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Introduction

Magnus Blomström and Linda S. Goldberg

Understanding the complex world of economics requires simplification in the form of theories and models. Using the insights from theories and models also requires data on the real world: A solid empirical base is needed for all but the most esoteric research. Robert E. Lipsey is one of the economists who have most significantly contributed to this empirical base. During more than fifty years at the National Bureau of Economic Research (NBER), Bob Lipsey has published many influential contributions in the broad field of empirical international economics. Colleagues have described Bob Lipsey as "a master of understated yet authoritative empirical research, and a meticulous creator and defender of measurements of the highest quality and interest" and noted that "his is the work that definitely supports or refutes perceptions, slogans, and 'stylized facts.'" This Festschrift is in honor of Bob Lipsey's contributions to economic research and his great efforts to promote the work and careers of other international economists, including all of the contributors to this volume.

Robert Lipsey got an early start at the NBER. After courses at the Juilliard School of Music, a B.A. from Columbia University, and a year of graduate work at Columbia, the eighteen-year-old Lipsey joined the Bureau in 1945, working as an assistant to Geoffrey H. Moore and Solomon Fabricant. He later received a Ph.D. from Columbia, after writing a char-

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acteristically rich and insightful thesis entitled "Price and Quantity Trends in the Foreign Trade of the United States." During his more than fifty-five years at the Bureau, Lipsey has at various times been a research associate, the director of international and financial studies, the vice president for research, and, most recently, director of the Bureau's New York Office, a post which he has held since 1978. He also taught at Columbia for several years, and became professor of economics at Queens College, City University of New York, in 1967. He is professor emeritus of Queens College and the Graduate Center of the City University of New York (CUNY).

Bob Lipsey's extensive research agenda covers four wide research areas, which are all represented among the contributions to this volume: international trade (particularly the role of prices); international comparisons of prices and output; multinational firms, international direct investment, and other capital movements; and relative national economic growth and capital formation.

The work on prices and quantities in international trade, both historical and current, was the earliest. It began with his dissertation on prices and quantities in U.S. trade, later published as Lipsey (1963) and continued with later essays on trade and U.S. economic development (1971, forthcoming). The data series for 1879 to 1913 have become the standard source for that period and have contributed to the debate about long-term trends in the terms of trade.

Studies of more recent times and other countries began with the book Lipsey coauthored with Irving Kravis (Kravis and Lipsey 1971). Further contributions, with Kravis (1972, 1982) and Bushe and Kravis (1986) analyzed prices and trade in the machinery sector, showing the advantages of the newly developed data in measuring price and income elasticities. The price collection and weighting methods were explained in Lipsey, Molinari, and Kravis (1991).

A second area of research has been that of international comparisons of prices and output, mainly with Irving Kravis, and later with Birgitta Swedenborg, based on the data produced by the United Nations International Comparison Program (ICP). The ICP is a worldwide program aimed at developing measures for calculating purchasing power parities and comparing real output, consumption, and investment across many countries, replacing the often grossly misleading comparisons based on exchange rates. The program is summarized in Kravis and Lipsey (1991), and recent developments are described in Heston and Lipsey (1999). The measures of international price levels are indispensable for studies of purchasing power parity and real exchange rates. Examples of this research are Kravis and Lipsey (1983, 1987a, 1988), and Lipsey and Swedenborg (1996, 1999).

Lipsey's international investment research, the third broad area, is almost as long-standing and has earned him considerable international fame. One well-known subtheme from this work concerns the distinction between countries and firms in analyses of competitiveness and comparative advantage (see, e.g., Lipsey and Kravis 1985; Blomström and Lipsey 1989; and Kravis and Lipsey 1992). Capital, technology, and other factors of production are mobile across international borders within multinational corporations (MNCs). This means that MNCs may maintain or strengthen their competitiveness by relocating their production facilities, even when the competitiveness or market shares of the home country decline. For instance, contrary to popular belief, U.S. multinational firms have remained competitive in world markets since World War II, while the dominant position (by some measures) of the United States has weakened over the same period. Moreover, national policies aimed at improving the competitiveness of the country may fail if they create or subsidize assets which then can be exploited both at home and abroad.

