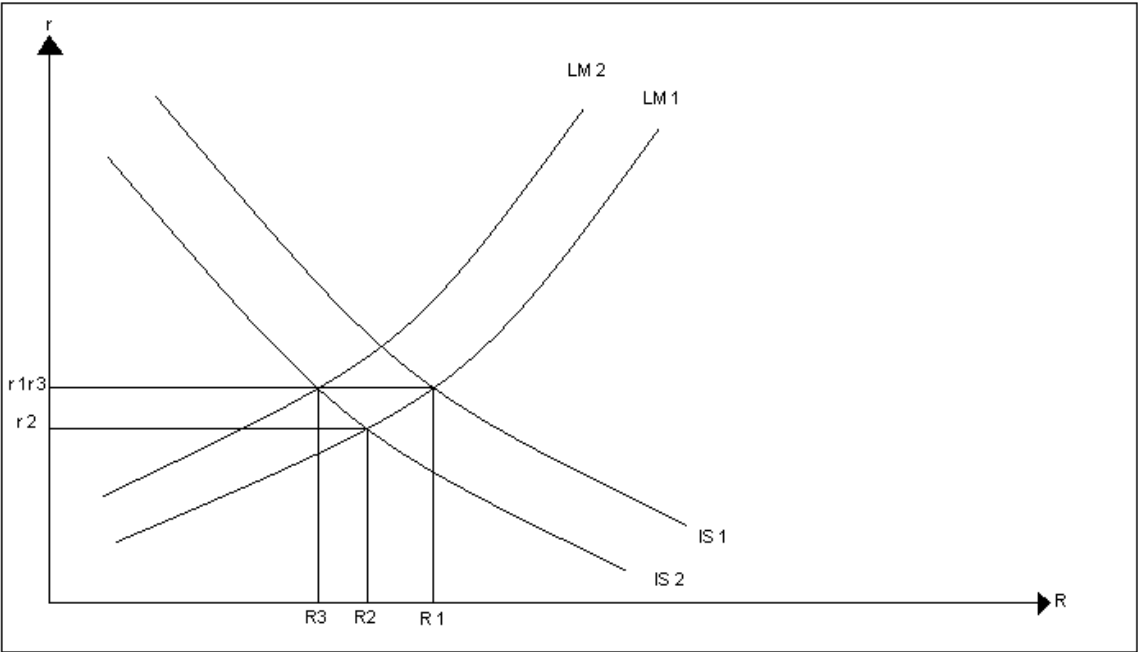
Bank of Jamaica has made their policies official for public by publishing them on their web page. This makes it easier for those with interest to understand the choices made by the bank. This section looks at the policies that are already addressed in the theoretical part that Bank of Jamaica has implemented in recent times.

If one take a closer look at the IS curve again, which is the product market, it is possible to look at the situation in Jamaica with the decreasing demand for bauxite. As discussed earlier

the IS curve is equilibrium in investments and savings, which is seen as a function of the interest rate. This means that the changes in demand for bauxite is seen in the IS curve, so that it is this curve that will have the negative shift when seen in the IS-LM model. In addition, since the IS curve is a function of the interest rate, the changes made by the bank of Jamaica in the interest rate will also show in this curve. The Bank has then the possibility of using monetary policies, which means changes in the supply for money, as a means to affect the economy.

This negative shift in the IS curve will then show a decreased BNP and a decreased interest rate. If the national bank decreases the money supply the interest rate can still be held at the same level as before the negative shift in the product market. This last move of decreasing the supply of money will lead to a negative shift in the LM curve as well, and then bring the interest level back to the original level, but it will also decrease the BNP even more. That means that a country should not strive to keep a high interest rate in a down going economy (Steigum, 2004). The IS-LM model that is explained over is pictured in the illustration underneath. It gives an impression of Jamaica’s situation, and is based on the policies that Jamaica is leading today.

**Figure 3.3D IS-LM Jamaica** (Steigum, 2004).



The ISLM model is a complete macroeconomic model which tells us about the national income, the price level, employment rate, trade, consume and investments. In the main part this model will be used in Jamaica's case to discuss the monetary policies used today and what might happen in the different cases of changes in the variables.

#### Fuel tax

The Government implemented a tax of 8,75 Jamaican Dollar per liter gas sold in the matter of helping to balance the budget. The tax is suggested to help increase the country's infrastructure (Dunkley, 2009). A tax like this is welcomed with mixed reactions from the people living in Jamaica, but somebody will have to build these roads, and just that employment, could help a lot of people get food on their table.

The newly implemented taxes lead to huge road blocks and some very volatile days in Kingston (The Observer, 2009b). A car was set on fire, a school girl robbed and people threw stones on cars. That was some of the situations in Jamaica after the government imposed the new tax on fuel.

### 3.4 The IMF

«Another loan from the IMF is inevitable (Seaga, 2009b)»

April 17 evening news in Jamaica broadcast a statement from the former Prime Minister; Mr. Seaga which talks about the possibility of going into another relationship with the IMF. He expresses that he understand how many people look at this option with fear, but, he also states that the IMF in the 1980's and the IMF today is not the same. That the conditionality's would not be as last time.

