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REGIONAL IMPLICATIONS OF THE INTERNATIONAL ECONOMY

*Roger F. Riefler**

In 1987 total world merchandise trade amounted to \$2,352.6 billion, an estimated 14.9 percent of world gross domestic product (Coughlin [1]). In 1988 that figure rose to \$2,687.8 billion. In 1987 U.S. exports amounted to \$254.1 billion or 10.8 percent of total trade; similar figures for 1988 were \$322.4 billion and 12.0 percent. U.S. exports represented about 5.6 percent of our GNP in 1987 (6.6 percent in 1988) and 14 percent of our output of goods (U.S. Department of Commerce [10]).¹ Service exports, which are excluded from these merchandise figures, are also significant. In 1988 U.S. travel exports amounted to \$26.5 billion, while other service income (which includes communication, financial services, insurance, etc.) totaled \$19.3 billion (International Monetary Fund [3]). On the import side of the ledger, 1987 U.S. merchandise imports of \$424.4 billion (17.6 percent of world imports) increased to \$459.5 billion (16.6 percent) in 1988 (International Monetary Fund [4]). In 1987 foreign direct investment in the U.S. stood at \$261.9 billion, while U.S. investment abroad was \$308.9 billion (Council of Economic Advisors [2]). In 1988 net foreign investment increased \$136.2 billion (U.S. Department of Commerce [10]).

Beyond the quantitative importance of U.S. international trade, as reflected in the above numbers, is its qualitative impact (Kreinin [5]). The absence of international trade severely would affect domestic production (as exchange supplies many critical inputs that cannot be efficiently produced domestically), lower domestic well-being through the denial of complementary goods (e.g., tropical fruit) that cannot be produced easily in the U.S., and reduce the competitiveness of domestic markets. Clearly world trade, on both current and capital accounts and in terms of quantitative as well as qualitative measures, is a "growth industry" and, not surprisingly, has generated a burgeoning literature concerned with its impact on various aspects of the national economy.

Regional science has not been immune to the recent flourish of increased interest in the economic impact of the international economy. Our historical interest in regions open to both factor and commodity

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¹ These measures may underestimate the impact of trade on the domestic economy, because as estimated by the World Bank, as early as 1981 tradable goods accounted for 37 percent of the U.S. Gross Domestic Product (Rivera-Batiz and Rivera-Batiz [8]).

flows has resulted in a definite kinship between our theoretical apparatus and conceptual models and those of scholars studying the international economy. (See, for example, Horst Siebert [9].) Recently this affinity has broadened as regional analysts have focused on the empirical effect of fluctuations in the international environment on the spatial dimensions of the domestic economy. At the forefront of this empirical effort to understand the regional ramifications of the international economy has been a group of regional scientists employed by or affiliated with the Federal Reserve System. We are fortunate, in this special edition of RSP, to be able to present eight articles representative of this genre of studies.

The purpose of this introductory essay is both to place the following articles in a single encompassing framework, provided by the international balance of payments (IBOP) accounts, and to discuss a sampling of regional issues (both scholarly and of a more immediate policy interest) raised by those articles. Following the IBOP accounts, Part I of this essay and the following four articles delve into the regional dimensions of the current account; here attention is focused on exports, imports, and the impact of fluctuations in the terms of trade. The latter part of this introductory essay and the final four articles in this volume turn to a discussion of the capital account.

Current Account

Exports

The study of the growth impact of increased regional exports has a long history, too extensive to review here, in our theoretical and empirical literature. While emphasis has been placed on interregional exports, lack of data, more often than not, have precluded the identification of export destination and, therefore, the actual growth transmission path. External demand emanates from and regional exports are shipped to a nether (or rest of the) world sector. Therefore, external demand and regional exports are exogenous or, alternatively, are seen as dependent on an overall measure of demand such as growth in Gross National Product. Such a procedure is clearly a second best solution in an economy closed to international trade. In an open economy where world trade is of growing absolute and relative importance, it is not even that.

