ИКОНОМИКА И УПРАВЛЕНИЕ, ГОД. IX, № 4

Гл.ас. д-р ТОДОРКА ТОНЧЕВА
УНИВЕРСИТЕТ ЗА НАЦИОНАЛНО И СВЕТОВНО СТОПАНСТВО, СОФИЯ

ВЛИЯНИЕ НА ОКОЛНАТА СРЕДА ВЪРХУ КОНКУРЕНТОСПОСОБНОСТТА НА ИКОНОМИКАТА

INFLUENCE OF THE ENVIRONMENT ON THE COMPETITIVENESS OF THE ECONOMY

Assist. Prof. TODORKA TONCHEVA, PhD
UNIVERSITY OF NATIONAL AND WORLD ECONOMY, SOFIA

Abstract: Competitiveness is an evaluation on the potential of countries to reach high productivity through an innovative approach to human resources, capital and physical assets. Higher competitiveness means higher economic growth and handling of competitive pressure. Competitiveness is a complex economical category that is determined by a multitude of factors: macroeconomic stability, openness of the economy, effective management, good legal frame, stable institutions, etc. All of these factors influence the competitiveness of the economy to a different degree.
During the Lisbon conference in 2000, the leaders of the European countries declared their ambition to make the European Union the “most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion", by 2010. In this regard, the present paper tries to reveal the impact on economy of the natural disasters provoked by the changes in the environment.

Key words: Competitiveness; Influence of the environment; natural disasters

1. Main Lisbon Criteria for Competitiveness of the Economy

Competitiveness is an evaluation on the potential of countries to reach high productivity through an innovative approach to human resources, capital and physical assets. Higher competitiveness means higher economic growth and handling of competitive pressure. Competitiveness is a complex economical category that is determined by a multitude of factors: macroeconomic stability, openness of the economy, effective management, good legal frame, stable institutions, etc. All of these factors influence the competitiveness of the economy to a different degree.

During the Lisbon conference in 2000, the leaders of the European countries declared their ambition to make the European Union the “most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion", by 2010.

It is hard to define the term competitiveness on a national level since nations cannot compete in the same way that companies do. Still we might say that the competitiveness of an economy represents a stable growth in the productivity of labor that leads to higher income and standard of living. In this sense, it depends on the quality of economical and political institutions in the country as well as the extent to which they stimulate employment, productivity growth, innovations and the adaptability to changes in the economic environment.

The Lisbon Summit set seven targets aimed at strengthening the competitiveness of the EU countries:

1. Creation of an information society accessible to everyone;

2. Creation of a European zone for research and innovations;
3. A single common market in the field of services and network industries;
4. Effective and integrated financial markets;
5. Strengthening entrepreneurship through a reduction in the regulatory burden on business and better conditions for starting new business;
6. Participation in public activities through bringing people back to work, improving their skills and modernizing social defense;
7. Sustainable development.

2. Key Aspects of The Influence of The Environment on the Global Economy

Nature, expressed in the various natural calamities, has a negative and, in some particular cases, positive effect on the economy and tourism of the countries on a global scale, on their competitiveness and efficiency.

Earthquakes, floods, hurricanes, tornadoes, draughts and other natural disasters for their part extremely negatively affect the infrastructure and the share of the financial capital as well as the employment, energy efficiency and other aspects of a given economy. The influence of these effects on the economy depends on different factors such as the nature of the calamities, the affected area and the capacity of national and regional institutions that are prepared to provide help and resources for recovery.[1]

Due to the growing pace of population growth on a global scale and to the climate change along with the worsening condition of the environment, natural disasters occur more and more often today. According to the World Bank several factors exist that influence the vulnerability of countries to natural disasters, namely: the geographical size of the country in question, the type of the calamity, the structure of the economy and the prevailing socio-economical conditions. In the parameters of the globalized economy all these factors are influenced by the consequences connected to the natural disasters.[2]