The problems that were seen under the last loan affected different areas, as discussed in the section about farming, and though the earlier prime minister states that the conditionality's has changed, not everybody agrees on that.

The World Bank released a report on the relationship between the IMF and Jamaica (Jamaica Country assistant note, 1998) where concerns about the effects of the relationship were expressed. It states that the country has not had any help from cooperation with the IMF so far. The report assesses the relationship to both the World Bank and the IMF and at one point it actually says that the debt burden has increased after a number of projects that has been implemented. This is because each project involves another loan from one of the institutions and leaves the country with more debt to pay back, without providing the country any better conditionality's to handle the debt.

### **3.4.1 Policies**

A recent article published by the Third World Network (2009) analyses some of the strings attached to the loans given by the IMF today. The conditions are meant as helpful policies that will, in the long run, stabilize the monetary economy. Never less the IMF has during a long time period been criticized for the restrictions and the interest rate that comes along with the loans.

The restrictions that follows the recent loans being granted to Georgia, Serbia, Ukraine, Hungary, Iceland, Latvia, Pakistan, Belarus and El Salvador is being discussed with focus in fiscal policies, monetary and exchange rate policies and financial sector policies. All the changes in policies are imposed on all the same areas in all of the countries, and are mainly targeted on the governmental expenses. The facts gathered is collected directly from the IMF's internet page and are only put together for the purpose of comparing the data which is done in the article enclosed the fact sheets.

The loans are first of all are limited to very short period of time, ranging from fifteen to twenty-seven months. The amount is spread from the lowest of 523 Million US Dollars to Serbia to the highest amount of 16,4 Billion US Dollars to Ukraine.

The article is pointing at how all of the policies will first of all affect the public sector employees, the poor and the homeless. This is because of the cuts in the public spending and public wages. Social benefits, pension, subsidizes and public sector wages are the first once to decreased or freeze. This also includes, as imposed in Pakistan, an eighteen percent rise in electricity prices.

## EU subsidized milk

In the documentary «Life and Debt», released November 27 2006, the farmers of Jamaica express their frustration around lowering the trade barriers in the country. They describe how the policies from the IMF have increased competition to such a degree that the local farmers have no possibilities of getting their goods sold. The food sold in the stores is imported from countries that can grow the same goods for less money, or receives subsidies. The milk from the cows does not get sold, because it is less costs by making it from powder, and in addition gets subsidized by the EU. The paper «Dumping in Jamaica» (Euro Step, 1999) states the facts around the problem of lowering the trade barriers to Jamaica and opening up for the EU's subsidized milk and drive Jamaican farmer's to dump their milk. The main reason for these problems is the strings attached to the IMF loans forcing cuts in the subsidies to the Jamaican farmers.

### 3.5 Science and Technology

All the way back to the Spanish time in the around 1400 mining has been going on in Jamaica. The mining were related to gold, copper, lead and iron, whilst later on it also included gypsum and phosphate and then of course bauxite (Lowe et. al. 2000).

Those minerals to be found on the island, which are of economical interest today are, limestone, gypsum, silica sand and marble. Silica sand is found in St. Elisabeth and is used for manufacturing of glass. Limestone is used in the alumina industry, but is not used in other areas of potential like glass manufacturing. Marble is found in several parishes and is not explored at the moment, but do have a high value if directed attention. Gypsum could be used in construction work, and is to be found in two of the parishes. This is also an unexplored source of income today (Lowe et. al. 2000).

Today, in Jamaica, a very limited part of the possible resources is exploited. About fifty percent of the land is being farmed, tourism is developed in a limited part of the island and several minerals stays untouched in the ground. The major industries in Jamaica is based on Bauxite mining and tourism, which are the two major income generators in the country (Lowe et. al. 2000).

As mentioned earlier, the prices of aluminum has dropped significantly in a short period of time, and Jamaica has seen a great loss of income in this sector. The different alternatives listed above could be worth exploring in the manner of getting a new source of income.

The IS-LM model discussed in the macroeconomic theory part states that the national income will decrease when the demand for products like bauxite decreases. The demand for bauxite decreases as an effect of the crisis where people get less money and lowers the saving,

consume and the investments. When the country, Jamaica, is experiences bad times and low demand for their products, and especially such a huge inflation, it is good the more self sufficient the country are. The more goods the country can supply themselves with, instead of rely on import, the better will it be for the balance of the country (Austvik, et.al., 2002).

My visit to the Alpart gave me a view on the possibilities of Jamaican industry. As discussed in the theoretical part the only way for a developing country to develop to have some kind of industry (Reinert 2005). Jamaica has three possibilities of industry; the first being to specialize in tourism, the second is to explore the further use of Bauxite by making Alumina and Aluminum. So far a few of the local companies is making Alumina from the Bauxite, but none is making Aluminum. The main reason for this is little or no possibilities of a stabile source of power to run an industry.

