

**CRISIS AS A CATALYST: THE ROLE OF  
SCHUMPETERIAN INNOVATION IN THE  
LITHUANIAN ECONOMY**VINCENTAS GIEDRAITIS, PH.D.,  
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**JEL Classifications:** O31,O32**Key words:** Schumpeter, innovation, Kondratiev wave, biotechnology, business cluster theory**Annotation:** What circumstances allow businesses to flourish in a stagnant world economy? We ask that question in our discussion of the uniquely favorable circumstances of the biotechnology sector in Lithuania. The purpose of this paper is to analyze Lithuania's ability to expand its economy during a time of crisis, focusing on its unique ability to innovate in such sectors as biotechnology.**Introduction**

This paper aims to provide an overview of the current state of Lithuania in the context of the global economy by focusing on the country's ability to innovate in the field of biotechnology. To what degree might biotechnology contribute to macroeconomic indicators suggesting national economic growth? We draw upon a modified form of wave theory, Schumpeter's process of innovation, and Porter's business cluster theory to analyze the potential of Lithuania's biotechnology sector and to test our hypothesis: The Lithuanian biotechnology sector is expanding because of the establishment of business clusters.

**Theoretical framework**

The ideas of Joseph Schumpeter (1943) can be drawn upon in the case of Lithuania to emphasize the importance of innovation on one hand, and the danger of stagnation on the other. Schumpeter popularized the term "creative destruction," by which he meant that innovation by entrepreneurs has the ability to radically change stagnant industries or an even an entire economy.

Schumpeter suggested that innovation and entrepreneurship acts as a sort of engine for economies to expand. National institutions such as the government and economy must create favorable conditions for the entrepreneur to be able to bring new commodities to the market. In such countries as Lithuania, still undergoing a post-Soviet transition, opportunities abound for new business ideas.

Schumpeter placed great emphasis on the role of Kondratiev waves in explaining the expansion of businesses through innovation. Rather than a condition of stagnation via Walrasian equilibrium, Schumpeter noted that innovators can breathe life into an economy through the introduction of new technologies and innovations. For example, Schumpeter noted that the steam engine as perfected by James Watt in the 1760s helped to bring about the Industrial Revolution.

Generalized clusters emerge when human activities are likely to agglomerate to shape urban areas. This phenomenon has traditionally been labeled urbanization economies. The clustering of activities produces the basis for sharing the costs of a variety of services. Larger aggregate demand in an urban area leads to the emergence and growth of various infrastructural, economic, social and cultural activities which cannot occur when costumers would be geographically dispersed. Specialized clusters emerge when firms in the same or closely related industries establish in the same locations to form what is sometimes coined industrial zones. This phenomenon is known as localization economies. The bases of specialized clusters emerge because of the geographical proximity of firms that perform different but linked functions within certain production networks (Dicken, 2003).

**Innovation and Lithuania**

Biotechnology may potentially be a similar "disruptive" technology, with Lithuania being at the confluence of a number of favorable factors. The theoretical discussion of business clusters can be applied to biotechnology, where it is a regional leader. According to the Lithuanian Biotechnology Association, the biotechnology sector in Lithuania has been growing by about 22% yearly for the past five years. Two such companies, Fermentas and Sicor Biotech were sold in 2007 for more than 28 million Euros (Innovations Report, 2008).

An explanation of why foreign companies invest in biotechnology in Lithuania is due to the relative "natural monopoly" status that this industry had enjoyed in Lithuania since the fall of the Soviet Union. In 1975, the biotechnology firm Fermentas was a part of the former Institute of Applied Enzymology, which was a Soviet funded genetic research laboratory. After Lithuania's independence, the firm began to operate independently, and began expanding operations globally, with joint ventures in Germany, Canada, and the United States. Thus, unlike other places where labor is relatively inexpensive, such as Mexico, Lithuania had such relevant factors as an educated

workforce or the already built factories and researchers.

