**Economics Papers (30%)**

**How do natural disasters impact the economy of a country?**

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**Introduction**

Ever since the Great Depression, it has been really common for developed mixed-economy countries' governments to step in, to fix major economic problems due to dreadful events. Precisely, it is the government’s duty to make sure the market economy is doing well. In addition to this aspect, one of its economic roles is to act to stabilize the economy on behalf of the population. For instance, the government can invest in public funding and hire people, promote investing, provide services to help residents and attract finances to redistribute it inside its own nation. In other words, a good government has the power to build and frame favorable circumstances for economic growth; as well as interceding whenever help is needed.

However, even when the government is doing a great job of controlling the economy, unplanned events can occur, that no one but nature has control on. A natural disaster refers to a natural, uncontrollable, event which causes great damage and loss of life in the most severe cases. During one of these unfortunate events, a population may face physical injuries, home destruction, death, ensuing medical and health issues, and community and property damages. As exposed previously, a lot comes with natural disasters such as floods, earthquakes, and hurricanes. Therefore, this paper will aim to answer this research question: “How do natural disasters impact the economy of a country?”.

As the numerous impacts on countries can be situated on a gigantic scale, it is necessary to analyze and expose all the components. The economic impacts of natural disasters are an unknown topic that needs to be addressed more in-depth and taken into account by the whole population. It is even more important for us, the younger generation, to know how these events can impact the economy because we are the ones holding the future of our planet in our hands. This is the reason this topic was chosen for this economic paper because it is an actual issue, unknown to the eyes of the population. The economics of natural disasters is an essential subject that the citizens have to acknowledge to progress as a whole and manage our countries better.

As a hypothesis, we believe that natural disasters have a major impact on the economy. We believe that demand for essential materials in the crisis will go up, while production will go down since many resources are territories that are deconstructed. We also predict that the consequences of natural disasters will fluctuate depending on many factors, including geographic position and the level of development. For example, the more vulnerable countries will suffer more from natural disasters, while more developed countries will have stronger resistance. We also predict that understanding the economic aftermath of the disasters is essential. Our final prediction is that the growth of domestic products will go down dramatically because the countries are not actively producing and impacting economic growth.

In this paper, the causes of the effect of natural disasters on the economy will be explained through the geographical position of a country and the level of development of nations. Afterwards, the impact of natural disasters on agricultural supply, as well as demand will be analyzed in depth, without forgetting its impact on the GDP. The last aspect that will be analyzed is the aftermath of natural disasters and how countries and governments act to rebuild the economy. The research method used will be to conduct the study by analyzing the literature that is available on this topic through different banks of information.

**The economics of a natural disaster**

1. **The geographical position of a country**

No one is safe from natural disasters. However, depending on the catastrophe, certain territories are more at risk of being victims of economic incidents. For instance, since the end of the 20th century, the State of Louisiana has lived through several natural disasters, such as “hurricanes” and “excessive rains”, which had a considerable outcome on their agricultural income, available funds and means, along with their economic visibility. The impact of the natural disasters experienced in Louisiana had excessive costs, towards their administrative financial loss that was estimated at practically $5 billion, due to their ruined “agriculture, aquaculture, and fisheries industries.”, (Guidry & Pruitt, 2012). Therefore, there are “three factors contributing to a disaster: the triggering *natural hazard event* (such as the earthquake striking in the Atlantic Ocean outside Portugal); the *population exposed* to the event (such as the 275, 000 citizens of Lisbon); and [finally] the *vulnerability* of that population, [...].”, (Strömberg, 2007). Thereby, how can a vulnerable population be defined in a territory affected by a major force? Unfortunately, the most frequent countries exposed to dangerous natural disasters are the ones that are still in the process of economic development, and hence little industrialized. Indeed, when territories are living this reality, it is more frequent for them to experience human and natural catastrophes such as natural disasters and even cases of starvation or poverty, which make their economy even more unstable. This also comes from the geographical position of a nation in a continent, as well as its political history. In addition, “[…] disaster fatalities are, [...] higher in low-income countries and nondemocratic countries. [...]. [P]erhaps, low-income countries are more exposed to natural hazards, or fatalities in nondemocratic countries are higher only because these countries are also poor.”,(Strömberg, 2007). As described in this source, the demographic consequences of natural disasters in low-income countries are caused by a high or moderate financial deficit, as well as a weak and problematic political system.

