The Prize in Economic Sciences 2008

This year's Laureate is awarded the Prize for his research on international trade and economic geography. By having shown the effects of economies of scale on trade patterns and on the location of economic activity, his ideas have given rise to an extensive reorientation of the research on these issues.

International Trade and Economic Geography

How are we affected by globalization? What are the effects of free trade? Why do increasing numbers of people flock to large cities, while rural areas become depopulated?

These questions cannot be answered without a theoretical foundation. For a long time, the analysis of foreign trade had been based on a well-established theory which explained why some countries export certain goods and import others. After World War II, however, it became increasingly obvious that important trade patterns did not quite correspond with that theory. In 1979, the US economist **Paul Krugman** proposed a new model which provided a better explanation for the observed patterns.

In later research, Krugman has shown that the model he initially developed for international trade could also be used to clarify key issues in economic geography. In the context of both foreign trade and economic geography, the objective is to explain *what* goods are produced *where*. Theories of economic geography also attempt to specify the forces whereby labor and capital become located in certain places and not others.

Traditional Foreign Trade

In the early 1800s, the English economist David Ricardo launched the theory of so-called comparative advantage to explain the range and composition of international trade. This theory, which was extended during the 1920s and 1930s by the Swedish economists Eli Heckscher and Bertil Ohlin, implies that foreign trade is based on differences among countries. Ricardo studied countries which differ in terms of technology. Heckscher-Ohlin considered countries which differ in terms of access to factors of production; some countries have a relatively abundant supply of labor but a scarcity of capital, whereas the opposite prevails in other countries. The result is that some countries should specialize in and export, for example, industrial products and import agricultural products – and vice versa.

Since its inception, this theory seemed capable of explaining the vast majority of international trade. Over the last half century, however, researchers observed increasingly large deviations from the trade patterns predicted by Ricardo and Heckscher-Ohlin. So-called intra-industry trade has expanded, in particular between rich countries. Such trade implies that a country both exports and imports more or less the same goods. A country such as Sweden, for example, exports and imports cars. This would not be compatible with the theory of comparative advantage unless the production of Volvo cars required a wholly unique technology, or a completely different combination of labor and capital than, for instance, production of BMW cars. But this appears highly unlikely.

Almost 30 years ago, Krugman introduced an entirely new theory of international trade. It was intended to explain the occurrence of intra-industry trade and was based on an assumption of economies of scale whereby mass production diminishes the cost per unit produced. The basic idea is rather self-evident, but the step from speculation to a stringent and cohesive theory is substantial – and this was precisely the step Krugman took in his short, 10-page article in the *Journal of International Economics* in 1979.

Consumers Appreciate Diversity

In addition to economies of scale in production, Krugman's new theory was based on an assumption that consumers appreciate diversity in their consumption. At the time, this was a rather new concept in economics, but it appeared to correspond to reality. Indeed, most of us have witnessed greater diversity in the supply of available commodities. As consumers, we are constantly tempted by a growing number of brands, even though we might sense that a standard car, a standard pair of jeans or standard toothpaste would suffice. After our basic needs for food and housing have been satisfied, it seems as if we opt for diversity and variation in our consumption. Two years earlier, in 1977, Avinash Dixit and Joseph Stiglitz had published a model for analyzing consumers' preferences for product diversity. According to this model, each producer, working under increasing returns to scale, becomes more or less a monopolist in terms of his own brand, even though he is subject to sharp competition from other brands.

Such a model can be used to show that foreign trade will arise not only between countries which are *different* (as in the traditional theory), but also between countries which are *identical* in terms of access to technology and factor endowments. Moreover, it can be demonstrated that extensive intra-industry trade will occur. In fact, it becomes advantageous for a country to specialize in manufacturing a specific car, and to produce it for the world market, while another country specializes in a different brand of car. This allows each country to take effective advantage of economies of scale, thereby implying that consumers worldwide will benefit from greater welfare due to lower prices and greater product diversity, as compared to a situation where each country produces solely for its own domestic market, without international trade.