Another important subtheme is the measurement of the internationalization of production (see, e.g., Lipsey, Blomström, and Ramstetter 1998). One surprising conclusion from this work is that the ratio of international production (i.e., operations of MNCs outside their home country) to total world production is relatively small, and that the vast majority of production is still carried out by national producers within their own borders. A related research area in which Bob Lipsey has played a prominent role is the analysis of the home-country effects of foreign direct investment (FDI). His early studies examined the relation between home-country exports and FDI, and found complementarity rather than substitution between the two (Lipsey and Weiss 1981, 1984). Later contributions have also looked at effects on investment, employment, and wages (Stevens and Lipsey 1992; Aitken, Harrison, and Lipsey 1996; Blomström, Fors, and Lipsey 1997).

Lipsey's research on relative national growth and capital formation is his fourth major area of work. Kravis and Lipsey (1984) and Blomström, Lipsey, and Zejan (1994, 1996) all analyze different aspects of growth and convergence between "rich" and "poor" countries. One conclusion is that the income distribution among countries is remarkably fluid; another is that the net "catch-up" was particularly strong for the poorest developing countries, contradicting the idea that there has been a "convergence club" confined to relatively well-off countries. Moreover, it appears that growth induces subsequent capital formation more than capital formation induces subsequent growth. Kravis and Lipsey (1987b) and Kirova and Lipsey (1998) document other important aspects of growth and capital formation. Contrary to popular impressions at that time, productive investment and capital formation by the United States did not lag strongly behind those of its peer countries, once appropriate corrections were made to measure education, defense, consumer durables, and research and development (R&D) capital. Rather than slipping toward mediocrity, Lipsey argued that the United States seemed to be holding its position in the relative-growth race reasonably securely, presaging the developments observed late in the 1990s.

Many of these research programs involved extensive efforts at data development. In addition, he has been involved in several pure data improvement projects, starting with a volume on construction data (Lipsey and Preston 1966). A more recent one was a project aimed at organizing and distributing a consistent and comprehensive data set on international trade flows (Feenstra, Lipsey, and Bowen 1997). Like the ICP project, it is likely that this data set will facilitate much new empirical research in the area.

Our brief comments just touch the surface of Bob Lipsey's career as a productive and influential researcher, as well as a meticulous creator of measurements of the highest quality and relevance. While his academic work has been widely read and quoted, the long list of publications still underestimates his contributions to the international economics community and the NBER.

As director of international and financial studies, as vice president of NBER, and at NBER meetings of the International Trade and Investment group, the International Finance and Macroeconomics group, and the Productivity group, Bob has been a consistent source of well-grounded insights and factual perspectives on issues related to empirical international economics. Bob has also been a steady and willing mentor to a broader group of colleagues in the research and policy communities, and to the many students whom he has taught and inspired. Through his work at Queens College and the City University of New York, Bob has demonstrated a genuine respect for scholars of many different backgrounds. This respect has often been admired and appreciated, and his inspirations have been long lasting.

All of the contributors to this volume have been inspired by and have benefited in various ways from Bob Lipsey's work, comments, and advice. In the following section we briefly overview the chapters by these contributors.

Organization of the Text

The book is organized around three wide research areas: international comparisons of output and prices, multinational firms, and international trade and exchange rates. The collection of essays consists of eight papers, original and serious contributions by scholars in these areas. Each of the papers is followed by a detailed comment written by an established participant in the specific field.

International Comparisons of Output and Prices

The first part of the volume consists of two papers on international comparisons of prices and output, the area where Robert Lipsey made his earliest contributions. Following in the Lipsey tradition, both papers are original, creative, and careful empirical approaches to understanding international linkages.

In the opening essay, Michael Knetter and Matthew Slaughter present some new measures of product-market integration based on price and quantity data. Globalization—the integration of national economies—has become one of the most widely used buzzwords of the late twentieth century. Yet there are remarkably few statistical measures of product-market integration across time, countries, and goods. Knetter and Slaughter's approach is to provide a time series perspective on macroeconomic price convergence, thereby rounding out the findings of a literature that generally has had a more cross-sectional emphasis. The idea is very nice: The authors measure equilibria outcomes—the prices and quantities generated in various markets—and then examine whether these outcomes are consistent with sizable changes in the magnitudes of barriers separating national markets for goods. The authors also provide theoretical context for interpreting these outcomes, using the standard Heckscher-Ohlin model and a second "HO plus production fragmentation" approach. Ultimately, the data on price dispersion provide little evidence that product markets in developed countries have become more integrated in recent decades. Data on relative prices provide more mixed results internationally. Quantity evidence suggests that product markets have integrated since the 1970s, but at quite different rates over time.