1. **Underdeveloped nation**

The geographical position of a country often influences the economic situation that it will be living in. Some are lucky to be located where the climate is constant and where unexpected meteorological events are rare. However, others are victims of many natural disasters, such as floods, landslides, hurricanes, and many more. In other words, if the country is located near a coast, a desert, the Pacific Ring of Fire, or simply in a territory at risk of catastrophes, it has a huge disadvantage in the growth of its economy. Indeed, if a population is greatly in danger because of uncontrollable circumstances, the government must intervene by the means available to them, according to their economic profile. Thereby, such disasters can generate exorbitant costs for a government that is already financially and politically unstable**.** The financing of technologies is beneficial to predict incidents, improve the quality of life and protect the citizens during those hard times. To clarify: “[b]etween 1980 and 2002, India experienced fourteen major earthquakes that killed a total of 32, 117 people while the United States experienced eighteen major earthquakes that killed only 143 people.”, (Kahn, 2005). In other words, the poverty and political instability of a country influence the outcome caused by the harmful impacts of natural disasters. As described earlier, the United States of America still had more than a hundred deaths, but compared to India, it is 30,000 fewer deaths, in just two decades. As a result, India lost a drastic number of citizens, in approximately twenty years, that probably were in the labor force, bringing income and therefore taxes to the country. Thus, all these deceased people are no longer part of the economic cycle of the territory, which inevitably depends on these revenues. That being the case, it is substantially possible to say that the geographical characteristics of a country have an important role in the devastating effects of an inevitable accident.

1. **Developed country**

In contrast, wealthy countries are in an advantageous position to support the population economically and with military aid. Government assistance at the economic level is sometimes necessary to restore order to the financial state of a country after certain devastating disasters. As a matter of fact, in serious cases, the government no longer relied on Adam Smith and “*the invisible hand*”, but more on the opinion and demonstrations of the population. Furthermore, it is easy to see that the richer nations have an incomparable facility in the underdeveloped countries. They have more developed strategies and measures put in place to protect their citizens and more stable infrastructures, capable of withstanding the most devastating disasters. In addition, richer countries have more effective regulations and provide high-quality care. (Kahn, 2005), page. 277). In sum, depending on the geographical position of a territory affected by a natural disaster, the consequences for the environmental, economic or political level, in poor countries are more difficult to overcome, due to the strategies and solutions offered by wealthy governments.

**Production and Demand**

1. **Agricultural production**

Different territories have many ways of creating production revenue in their surroundings. Agricultural production is the main source of the economy, for many countries like Brazil and India. Their incomes are often unstable because they depend on the weather, the soil fertility and much more. Natural disasters definitely impact, in many ways, the production level of any region but more specifically agricultural-dependent countries. Even if it's less frequent, depending on the disaster's intensity, it can positively impact the country. For example, moderate floods or storms can have practical outcomes in the field of agricultural production. Better hydrating soil can produce more significant cotton production that transforms into textile production. In addition, controlled storms are shown to affect agricultural growth 2 years after the event and 3 years after for the GDP growth (Fomby & al 2013). This mainly occurs when the catastrophes are small but when it's not manageable, they badly impact the agricultural production of a country. For example,it is explained that unmoderated catastrophes like Flash floods can be devastating for all territories' economies. In 2009, Ketsana was a victim of historical floods. All the agricultural sectors including infrastructures and workers were severely impacted. Furthermore, in the dry season, drought also influences the outcome of a harvest on many lands. (Anh, 2016). For a country with better agricultural land, it is essential to use its capacity to provide food for its citizens and their neighbors in need of these resources.In an article, Lin (2019), shows an analysis demonstrating that natural disasters often affect the incomes and employment of agricultural fields, leading to a loss of 30% in agricultural GDP. From 2005 to 2010, Taiwan, often affected by natural disasters, was a victim of a loss of 9.9 to 59.1 billion in net revenue. The largest variant of these numbers was the agricultural production lost due to Tisiphones. Briefly, this explained that agricultural-dependent countries are significantly impacted went its question of damage to their land.