Natural disasters affect the economy of countries in two ways. On the one hand, they destroy the material capital of the population (housing, road infrastructure, factories, plants, pipelines, etc.), and on the other hand, they disrupt the usual flow of the production and consumption. As a whole, calamities suppress the economic boom of the affected countries for a period of time. Companies stop their production until their full recovery, after which they compensate their losses through a production boost in the economy sphere.[3]

According to financial guru Warren Buffet, natural disasters such as hurricane Katrina and the earthquake in Japan have larger economic consequences for the economy and tourism of the countries on a global scale than terrorism. Those calamities, including the tornadoes, the floods and the tsunamis, cost the insurance industry billions of dollars and result in huge losses for the economy. If the impact of the natural disaster on countries is big enough, it can slow down their economic growth for decades. According to a UN study, global warming as a result of the anthropogenic activities leads to an increase in natural disasters.[4]

Earthquakes, tornadoes, hurricanes and other catastrophic natural phenomena devastate the material capital of the population such as housing, business

[1] www.ehow.com/ The Effects of Natural Disasters on the Economy, eHow Culture&Society Politics Economy, 2012.

[2] www.businesspundit.com/ The Economic Impact of Natural Disasters, 2011.

[3] www.washingtonpost.com/ Disaster Economics, The Washington Post, 2005.

[4] www.useconomy.about.com/ Amadeo, K., Natural Disasters. The Cost of Hurricanes, Floods, Tornadoes and Earthquakes. 2012.

property and transport infrastructure, including roads and airports. This often leads to disruptions in the economical activity in the affected region. Natural disasters could lead to sudden increase in the price of energy such as the high prices of petrol. Hurricane Katrina in 2005 shut the big oil refineries and pipelines along the Persian Gulf coast due to the high prices of the fuel. The high energy expenses affected the whole US economy because energy is key to the production of goods and services. And the long-term impact of the higher energy expenses depends on how fast the various refineries, pipelines and other energy facilities are subject to repair and resumption of production. Disasters that affect key trade centers such as coastal areas around major ports can influence the level of import and export.

Nonetheless, there are also some positive aspects of the influence of nature on the competitiveness of the economy. Government aid creates an opportunity for improving the infrastructure of the affected country. Also, there is often a jump in the levels of employment manifested in an increase in construction jobs as a result of the rebuilding of destroyed homes, business buildings and other property.[5]

3. Essential Characterization of Natural Disasters

Natural disasters play a vital role in modern life, cost the affected countries billions of dollars and inflict damage, killing thousands of people every year. From an economical standpoint, natural disasters affect a number of important macroeconomic variables, and in particular technology, which in its turn can increase or decrease economic growth. The fast recovery after calamities is extremely important for the economy. Institutions can determine the scale of the consequences from such events, e.g. the inflation that can affect the economic growth in the long term. Nations can considerably decrease the negative aspects of the natural disasters by planning a number of preliminary, current and follow-up measures for coping with the phenomenon.[6]

As a whole two big categories of natural disasters exist: climate disasters and geological disasters. Climate disasters are related to climate and are a result of the influence of atmospheric phenomena. Floods, hurricanes and draughts are the biggest climate disasters that affect countries on a global scale. They influence people and their capital through the powers of wind and water. Geological disasters include earthquakes, volcanic eruptions and natural calamities brought about by geological changes. The effects of the geological disasters are harder to predict because of the aftershock effects.

4. The Link Between Natural Disasters and the Economy

The jury is still out on the effects of natural disasters on the long-term growth of the economy. Only one study has concluded that natural disasters can stimulate economic growth in the long run. The authors of this research – Skidmore and Toya - reach the conclusion that climate disasters excluding draughts can lead to a raise in the pace of economic growth but they were unable to find proof that geological calamities on the other side cause a drop in economic growth.[7] They are the only authors that support the idea that natural disasters can stimulate the economy in the long run.

Other studies reach different conclusions. Rasmussen concludes that in the long run the consequences of natural

[5] www.ehow.com/ The Effects of Natural Disasters on the Economy, eHow Culture&Society Politics Economy, 2012.