In the second chapter of the volume, Robert Baldwin uses an original methodology to infer relative factor price changes from quantitative data. He first proceeds by discussing the difficulties with existing approaches that study the implications of trade for relative wages. Basically, there is an indeterminacy of the commodity composition of trade in models with two or more factors and at least as many goods as factors. As a consequence, it is useful to interpret the Heckscher-Ohlin theorem in terms of the exchange of a country's relatively abundant productive factors for its relatively scarce factors. Testing this theorem empirically invariably involves calculating the factor content of the goods and services traded internationally. Some economists have relied on the behavior of factor proportions within and among industries to draw conclusions about the causes of observed factor price changes. Baldwin investigates the appropriateness of linking these measures to factor price changes within the general equilibrium framework used by trade economists. His clear and sensible conclusions are important for a broad spectrum of studies: Baldwin emphasizes that only under special assumptions are such linkages between factor proportions and factor prices justified.

Multinational Corporations

A second important and ongoing component of Robert Lipsey's research deals with untangling the reasons for and implications of the multinational corporation. In chapter 3, James Markusen and Keith Maskus provide a fundamental contribution to our understanding of multinational firms. Analytically, the authors begin by extending the recent theory referred to as the *knowledge-capital model.* This modeling approach, which generates motives for both horizontal and vertical multinational production, is used to derive analytically strong and subtle predictions about a range of activities undertaken by producers. For example, a key issue is the foreign affiliates' pattern of production for local markets versus their production for exports. Markusen and Maskus elegantly demonstrate that the producer's decision is a function of country and partner characteristics such as market size and relative endowments.

Further demonstrating the gains from exploiting their own absolute and comparative advantages, Markusen and Maskus explore the model's implications using data on foreign affiliate production and sales to the host-country market and for export markets. The authors find that the ratio of production for export sale to production for local sale depends negatively on market size, investment, and trade costs in the host country, and positively on the relative abundance of skilled labor in the parent country (or the skilled labor scarcity of the host country). Export sales by affiliates are particularly important when the parent is both skilled-labor abundant and small. Overall, this paper clearly follows in the tradition of Bob Lipsey by providing a rich set of empirical findings and a particularly lucid set of interpretations.

The fourth chapter, by Birgitta Swedenborg, takes on one of the long-debated questions raised by the growth of multinational companies: namely, whether growth of production abroad substitutes for or is complementary to production growth at home. Swedenborg revisits this and related issues in a new way for Sweden, a large net foreign investor and the only country other than the United States for which there exist comprehensive firm-level data. The novelty of Swedenborg's analysis is that it uses panel data for Swedish MNCs, covering a thirty-year period in order to answer those questions that are essentially dynamic in nature. The careful results broadly confirm earlier findings based on cross-sectional analyses, but reveal too that the latter tend to overestimate the relationship between variables over time. Two-stage least squares (2SLS) analysis reaffirms that the partial effect of foreign production on exports is negative in the case of products that are "substitutes" and positive for "complements," and that the net effect is zero. The overall relationship between foreign and domestic growth in production is positive, due to economies of firm size in R&D and headquarter services, which benefit both home and foreign operations.

Over the years, Bob Lipsey has analyzed not only MNC behavior in terms of production and trade, but also the home-country effects of foreign investment. That is also the topic of chapter 5, in which Gunnar Fors and Ari Kokko examine the effects of outward foreign direct investment on economic structure within the home countries of the multinational corporations, as opposed to the implications for destination countries, as is often emphasized in the literature. Drawing on a detailed plant-level database covering seventeen of the largest Swedish MNCs, Fors and Kokko find that the changes taking place within the MNCs are significantly larger than those recognized in most earlier studies. The establishment and closures, and associated employment, of domestic and foreign plants owned by the seventeen MNCs demonstrate that rapid changes in the structure of production in the home country are possible over relatively short periods of time. Fors and Kokko find no simple pattern in the relocations of production, although econometric analysis suggests that home-country operations were becoming relatively less labor intensive as a result of the structural changes.