The first article in this compendium, by Tim R. Smith of the Kansas City Federal Reserve, addresses the issue of the regional source, industry mix, and ultimate destination of U.S. manufactured exports. Although constrained by the fledgling nature of his data source, he is able to identify some basic patterns in regional international trade and,

more importantly, examine changes in regional export levels and destination. Such efforts are clearly necessary if we are to identify the growth transmission process from the international to regional spheres and to compare this impact with that transmitted interregionally. His results pose a challenge to regional analysts. Should top-down modeling efforts start at the national or international level? What are the similarities (and differences) between international and interregional exports with respect to the type of goods and services shipped? How does the sensitivity of trade flows to exogenous change differ? What are the relative trade elasticities? These, and additional similar questions, challenge the reader of our first article.

Extending our view of Dr. Smith's article beyond the implications for modeling the regional growth process, state (local and national) policy makers are clearly aware of the increased dependency of regional economies on international exports. Even in the nation's midsection we are told, for instance, that 10 percent of Nebraska's employment in goods production is dependent on international exports. It is a rare state (or city) that has not increased its international marketing efforts. Foreign trade offices and trade missions are now the order of the day. To what extent is this effort congruent with the existing composition and geographical destination of a region's international exports? How efficacious will these policy efforts be in generating further regional expansion? Looking at issues raised by national policy initiatives, what will be the regional implications of the U.S.-Canada Free Trade Agreement? What will be the total and regional impact of tariff (and nontariff) reductions such as those (we hope) emanating from the current round of GATT negotiations? Answers to these questions must await extension and refinement of the pioneering work presented in our initial article as well as further development of our conceptual models addressing the regional impact of export fluctuations.

The second article in this issue of *RSP*, by Paul W. Bauer and Randall W. Eberts of the Federal Reserve Bank of Cleveland, is designed to contribute to both our theoretical and empirical understanding of the export/regional growth nexus. They posit a two stage model where, first, exports by state and industry are related to various determinants of international trade. A second equation relates domestic production, again by state and industry, to exports and other determinants of domestic demand. For exports to have had a important impact on economic restructuring at the state level, substantial variation across industries must exist in the growth rate of exports; and/or the effects of exports on domestic shipments also must vary by industry; and overall, there should be a significant relationship between changes in exports and domestic shipments. Their results

suggest that all three conditions are met and that, therefore, exports have had a considerable role in 1980 to 1986 regional restructuring.

A second thought-provoking conclusion derived by Bauer and Eberts (and consistent with the results of Smith) is that a state's growth in exports cannot be explained by the industrial mix of the state. Although exports do vary across states and industries, little of the variation can be explained by focusing separately on either state or industry. Export sensitivity is influenced by the interaction of state- and industry-specific factors. Such results present a challenge to state policy makers and regional analysts alike and suggest that a satisfactory explanation of the relationship between exports and regional growth is likely to entail not only continuing refinement of our macromodels of regional growth, but also additional input from more micro-oriented location analysis.

Imports

At the national level, the impact of foreign imports on the plight of domestic industries such as textiles, apparel, footwear, steel, autos, etc. has garnered significant attention. Although the regional dimension of import competition has been noted, calls for tariffs, quotas, and other protectionist devices, as well as what may be called *domestic adjustment policies* have focused on policy makers at the national level. State and local economic development officials have not been as active in this policy domain. The lack of direct policy levers to protect local industries partially explains this phenomena, as does the inconsistency of such a policy with the current emphasis on the promotion of local exports. Further abetting the emphasis on national policy responses to the threat of imports is the fact that the competitive damage done by imports is documented most easily at the national levels. Fluctuations in employment levels at individual plants or firms may reflect the vagaries of domestic as well as international competition; hence, quantification of relative impact is difficult. Changes in the total domestic employment or industrial output are more easily attributable, where relevant, to international (as opposed to domestic) events.

Although local fluctuations in employment due to expansion/contraction of the export market may be visible, import competition may be invisible from the local perspective (although often a convenient scapegoat for untoward events). Individual firms, especially if they are small (or represent a small percent of industry output), often take the view that if they do not export, they are relatively immune from the international economy. Such an outlook often runs counter to current fact and, especially in a milieu of changing composition of trade, the possible future situation.