[6] http://business.uni.edu/economics/ Popp, A., The Effects of Natural Disasters on Long Run Growth, 2006.

[7] Skidmore, M. and H. Toya, Do Natural Disasters Promote Long Run Growth? Economic Inquiry, 2005, pp. 664-688.

disasters for the economic growth are more likely to be ambiguous. He notes that natural disasters can slow the economic growth through an irreparable destruction of agriculture, tourism, fishing and other natural resources of the affected country. According to him the efforts for recovery can lead to reduction in investment, raise in the interest rate and the occurrence of inflation and financial crisis, which would result in a reduced economic growth.[8]

Auffret on his part determines that it is difficult to predict the effect of natural disasters on the long-term growth of the economy because the growth perspectives of the country depend on the promptness and success of the recovery processes. However he does not present empirical proof to support his case.[9]

Benson and Clay emphasize that the economic consequences of natural disasters depend on countless factors. According to them, each calamity has a unique influence on the affected country and its economy.[10]

5. The Impact Of Natural Disasters on Key Macroeconomic Variables

Natural disasters affect certain key macroeconomic variables. These are: natural resources, material capital, human capital and technology. These are the four basic macroeconomic variables that we are going to analyze. Usually under regular circumstances they have a positive effect on long-term economic growth. If the net effect of natural disasters on the macroeconomic variables is positive, then we have economic growth. If the net effect on the macroeconomic variables is negative, then natural disasters have a negative influence on the economy of the affected country and bring the country to an economic downturn. In most cases, the net effect is ambiguous. Such is also Rasmussen's opinion, as we mentioned above.

Natural resources are the first key macroeconomic variable that we are going to discuss. Natural disasters usually affect a big part of the natural resources fund of the affected countries. For instance, hurricane Isabel in 2003 caused losses amounting to more than 550 million dollars in North Carolina. Hurricanes and draughts can remove the upper layer of the soil and lead to reduced fertility, which would harm the agricultural crops. Tourism is also largely affected by natural disasters, especially in cases where important and popular national heritage sites are involved.

But the effect of natural disasters on natural resources is not always a negative one. Floods for example supply the soil with sedimentary compounds that increase agricultural production. Ash from volcanic eruptions also enriches the soil. Positive consequences are observed also in tourism. A natural disaster in some cases is seen as being of use for a given destination. For instance, the volcanoes in Hawaii attract countless curious tourists that perceive them as a tourist attraction.

Material capital is the second key macroeconomic variable that we are going to examine. Its accumulation plays a vital role in accomplishing economic growth. Material capital allows workers to achieve higher productivity. Since economic growth is closely related to the output of workers, bigger quantity of capital in the economy should lead to higher income per capita. Natural disasters destroy the material capital. Change in the latter depends on the investment made for the recovery of the affected country. Bureaucratic procedures, corruption and a low level of insurance might slow down or even prevent the

[8] Rasmussen, T. Macroeconomic Implications of Natural Disasters in the Caribbean. Working Paper 04/224, *International Monetary Fund,* EconLit, 2005, p. 11-12.

[9] Auffret, P. High Consumption Volatility: The Impact of Natural Disasters? Working Paper 2962, *The World Bank*, EconLit, 2006, p. 17.

[10] Benson, C. and E. Clay. Disasters, Vulnerability and the Global Economy, in *Building Safer Cities: The Future Disaster Risk*. Washington DC: The World Bank, 2005, p. 14-19.

reconstruction of the material capital. Empirical evidence shows that natural disasters can really have a negative effect on the accumulation of material capital.