1. **Long-term vs short-term GDP**

Gross domestic product is the measure of the prosperity of a country. It’s the sum of all monetary transactions of households, businesses, and governments that determine the wealth of nations (Anielski, 2002, p. 4). A number of researchers found several ways that natural disasters can impact the GDP. Most are divided on whether it can be beneficial in the long run. In natural disasters like extreme temperatures, windstorms, floods and much more, the average real per-capita income loss is about 2%. It shows that it has an immediate impact on the economy but, in comparison, a humanitarian disaster like epidemics and famines has double effects on the financial output. Observing the effect in the long run, it is recognizable that, on a panel of 89 countries, natural disasters have a positive effect on the gross domestic product of a nation. This can be shown by the capital stock accumulation, the human capital accumulation and the improvement of future technological capacity. However, even if growth can be made, countries that are stuck in frequent disasters are at risk of turning into a poverty circle. Generally, because disasters affect them immediately, these regions want to resume productivity as fast as possible. They come to replace their damaged capital with similar infrastructures which only put them in a never-ending cycle (Kellenberg, & Mobarak, 2011). This result in a future limitation of productivity in the area. In other situations, some countries being victims of huge natural disasters can deeply see a change in their future financial system. In Cavallo et al. (2013) research**,** it is shown that some countries see their gross domestic product drop to 10% lower than it could be in the next ten years. However, this statistic is driven by radical political revolutions happening after the strike. For instance, in 1972, Nicaragua was touched by effective and damageable earthquakes. This had an impact on its output per capita, but in the year that followed the number almost returned to what it was initially. It then dropped significantly because a revolution appeared six years later. This shows that if the GDP of a country is affected because of a disaster it can go back to its initial number in a matter of time, but that long-lasting consequences are usually caused by human disasters like revolutions after the event.

An aspect that could also affect the GDP after a disaster is workforce losses. If the workforce in a country is shrinking, the government has less income to spend on its citizens. Also, fewer workers restrain the maximal productivity of companies and do not sustain economic growth (Pakulski, 2016). Natural disasters often impact the number of available brokers due to death, household damage, the destruction of transport facilities and much more. In the United States, Kellenberd (2011) research explained that generally, local employment falls by 3.4% following flood events where workers typically stay. On the other hand, this fall in employment does not necessarily impact the income of a household due to demand.

1. **Impact of natural disasters on demand**

Natural disasters have significant consequences in several areas. One of them is demand. This area is influenced by natural disasters much more than we might think. When a natural disaster happens, demand increases and decreases depending on the area assessed. Demand is, depending on their ability to pay, the amount of goods or services that consumers are willing to buy. First, let’s look at the side where the demand for goods and services goes down. The main cause of the considerable drop in demand is the fall in income among the victims of natural disasters. The repairs and the damages to the houses and infrastructures make the priorities go into those repairs, rather than spending on tourism or vacations. It was mentioned that “The effects of a natural disaster on household income, [...] are estimated at 6.9% and 7.1% declines in Vietnamese households.” (Bui & Dungey, 2014). This high number is due to the wage being lowered by employers who struggle with low income. When a disaster hits, employees and people that are part of the labor force don't work as much as they did before. The number is also due and the long days off work where the workers repair the damages on their homes. Due to a lower income, consumption and making purchases in terms of leisure and services such as holidays goes down. With their budget, people set their priorities on what is essential to their well-being. (Grislain-Letrémy, 2018).