Krugman's initial article is brief and straightforward. Owing to its simplicity, the international research community could quickly ascertain that it pointed to vital mechanisms in the economy. In many subsequent articles and books, Krugman himself, as well as other researchers, have endowed the theory with greater realism. Today, the general view is that the basic mechanisms specified by Krugman constitute an important complement to the traditional Heckscher-Ohlin theory. The truth, as in so many other instances, is that reality encompasses features of both theories. This has resulted in lively empirical research aimed at determining the extent to which foreign trade can be explained by the earlier theories as compared to the new theory. In general, the new theory of international trade has inspired an enormous field of research, which is usually a reliable indication of theoretical quality.

Economic Geography

Economic geography deals not only with what goods are produced where, but also with the distribution of capital and labor over countries and regions. The approach Krugman used in his foreign trade theory – the assumption of economies of scale in production and a preference for diversity in consumption – was also found to be appropriate for analyzing geographical issues. This allowed Krugman to integrate two disparate fields in a cohesive model.

The embryo of the theory which would come to be called the “new economic geography” had already appeared in Krugman’s 1979 article. In the final pages, he asks what would happen if foreign trade became impossible, for instance due to excessively high transport costs or other obstacles. His line of reasoning is as follows. If two countries are exactly alike, then welfare will be the same in both countries. But if the countries are alike in all respects except that one of them has a slightly larger population than the other, then the real wages of labor will be somewhat higher in the country with more inhabitants. The reason is that firms in the more highly populated country can make better use of economies of scale, which implies lower prices to consumers and/or greater diversity in the supply of goods. This, in turn, enhances the welfare of consumers. As a result, labor, i.e., consumers, will tend to move to the country with more inhabitants, thereby increasing its population. Real wages and the supply of goods will then continue to increase even more in that country, thereby giving rise to further migration, and so on.

Twelve years would pass, however, before Krugman reconsidered these ideas. In an article published in 1991, he developed these concepts into a comprehensive theory of location of labor and firms. Here, he assumes that although trade is possible, it is obstructed due to transport costs. Otherwise, labor is free to move to the country or region which can offer the highest welfare, in terms of real wages and diversity of goods. Firms’ location decisions imply a trade-off between utilizing economies of scale and saving on transport costs.

Concentration or Decentralization?

The above considerations evolved into the so-called *core-periphery model*, which shows that the relation between economies of scale and transport costs can result in either concentration or decentralization of communities. Under certain conditions, the forces which contribute to concentration will dominate. Regional imbalances arise and most of the population will be concentrated in a high-technology core, whereas a small minority will inhabit the periphery and live off agriculture. Such a mechanism could underlie the explosive urbanization witnessed today throughout the world, with rapidly growing megacities surrounded by increasingly depopulated rural areas. This is not necessarily the only possibility, however. Under different conditions, the forces which give rise to decentralization will dominate. This promotes somewhat more balanced development. Krugman’s model can be used to account for the mechanisms at work in both directions. For example, his model indicates that declining transport costs easily generate concentration and urbanization – which seems particularly noteworthy since transport costs have exhibited a declining trend throughout the twentieth century.

Other Endeavors

In addition to his scientific research, Paul Krugman is highly appreciated by his students as a pedagogical lecturer and author of textbooks. In wider circles, he is better known as a lively blogger and spirited columnist in the *New York Times*.

LINKS AND FURTHER READING

More information about this year's prizes, including a scientific background article, is to be found at the Royal Swedish Academy of Sciences' website, *www.kva.se*, and at *http://nobelprize.org*. You can also see the press conference there as web-TV. Further information about exhibitions and activities concerning the Nobel Prizes is available at *www.nobelmuseum.se*.

Selected Scientific Articles

Krugman, P (1979) Increasing Returns, Monopolistic Competition, and International Trade, *Journal of International Economics* 9: 469–479.

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Krugman, P (1991) Increasing Returns and Economic Geography, *Journal of Political Economy* 99: 483–499.

Popular Science literature

Krugman, P (2000) *Geography and Trade*, MIT Press, Cambridge, MA. 85 pp.

Krugman, P & Obstfeld M (2009) *International Economics: theory and policy*, 8th edition, Pearson. Ch 6–7, 712 pp.

THE LAUREATE

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