Human capital is the third macroeconomic variable we shall look at. It positively influences economic growth in most cases. Investments in it lead to higher productivity. Natural disasters affect the human capital in several ways, which makes the analysis quite hard. First of all, natural disasters can severely deplete the human capital if there are many casualties. Between 1970 and 2010 just three natural disasters (excluding draughts) have caused the death of 100 thousand people, and 19 disasters – the death of more than 10 thousand people. From the latter, five have occurred in India, three in Bangladesh and two in Iran. The rest have happened in Central and South America, Armenia and Turkey. The improvement and sophistication of the warnings for natural disasters allow people to take the necessary precautions. The effect of natural disasters for the population can be relatively minor through the use of modern technologies for warning and predicting.

Another potential negative influence of natural disasters on the human capital is the damage to the educational system through the destruction of the material base of the educational facilities in the affected countries. For example, hurricane George in 1998 affected 28 per cent of schools in the Dominican Republic and the government decided to use the buildings of 443 of the biggest schools as shelters for the homeless. The damages force about 100 thousand students to discontinue their classes for several weeks. If the countries do not possess enough finances for the recovery of the schools in such situations, then the consequences for the human capital will only increase with time.

Calamities can have a negative impact on the human capital even if the schools are not destroyed. In poor countries, when a family is directly affected by a natural disaster, children can be forced to leave school in order to limit the expenses and increase the income of the family. In this way the number of qualified and educated people is reduced, which subsequently influences negatively the economy. Some countries are in a position to avoid the negative consequences on the human resources in the long run thanks to the influence of local institutions. Through a number of measures the local authorities can quickly and efficiently repair the damage caused by the disaster.

The fourth key macroeconomic variable is technology. The high level of technology embodied in the material capital raises the productivity of the economy. Measuring the level of technology used in the economy is, however, a difficult undertaking. It requires an analysis of the connection between natural disasters and the common factor, such as the productivity of labor. The common factor productivity directly measures productivity of labor and capital and thus indirectly measures the level of technologies used in the economy. In this way it also indirectly measures institutional stability, the availability of natural resources and the stability of the political climate.

Draughts do not affect macroeconomic variables to such a degree as other natural disasters and they do not usually destroy the material capital. In developed countries with stable institutions and economies, draughts do not endanger human life. They affect mostly agricultural interests and the use of water resources. The agricultural interests in countries with stable institutions can overcome without any trouble the initial consequences of the draughts. Insurance protects farmers against the initial economic losses and allows them to continue working. But if institutions do not work effectively enough, the negative effects multiply.

There can be catastrophic losses of human life from draughts and these are a consequence of institutional factors and the lack of food for the local population. The lack of food causes fundamental changes in the economy, which leads to a reduction in the economic growth of the affected country. In poorer and underdeveloped countries the lack of infrastructure leads to the inability of rescue teams and non-government organizations to help the starving people. Draughts can affect the institutional stability and the political climate of the affected country, especially if the country is otherwise unstable or the disaster is large-scale. Draughts can lead to wars and internal conflicts, which reduce the economic growth. But as a whole it has been proven that draughts do not have a negative effect on the long-term growth of the developing countries, but rather have a more short-term influence.

6. Connection Between Natural Disasters and the Financial Markets

According to widespread beliefs, calamities like hurricanes and earthquakes, especially ones of high magnitude, have a negative impact on financial markets. But is that really true?

According to predictions made at the time when hurricane Katrina was still raging, real estate, stock market prices of material and human resources, and even the purchasing power of the dollar would have been affected in the following months. The prices of petrol would have risen and this would have been felt by the American people and the whole economy. But if someone followed those predictions and played on the stock market with the idea that fund indexes were going to collapse and petrol was going to skyrocket, he surely sustained substantial losses due to the total mismatch between predictions and reality.

And what was the reality at that time, after hurricane Katrina? Let's look at the facts: by September 7th 2005 the main market indexes DJ, S&P500 and NASDAQ100 are between 3.5 and 4% higher as opposed to the bottoms by the end of August when everyone was waiting for the hurricane to hit the US territory. The prices of petrol on their part had dropped by about 10% from their peaks of 70$ per barrel. That was yet another discrepancy between the market reality and the opinions of analysts making predictions and commentaries.