Another reason for the demand going down is the important number of deaths when a disaster hits. Fewer people present in a population, therefore, equals less labor force and people to consume the products. There are also fewer people to help rebuild the economy after a disaster hits. For example, in 1775, a significant earthquake devastated Lisbon, an influential city economically speaking for the Portuguese economy. A subsequent tsunami then hit Europe's fourth-largest country: “An estimated 60,000 people were killed, out of Lisbon's population of 275,000.” (Srömberg, 2007). This significant disaster had a huge impact on the Portuguese economy, as about 4.5% of the population was not there to consume anymore. Consumption is at the base of the economy. Without it, businesses producing can't function, and the economy dangerously slows down. Major population fluctuation after natural disasters is another significant reason why demand decreases, it's a factor that puts countries that want through a natural disaster in an important situation because not only do they have to deal with the physical damages in their countries but also with rebuilding the economy, which will be precise in a later part of this paper.

While a significant drop in demand is felt during natural disasters, it is equally essential to look at the side where demand is increasing. First, demand for specific construction and protection products and services increases significantly. Let's look at the rising demand for insurance. It has been shown that before natural disasters hit, demand is not a priority for citizens, who do not believe that such damage will one day be made to their homes. When destruction happens, it becomes urgent for them to consume this service to pay the least amount of money possible for their habitation.(Grislain-Letrémy, 2018). The demand for this type of service rises to a very high level. However, the number of products where the demand goes up is not equivalent to the ones where the demand goes down. It then helps the economy to a certain point, but natural disasters are fatal. The demand also increases considerably when we consider construction materials such as wood and cement, and bankrupt resources, like non-perishable food, hygiene products and bedding to open the most shelters possible. Since the goal of these shelters is not to make a profit but to provide free cars to the population, the stocks being bought for them are what increase the demand.

An important solution has been adopted by several countries to allow more vulnerable countries to continue to consume products to get the economy going. It was mentioned that: “The one-third of the world’s population that lives in low-income countries suffers almost two-thirds of all fatalities from disasters.” (Srömberg, 2007). When a natural disaster hits, the economically vulnerable countries get hit way more hard in the face than others. Another example is Vietnam, where the living standards are very low. After a disaster, even with governmental reduction policies, it is very hard for these types of countries to get back on their feet. How much-helping countries in a more difficult economic situation is essential. As a solution, the linked and allied countries wanted to help each other by exchanging resources. Whether in terms of material or human resources, this is one of the best ways to get back on your feet economically. A specific initiative makes it possible. Leaders who share close ties with another country encourage their population to consume products from their own country to get the economy going, but also certain products from other regions, to allow them to have customers again, with all the negative consequences that often happen with disasters. (Srömberg, 2007). To conclude on this topic, demand is strongly affected by natural disasters. However, it always depends on production and how this aspect of economics is handled. This part will be covered later on in the paper.

**Rebuilding the economy after a natural disaster**

When a natural disaster, whether it is an earthquake, tsunami, or flood, strikes a country, it has to get back on track. Precisely, due to temporary inactivity because of circumstances beyond one’s control, the economy is on hold. Therefore, it is the government’s duty to rebuild and/or reshape it to recover from what happened. But this process is very different for every nation or community, nor is it easy. To begin with, it takes a lot of money to go back to the usual, such as rebuilding schools, habitations, public facilities and so on (Deraniyagala, 2016). By only re-constructing what was destroyed, it has been found that these operations take on average 15% of a country's GDP on its own (Perera, 2011). Then, it is advised for the government to take action within the six months following the natural disaster that occurred; otherwise, it might be too late and severe sequels for the economy can appear. Additionally, when a natural disaster strikes a territory, the country will have more or less difficulty dealing with it, depending on its economic situation. Precisely, it has been established that poorer countries have more issues recovering from disasters than richer countries (Deraniyagala, 2016).