International Trade and Exchange Rates

The third section of the volume presents three papers that pay homage to Robert Lipsey's extensive work toward both creating data sets and considering broad policy questions that arise due to international openness. The availability of new theoretical paradigms, including the so-called New Open Economy Macroeconomics approach to studying international linkages, allows for a reexamination of long-standing issues of pricing, choice of exchange rate systems, and the structure of production activity. The availability of new data and the incidence of expanded trade have triggered new research and important policy questions.

In chapter 6, Michael Devereux and Charles Engel elegantly address a number of themes that have often been the subject of Bob Lipsey's research. The broad debate entered by the authors concerns the issue of the choice of exchange rate regime—fixed or floating—and the interaction between this decision and the type of price-setting rules and production structures found within and across economies. Clearly, the paper is inspired by a number of important phenomena and issues central to Bob's work: the determinants and patterns in both relative prices and nominal exchange rates across countries, and, as we have previously emphasized, the behavior of multinationals. The methodology is within the developing New Open Economy Macro school, wherein in a dynamic, intertemporal general equilibrium framework is carefully crafted and analyzed.

Devereux and Engel consider different types of price stickiness: Nominal prices can be sticky in the currency of the consumer, as referred to by "pricing-to-market," or prices can be set in the currency of the producer. Using this carefully executed dynamic framework, Devereux and Engel argue that when prices are set in producers' currencies, floating exchange rates are preferred if the country is large enough in international markets or not too risk averse. On the other hand, floating exchange rates are always preferred if prices are set in consumers' currencies, because floating exchange rates allow domestic consumption to be insulated from foreign monetary shocks. The gains from floating exchange rates are greater when there is internationalized production. While the issue of exchange rate regime choice undoubtedly will continue to be debated in international economics, Devereux and Engel make a convincing theoretical case that the debate should carefully consider dominant pricing behaviors and the incidence of multinational production.

The next paper in the volume also follows in the tradition of Robert Lipsey. In chapter 7, David Richardson and Chi Zhang map and interpret U.S. comparative advantage across time, trading partners, and sectors at an increasing level of commodity detail. They use Bela Balassa's index of revealed comparative advantage (RCA), measured from U.S. export data. The authors call some of their indexes RRCA indexes—in which they measure regional revealed comparative advantage by groups of U.S. trading partners. U.S. patterns of comparative advantage seem to be different in different parts of the world, and these differences seem to have changed between 1980 and 1995, the period covered by the authors' data. The data reveal that aggregation issues are important, and that U.S. comparative advantage is quite diverse across sectors. Furthermore, more finely disaggregated sectoral data reveal some subproducts that have strong comparative advantage, and others that do not. Quantitatively, the United States has comparative advantage in all regions in differentiated producer goods and generally has comparative disadvantage in standardized producer goods and consumer goods of all sorts.

The final chapter of the volume, chapter 8, by Drusilla Brown, Alan Deardorff, and Robert Stern, addresses a topic that has rarely been studied by international economists but is of real policy interest. They examine issues of child labor exploitation in developing countries, and the variety of trade and other policy options and programs that are available in the United States and other industrialized countries to deter such exploitation. These deterrents include U.S. trade policies, economic and technical assistance provided through the International Labour Organization (ILO), supranational measures working through the ILO or the World Trade Organization, codes of conduct, and consumer labeling. The authors present a theoretical model of family labor supply that is embedded in a standard Heckscher-Ohlin general equilibrium model of production and trade. Using this model, the authors argue that the total labor supply of the family varies when the wages of parent and child move together, in comparison with results when the wage of only one family member changes. The implication is that well-meaning policy proponents can make some conditions worse. For example, policy prescriptions that are initially targeted at the child and expected to improve the child's welfare may lead to perverse outcomes and leave the child worse off. These considerations are important for our broader understanding of the consequences of globalization and of a country's sources of comparative advantage.

In summation, this volume pulls together many talented and influential contributors to empirical international economics. Their writings represent serious and substantial contributions to the areas of empirical international economics that span the breadth of fields to which Bob Lipsey has himself contributed. The comments on the papers, by Bruce Blonigen, James Harrigan, Ann Harrison, Edward Leamer, Anna Schwartz, Robert Staiger, Guy Stevens, and Kei-Mu Yi, also provide insightful perspectives on individual papers and the broader topics addressed in the volume. Through these writings and in many immeasurable ways, we pay homage to Bob Lipsey, a great man and an influential economist.

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International Comparisons of Output and Prices