The price of the dollar went up in relation to the European currency. Here we must specify that when the trend in the EUR/USD proportion is ascending, this means a rise in the price of the euro, and vice versa. After the prediction mentioned earlier, the only findings that came out in the following days were against it. These findings showed that to explain the market behavior, one needs to seek the reasons not in outside factors such as natural disasters but in the prevailing mood among the people. The participants' emotions are the true reason that will make the predictions more accurate. The mark can be found among different instruments such as indexes, currencies and commodities. The technical analysis and the skills required in order to make it correctly are what gives a substantially higher chance for a reliable prediction of prices.

Let's entertain the idea that public mood is not at all a function or a consequence of outside events such as natural disasters. Many who are not familiar with the market situations, when conducting short observations on the stock market, make the hasty conclusion that when there are bad news you should buy and when there are good news you should sell. If the reality was such, it would be very easy to make profit. A short examination of the influence of the most destructive earthquakes in the USA since the beginning of the 20th century gives us a better understanding of the aforementioned. It turns out these dramatic events for the American life and wellbeing that caused billions of dollars in damages do not have an unambiguous effect on stock markets.

The earthquake of March 1963 was the strongest registered on the American continent. Its magnitude was 9.2 on the

Richter scale. It was followed by tsunami and fires. It happened in the relatively early stages of an emerging big financial market, which continued until the end of January 1966. In other cases earthquakes happened just before an important bottom or top of the market indexes.

From the above said it can be concluded that in order to trade successfully, a person should follow a non-conventional logic even if it's not popular. News and events are hard to cover by an individual participant and following them can only do harm. On the winning side we have the interpretation of the public mood through a graphical representation of the various instruments. It gives the clearness that psychological and social factors do not have. Only when understood that the graph is not merely a picture but behind each of its fluctuations in one direction or the other lay hidden the hopes, dreams, woes and pains of millions of people around the world, only then can one begin to truly understand the stock, currency and commodity markets.[11]

7. Relation between Natural Disasters and the Financial Crises

There are two possible sources of inflation in countries affected by natural disasters. Firstly, inflation can result from increased external debt. Recovery after a natural disaster costs a lot of money to society and governments are obliged to pay a large part of it. However they cannot afford to amass further foreign debt. That is why institutions representing the government can put pressure on the central bank to print more money so as to put a stop to the financial crisis. As a result of the excessive printing of money, inflation arises in the affected country. In countries with stable institutions the government cannot influence the central banks' policy. But in less developed countries with unstable institutions there is a bigger risk of problems related to financial crises and inflation.

It can be said for sure that financial crises can originate from natural disasters. Governments do not necessarily have a budget allocated to recovery from natural disasters or other emergency situations. After a series of earthquakes in Turkey in 1999 the amount of taxes collected from the most affected regions dropped significantly. The slowing down of the region's economy is not the only reason for the decline in tax revenues. The effects of the natural disasters in the long run impede the tax-gathering efforts. The government raised taxes everywhere in an effort to compensate the loss of revenue. Different international institutions such as the European Union, the World Bank and the IMF offered Turkey over 2 billion dollars in loans. The government spent around 6.4 billion dollars for recovery. Economists expected the total sum of the expenses of the Turkish government, including the initial expenses and the interest, to be about 14 billion dollars, which would be a heavy burden for the government. Those expenses really caused huge difficulties.

In regions that have suffered infrastructural damage inflation may arise as a result of the market forces. The prices of commodities may rise after natural disasters because the impaired infrastructure can lead to interrupted delivery of goods such as foodstuffs. The demand for goods also increases as calamities destroy the personal belongings and homes of the population. The best way to control inflation caused by the rapidly increasing prices is to restore infrastructure as soon as possible.