**Measuring the loss**

Now, measuring what was lost during a tragedy, and translating it into a certain amount of money, surely is a complex procedure. There are “concepts” that help to calculate what the cost in total will be for the government. Firstly, “losses” refer to all the damages caused by natural disasters, in terms of physical destruction and impairment. The point is to end up with a sum of money, which is equal to the casualty. Secondly, “indirect vs. direct losses” compare the physical damages to those that ensues afterwards. For instance, if a well-known historic monument is destroyed during a hurricane, the number of tourists in its city will most likely decrease. Therefore, the tourism drop in a given area is an indirect loss. While the monument’s destruction is an example of direct loss. Thirdly, the “market vs. non-market” effects are also considered. As exposed previously, all the country’s income is evaluated; compared to the one that is not reported in the national figures. Fourthly, what will the rebuilding cost be, and were those equal to the same buildings beforehand? Fifthly, “redistribution” comes to give compensation and resources to the population by the government. And sixty, the “wealth” lost before any occurrence. The goal is to measure how much what was lost could bring monetarily and non-monetarily. In other words, these 6 steps show a precise procedure that a state or country can follow after a natural disaster, to know what was lost and how much will they have to spend to repair and go back to normal. They can follow this plan to have a clear idea of how to apply their chosen policy, more efficiently and rapidly as possible (Kliesen, 1994).

**Government budget and economic policy**

To begin with, governments usually provide aid to persons in need after such an event. For example, in Canada, if a resident suffers from losses, the government can step in and provide what is necessary depending on the situation (Public Safety Canada, 2022). Based on precise criteria such as eligibility, importance, state and so forth, Canadians can request financial aid, which is a part of the government policy in case of a natural disaster. These are called “cost-sharing”, between residents and the Canadian government. In the United States, for instance, it is the federal government that addresses the calls of states, territories, and groups of people… who are impacted. This process contains an evolution of the situation, services deployment, technological and financial support to help recovery, reports, and a hopeful return to the initial situation (U.S. Department of the Interior, 2018). In other words, after evaluating the impacts of a natural disaster, measuring the loss and answering requests from the population, the government can start planning a budget which aims to repair everything and help those in need. All of this is to restore the economy and restart it as fast as possible. To rephrase it, the government has the role to step in and make the economic activities work again, to have a minimal financial and market loss.

**Conclusion**

To conclude, this paper allowed us, researchers, as well as future readers to understand in depth the important issue, which is how natural disasters impact the economy of a country. This subject represents an indispensable one, which deserves to be addressed more in the media today. It is out of one’s mind that a phenomenon coming from nature, such as natural disasters, over which countries do not have any control, can impact the quality of life of individuals against their will, therefore, it's an economic subject as much as a human subject. In this paper, a detailed analysis has been made on the subject.

First, the impact of natural disasters on the economy was analyzed with the geographical position of a country, and how disasters can be fatal when we consider the essential resources of a territory. In support of this theme, the matter of underdeveloped nations was broad, explaining in depth the impact of natural disasters on a developed country, compared to an underdeveloped country. Second, fairly simple elements, but just as essential in economics, were analyzed: supply and demand. Agricultural production was thoroughly explained, along with its impact on the revenue, followed by the long-term versus the short-term outcome of disasters, on the broad aspect of the growth of domestic products. Since supply is impossible to talk about without demand, this economic topic was analyzed to better understand the issue. The causes and consequences of the fluctuations in demand were analyzed throughout the paper. Third, the aspect of rebuilding the economy after a natural disaster was established. In addition to that aspect, the different ways to measure the loss after a natural disaster were explained. Finally, the unequal economic effects and how different countries deal with it, as well as the government budget and policy, were precise. In sum, this economic paper gave a complete overview of the impact of natural disasters on the economy. The essential aspects such as supply, demand, and GDP were addressed in depth.

To conclude on this paper, let's look at the outcome of our hypothesis. Most of our predictions were true as we discovered that natural disasters do, in fact, have a huge effect on the economy of a country. Requests for essential materials did go up, as we predicted, while production went down, depending on the area. We were also right-thinking that the geographic position and resources were essential indicators for how much a country gets affected by disasters. Finally, our predictions regarding the GDP were correct, as well as the importance of considering the disaster’s aftermath. To conclude, the economic impact of natural disasters should be addressed in the media, considering it is an issue altering the whole world. Who knows, considering the global issue of the hour, climate change, maybe our country will soon suffer from the climate fight which is the economics against natural disasters!

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