For these reasons, we also argue that there is strong aspect of business clustering present in Lithuania (Porter, 1990). Biotechnology firms are clustered about Vilnius, and have ties with business and research centers at Vilnius University. Therefore, there was momentum in the development of the Lithuanian biotechnology sector that other regions did not have. Building on this momentum the Vilnius city municipality and two major universities (Vilnius University and Vilnius Gediminas Technical University) are building a major research park, the Saulėtekio Slėnis (Sunrise Valley). At the same time, a relevant question is why American pharmaceutical companies, such as Eli Lilly, have opened factories in much more expensive Denmark. One explanation may be because business clusters were already present in that country, while Lithuania's was still being privatized.

Another positive development of the biotechnology industry in Lithuania is related to immigration and the "brain drain" phenomenon. As an example, seventeen advanced Lithuanian experts who had previously emigrated have decided to return to the Vilnius Institute of Biotechnology. Dr. Daumantas Matulis from the Institute of Biotechnology, has stated that, "The growing importance of life sciences and biotechnology in Lithuania is being recognized with ScanBalt Forum 2008 to take place in Vilnius. This is a chance to promote Lithuania as an attractive place to work, live and invest. We intend to further strengthen our position as a strong player within life sciences and biotechnology in the Baltic Sea Region" (Innovations Report, 2008). More generally, the rate of Lithuanians migrating abroad appears to be reducing, perhaps due to increasing opportunities domestically (Gruzevskis, 2007).

All things equal, per capita, Lithuania needs fewer innovators to make potentially large changes in its much smaller economy, which unlike EU-15 countries, is still in a condition of flux. Given such evidence, we find that our hypothesis of business clusters being a cause of the success of biotechnology in Lithuania to be supported.

Another advantage for Lithuania in terms of innovation is the attractiveness in the previous regard to foreign direct investment. Although Lithuania may lack the capital of "old Europe," it has a skilled and educated workforce, and low labor costs. This makes it an attractive place for foreign firms that want to also "out innovate" the competition. Why build a factory in the traditionally more expensive EU-15, than in the less expensive business climate of such new member countries at Lithuania?

Again borrowing from Schumpeter, the current economic crisis can in a sense be seen in a positive light for tiny Lithuania. While the economy is under stress, Lithuanian firms can continue to innovate. However, when the global economy does improve -

which, with time, it will - it will take a far smaller "push" to restore Lithuania's economy to a strong position, compared to much larger EU-15 countries. Although premature to draw any conclusions, there are glimmers of hope. For example, the IMF's Robert Zoellick stated on March 22 2009 that, weighted down by large, sluggish economies, the global economic recovery is expected in 2010, at which point major economies will break even. However, developing nations' economies such as Lithuania's are expected to expand by up to 4.5% (World Bank 2008a).

Lithuania has certain real advantages compared to larger economies in terms of innovation. First, Lithuania's industries are still in a relatively nascent stage. Twenty years after the collapse of the Soviet Union, its industries are specializing and adapting to a global marketplace faster than the industries of such "old Europe" countries as Germany. This is a case of the so-called "second place advantage," where a newly opened economy can learn from the mistakes and consequently "out innovate" them, since they have no new infrastructure to need to replace. Regionally, the European Commission states that biotechnology will be a very important part of Europe's economy in the coming decades. Although information about the biotechnology sector in Europe is incomplete, Ernst and Young find that the Lithuanian biotechnology market is one of the largest in the region. 99% of biotechnology products are exported to 86 countries. In 2006, the biotechnology industry had sales in excess of 90 million Euros. Among former Communist countries, Lithuania follows only Hungary in sales volume. The Lithuanian government is wisely investing in this up and coming sectors by increasing biotechnology research funding during the last five years (Innovations Report 2008).

## **Conclusions**

Although Lithuania's economy had been growing, the overall rate of economic development in Lithuania compared to other countries is not as rapid. One explanation is that foreign investors may be increasingly diversifying their investment to more countries, causing the rate of investment and development in Lithuania to flatten out. Additionally, with the increasing cost of labor in Lithuania, foreign investors may find it more profitable to invest in a country with a less expensive workforce. Low costs are not the only explanation for diversification. Companies may also seek technological success by using local, highly educated talent. We found that Lithuania is well-poised to weather the current economic crisis compared to other countries.

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