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Introduction

Outsourcing and fragmentation: Blessing or threat?

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On a perfect morning in September 2004, I was sailing in the Adriatic Sea along the Croatian coast. The captain of the boat showed me a new super pocket-gadget with a digital phone, mini-computer, camera, and music box all rolled into one. He told me that international press agencies, newspapers, television networks, and radio stations were all reporting that a giant of economics, Paul A. Samuelson, was challenging orthodox views on globalization and outsourcing. He then told me that I was welcome to download these reports from his pocket-gadget. It is a sign of our times that Samuelson's challenge to the orthodoxy was not to appear in the Journal of Economic Perspectives until a full month had passed.

The New York Times picked up the story of Samuelson's challenge on September 9:

> In his article, Mr. Samuelson begins by noting the unease many Americans feel about their jobs and wages these days, especially as the economies of China and India emerge on the strength of low wages, increasingly skilled workers and rising technological

What did I think of the controversy? Quite frankly, I was thinking of something else: What a great decision North Holland had made to publish a special issue of *International Review of Economics and Finance* devoted to "Outsourcing and Fragmentation: Blessing or threat?" One could hardly pick a hotter topic at a better time.

The papers contained in this issue bring together theory and empirical work. Wilfried Ethier kicks off with just the right model required to analyze the main issues of globalization—skilled–unskilled labor wage differentials, unemployment, technological change and its possible bias, and finally, independence of national social policies in the new global economy. He reminds us of the following three stylized facts: 1) the relative price of skilled-intensive goods has been increasing, 2) despite this increase, the skilled/unskilled employment ratio has been rising across industries, and 3) the rising skill premium

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occurs in rich and poor countries alike. The results of this rich paper hinge on the nature of substitution between skilled labor and equipment on the one hand, and substitution between unskilled labor and outsourcing on the other.

Alan Deardorff follows Ethier with a trade theorist's take on skilled-labor outsourcing. Here again the point of departure is a stylized fact that contradicts the standard Heckscher–Ohlin model. Why do skills-rich countries outsource skilled labor services to countries with poor endowments of skills? After all, in the HO world the absence of commodity price equalization implies that US skilled workers should have lower wages than their counterparts in developing countries. Clearly, the standard model needs modification. Perhaps the assumption of identical technologies should be the first to go. The Deardoff one-sector two-activity model assumes that the North has a technological advantage over the South. Technological parameters can readily be fixed in such a way that the outsourcing of skilled- and unskilled-intensive activities to the South makes perfect sense. Why does outsourcing take place only now, though, given that the North–South wage differentials existed before? Read the Deardorff paper to find out.

Outsourcing of production and the emergence of international production networks have resulted in the rapid growth of trade in parts and components, fragments, or middle products (just a few of the terms used to describe this phenomenon). Over a decade ago Ronald Jones and Henryk Kierzkowski provided a framework to describe why fragmentation of production takes place and how it gives rise to international trade flows. The framework involves alternative production processes with varying degree of fragmentation. The existence of different production stages requires services to coordinate production, to move parts and components between alternative locations, to ensure that the quality of components meets required standards, and so on.

In the most theoretically oriented paper in this volume, Henry Wan casts the Jones–Kierzkowski framework in terms of non-convex general equilibrium. Assuming free entry, a constant marginal cost in manufacturing, and a positive fixed cost in servicing, Wan demonstrates that the resulting market structure is neither perfect nor imperfect competition, nor Bertrand-type oligopoly. He then develops a generalized equilibrium concept which relies heavily on full employment and profit conditions. The workings of the model are illustrated under simple Ricardian technology in fabrication and Leontief technology in assembling.

Ngo Vang Long looks into the benefits and costs of outsourcing. Long points out that while outsourcing is likely to bring about cost savings, the initiating firm is also likely to face additional costs—notably those associated with training of foreign labor. This is a blessing to rival firms that, as a result, may benefit from lower production costs. The decision to outsource or not to outsource must take technological spillovers into account. Under a realistic scenario, Long demonstrates that firms may not go all the way in moving their production to foreign locations.

The second part of this special IREF issue consists of empirical studies. Jones, Kierzkowski, and Chen Lurong confront the JK model with data on international trade in parts and components. This type of trade grew between 1990 and 2000 from $355 billion to $846 billion, a rate of growth much higher than that of world GDP, world trade in general, and intra-industry trade. As predicted by the theory of production fragmentation and outsourcing, the main sources of this growth have been the world income expansion and the lowering of service links costs. This result stands in contrast to the prediction of the new geography and trade theory: agglomeration is expected to accompany economic growth.

In seeking the best location for production of various stages, geography weighs heavily in the decision making process. Moving things around or back-and-forth imposes transportation costs. As production

gets spatially separated, the degree of managerial control over the fragmented production process is affected. Fukunari Kimura and Mitsuyon Ando point out that less control over production has a cost, and the calculus of fragmentation becomes thus more complex. The two dimensions of fragmentation are useful in explaining whether outsourcing takes form of intra-firm or arm's-length transactions. This is well documented in the Kimura–Ando paper which uses micro data for Japanese firms. One of their important findings is that Japanese manufacturing affiliates in East Asia tend to substitute arm's-length transactions for intra-firm transactions.

Most concerns about outsourcing regard its effects on labor markets. While it is easy to cite cases of adverse impact in a particular industry or region, more scientific evidence is needed. Hartmut Egger and Peter Egger set out to provide just that. Even if outsourcing was limited to a single sector, proper accounting should take into consideration possible cross-industry effects. General equilibrium models of international trade stress the interdependence of commodity and factor markets.

The Egger–Egger study considers spillover effects for 21 two-digit Austrian industries in the 1990s. The variable under investigation is relative employment in the Austrian economy. They find that spillover effects account for as much as two-thirds of the total employment effect from international outsourcing.

The impact of outsourcing on employment is also analyzed by Holger Görg and Aoife Hanley. Their empirical work, based on micro-data generated by Irish electronics plants, nicely complements the Austrian study. Görg and Hanley find negative employment effects due to the outsourcing of materials used in production. These are short-term effects; it remains to be seen whether they are sustained over a longer time horizon. As the Egger–Egger study stresses, the overall employment effects of outsourcing are not limited to individual sectors, and even less so to individual plants. It should also be kept in mind that Ireland had been a big winner in the outsourcing game, with the electronics sector attracting a great deal of foreign investment.

When foreign producers move some of their activities to a country, there is no guarantee that the move is permanent. Central Europe has a number of attributes which make it attractive for outsourcing-good location, low wages, skilled labor, and, since May 1st, 2004, membership in the European Union. Bartlomiej Kaminski and Francis Ng, in the last paper in this issue, analyze the outsourcing experience of 10 Eastern and Central European countries. Participation in international production networks seemed to have been an efficient way of joining the world economy, and has been embraced by many transition economies. The furniture industry was the first sector where Western European firms (IKEA is a case in point) started outsourcing. The relationship has gradually evolved and spread into the automobile and IT sectors. Simple assembling operations have given way to the processing and local production of parts.

As the papers in this issue document, outsourcing has become a world-wide phenomenon. It is only the beginning of what seems an inexorable process. In 1972, Henry Kissinger asked Chou En-Lai what effect the 1789 French Revolution had on Western civilization. The Chinese Prime Minister reportedly replied: "It is too soon to tell." Though it is too soon to tell the complete story of globalization and outsourcing, the investigation has begun.