The last is to explore the further possibilities of alternative energy, like solar panels or windmills. Since Jamaica is an island and surrounded by water it is possible to place windmills in the water to generate power to the island from the wind energy. Several of the guesthouses and private houses in Jamaica have solar panels on the roof to collect their own energy, and considering Jamaica's position, solar panels could help the country. The main concern in this area is the space issue. Since it is a small country there is limited space to place enough solar panels to do any good.

Synergies, technological changes and economies of scale

As discussed in the theory, a lot of the macroeconomic models used are lacking three factors (Reinert, 2004). The three are synergies, technological changes and economies of scale. All of this is affecting the real world and not the model.



In Jamaica eighty percent of the people taking a higher education are moving out of the country by graduation. They move because there is no jobs to suite their qualifications, and if it is they will get a much better salary in the US doing the same, and then could be able to send money back home. This is off course some of the reason for the level of remittances being so high, that the best educated Jamaicans, do not live in Jamaica. So, when the IMF comes in to a country and impose their restrictions, the same restrictions to every country, they do not know how the different economies will react.

### 3.6 Overview part 3

The main part has addressed some of the major macro- and microeconomic areas in Jamaica that so far has been affected by the financial crisis.

The three main areas; economic-, social-, and environmental are seen from the point of decreasing bauxite production.

The social areas are in some ways very obvious but at the same time there are many huge effects that are hard to measure and to foresee the development of. That is the mainly the question of what unemployment will lead to. So far many hundreds of workers are laid off, just in the bauxite industry. Some articles are stating the concern about increasing crime and then more murders in a country with already record high murder rates.

The economical side of this discussion is easier to address, since the numbers to an extent speak for themselves and are measurable. The governments concerns today seems to be surrounding the immediate problem of covering the deficit in the budget, and are reaching to solutions like introducing a tax on the gas.

The environmental side of this subject, the destruction of bauxite production, is a more long term concern that the government do not seem to working very actively on. They do own several of the companies, but still a lot of the ruined land has not been restored and are now left as open wounds in the land areas. In the matter of the decreasing production there are two main subjects related to the environment. The first is if the decreasing production will lead to the foreign companies to withdraw from Jamaica and leave the land unrestored. The second is what alternatives Jamaica has to an income source, and then what industry the country will turn to next.

## 4.0 Conclusion

Jamaica is in a fragile position, where the further development is of very uncertain nature. The world recession is still going on and every single country in the world is feeling the effects, the question is only to which extent the different nations will suffer. The suffering is in first round traced back to the increasing food prices which has hit Jamaica to a very large degree. It can also be said that there are good aspects of the financial crisis, all though this that is a fact that is probably not recognized by the Jamaicans yet.

The research question explored in this paper is studied with background in the financial crisis, to have a look at the effects that is seen in the light of the crisis. The area in focus has been the bauxite production in Jamaica. There are three main areas that have been researched in the context of Jamaica and the decreasing bauxite production.

The social implications seen from the crisis is first of all the increasing unemployment that is made by the bauxite companies who are cutting down their production.

The environmental implications are harder to measure, but the main problem seems to be that the mining production has left huge areas of Jamaica with land that cannot be used because the bauxite companies have not restored the land after the mining was done. If these areas were restored they could have been used in farming to make the country better fit for this crisis.

The economical implications are seen in several areas. The declining production of bauxite is the main area which came as an effect of the decreasing demand for bauxite. When the demand went down so did the export of bauxite leading to less foreign currency generated to

the Jamaica and a higher inflation. The inflation affected the food prices, so even the poorest people in the country are feeling the financial crisis every day.

It is still uncertain how long the financial crisis is going to go on and impossible to know how much worse it will get. Maybe the demand for bauxite will increase again and Jamaica can start producing at normal levels again. There is also a chance that the country will have to find alternative ways to generate an income and will look into more environmental friendly solutions.

What seems to be happening next is a loan from an external financial institution, to cover the deficit in the budget, which most likely will be from the IMF or the World Bank.

#### **4.1 Further research**

The research question analyzed is focused on the declining bauxite production and is therefore limited to this area. There are several other areas around the effects of the financial crisis that could be very interesting to explore. The area with most connection to the area analyzed would be taking a look at other alternatives for the country. It would be possible to look at more environmental friendly industries for Jamaica. In that case the alternative sources of energy are also an important area where Jamaica could benefit from exploring.

On the social aspect of the crisis there are many areas that can get worse as an effect of people getting poorer and have to find other ways to generate an income. Problem areas like crime, murders and prostitution. The Problems with the high murder rate are already a fact, and has long been recognized as an area that needs to be addressed and worked with.

The last area that has come to the surface during the research with this paper is the corruption in the country. As mentioned early in the paper Jamaica has had increasing problems with handling the corruption in the country, and with a uncertain situation like the financial crisis it could be interesting to make a research in this area to see if this phenomena increases.

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