Whether or not the rising inflation will have a substantial effect on the long-term plan for economic growth is a controversial issue. The traditional belief is that the effect of inflation on economic growth is negative. But it is controversial whether inflation has a negative impact in the long run. Economic

[11] http://home-traders.eu/prirodni-bedstvia.html Gruev, Iv. How Do Natural Disasters Influence Markets?, 2011.

experts Bruno and Easterly have found that the relation between inflation and the growth of the economy is minor in the long run.[12] In countries with high inflation and inflation crises, economies accomplish growth after the inflation slowdown.

Inflation in poor countries can have short-term effects that could however lead to long-term consequences for the human resources. If wages do not make up for inflation, the actual income of every household will drop down. Parents will not allow their children to attend school since they will try to save as much as they can, as we have already mentioned. The longer parents keep their children away from the educational system, the bigger the drop in qualification of the human capital will be in the future. The children's health may suffer as a consequence of the decreased income of their parents. Empirical data shows that inflation leads to increasing malnutrition among children.[13] Thus financial crises that result in inflation will lead to economic decline of the affected countries.

8. Summarized Look on the Influence of The Environment on the Competitiveness of the Economy

Even though natural disasters are often portrayed as rare and unexpected tragedies, the truth is that nowadays they happen more often, affect more people and cause bigger economic damage. Statistics show a rising trend in the number of calamities recorded annually. Floods, earthquakes, hurricanes, volcanic eruptions, extreme heat, fires, etc. do not cease to torment people across the globe. Due to the growth in world population, the fast urbanization, the damaging of the environment and the climate change, the number of people affected by natural disasters in the last 20 years has grown considerably. Natural disasters have a disproportionally large effect on poor countries. In the last 25 years a shocking 95% of all injured or affected people are inhabitants of 112 countries, classified by the World Bank as low income countries.

The combination of poor city management, economic poverty, inadequate urban planning and improper overbuilding is an inevitable premise for amplifying the effect of natural disasters. They are not just accidents but a product of the constantly changing relations between natural dangers, social and physical conditions and the existing systems for risk management aiming to protect us. With a few exceptions people do not die from strong winds or seismic waves but rather from the effect these natural disasters have on their environment. The high density of the population, the fast urbanization, and the unfavorable placement of a number of big cities increase the destructive effect of the calamities. Even though unconsciously, cities increase the risk of disasters through the concentration of heat and pollution from power plants, industrial processes and hundreds of thousands of running cars.

It has been proven that natural disasters have an effect on the growth of the economy in the long run. The key macroeconomic variables influenced by natural disasters, as we mentioned earlier, are natural resources, material capital, human resources and technology. Under normal circumstances these four variables help increase the growth rate of the economy. Whether the net effect of the natural disasters on the economy is positive or negative depends on the nature of the calamity and on the readiness for recovery of the affected country.

The role of the institutions in the country is to guarantee the efficient and quick recovery after a disaster. In this way the positive effects from the natural disaster are maximized and the negative effects are minimized. Stable institutions decrease the

[12] Bruno, M. and W. Easterly. Inflation Crises and Long Run Growth. Working Paper 1517, *The World Bank*, EconLit, 2005, pp. 20-21.

[13] Skoufias, E. Economic Crises and Natural Disasters: Coping Strategies and Policy Implications. *World Development*, 31: 1087-1102, 2006, pp. 1091-1092.

possibility of financial crisis in the aftermath of the disaster and minimize the shock of the population.

Comparatively minor disasters that affect a small area in big countries have a negligible effect on the growth of the economy in the long run but the same disaster might ruin the economy of a small country. In addition we can say that natural disasters that hit a country can have a very strong effect on the exchange rate of its currency, this effect being in direct ratio to the magnitude of the calamity.

Earthquakes, floods, tornadoes and hurricanes severely hurt the economic life of a country. The loss of human life, the damage inflicted on the basic infrastructure and the halt of the production in factories with key significance to the economy lead to considerable losses for the currency as well. The economy of every country can turn upside down as a consequence of natural disasters. Not only is economic growth interrupted, but the recovery is extremely expensive, often connected to printing of money and an increase in deficits, which once again reflects negatively on the currency of the affected country.