The fact that state and local policy makers also neglect the impact of imports on regional growth is disturbing. The doctrine of comparative cost advantage, although basically a static theory, suggests that an employment loss via international import competition, even when offset by an equal gain in employment generated by export growth, is unlikely to have a neutral impact on the composition of employment (e.g., by skill or occupation). Further, a comparison of the international versus domestic versions of the product cycle theory suggests that some regions (e.g., rural areas) are likely to be more vulnerable to import competition than others (Lamphear and Riefler [6]). Although regional policy makers are unable to impose tariffs and negotiate voluntary export restraints (VERs) they do have indirect policy levers, such as education and manpower training policies as well as capital subsidy programs (e.g., venture capital) and other initiatives that can be directed to the improvement of a region's international (and domestic) competitive position. Successful export promotion may be highly visible, but policies aimed at reducing the competitive advantage of international imports may be as beneficial from a long-run regional development perspective.

Although recent (1985 to 1988) depreciation in the dollar is reflected in the growth of exports documented by Dr. Smith in our first article, the third article by Dan M. Bechter and Christine Chmura, economists at the Federal Reserve Bank of Richmond, looks at an earlier period of dollar appreciation (1980 to 1985). Such appreciation, of course, reduces the foreign competitiveness of U.S. industries thereby, under *ceteris paribus* assumptions, decreasing our exports and increasing imports. The initial goal of the authors is to identify the rural versus urban impact of this worsening competitive position and to compare performance in the Southeast with that in rest of the country. Their indirect methodology, looking at county manufacturing employment growth or decline (and the dispersion of results), attempts to identify the overall impact of deteriorating foreign competitiveness on areas classified by relative degree of ruralness and by location (e.g., Southeast, Baltimore-Norfolk growth corridor).

Obviously such an approach is unable to distinguish the effect of loss of export markets from the impact of increased imports. It should be recognized that by classifying this essay in the import part of this introduction, I am hypothesizing that the latter effect dominates. Resolution of this issue, however, awaits further empirical work. Given the above mentioned relative lack of attention to import competition on the part of small firms and state and local policy makers, we hope this classification will generate such research.

The results of the Bechter/Chmura paper certainly suggest that events in the real world don't match those predicted by our

(over)simplified theoretical constructs. At the aggregate level for manufacturing, relative growth patterns change between 1980 to 1982 and 1982 to 1985 and the comparative performance of counties classified by degree of ruralness is more complex than theories such as the product cycle approach cited above suggest.

The latter parts of the paper by Drs. Bechter and Chmura turn from a descriptive analysis of the differential regional impact of dollar appreciation to an attempt to investigate the role of industrial mix in explaining the complex pattern found. Employing an industry-specific variant of shift/share analysis, the authors first compare expected manufacturing employment shifts (based on national changes) by county type with actual employment changes between 1980 and 1985. Such analysis permits comparisons of relative performance (adjusted for industry mix) between various county groups in the Southeast as well as the nation. Finally, utilizing industry specific measures of exchange rate employment and production elasticities, the authors simulate the effect of dollar appreciation on counties (again grouped by degree of ruralness).

As Drs. Bechter and Chmura observe, the complex pattern that emerges from their study suggests that further research along the path they are pursuing is needed. But beyond the need for further refinement and extension such as the need to relax *ceteris paribus* assumptions (involved in an indirect investigation of dollar appreciation and regional manufacturing growth), certain other issues emerge. Given the growing importance of international trade, can we afford to maintain the fiction of a closed national economy implicit in our use of a national base when computing location quotients or the components of shift/share analysis? Industrial mix and degree of competitiveness are now international issues; possibly an appropriate base for such calculations would be the distribution and growth of employment in a wider geographical area (e.g., developed nations). Finally, at the policy level, we again encounter questions, alluded to above, such as the differential employment impact, by occupation and skill mix, of fluctuations in the competitive position of the U.S. (and its component regions) vis a vis foreign suppliers.

Terms of Trade

Although our applied regional models are often silent on the growth impact of fluctuations in the domestic interregional terms of trade, our theoretical literature long has emphasized the differential impact of such changes on regional growth (Siebert [9]). As is often the case, our inability to measure fluctuations in interregional import and export prices successfully has led us to forego their inclusion in much empirical

research. At the international level, the advent or (better put) the approximation to flexible exchange rates increased the importance of growth transmission through price effects. In a sense, flexible exchange rates have made the international terms of trade more akin to the domestic version found in our theoretical models of regional growth. In an international world of flexible exchange rates, domestic prices do not change in response to trade flow imbalances; the impact largely is felt through currency appreciation/depreciation (especially given restrictions on factor flows). In a (closed) interregional world with trade imbalances, although factor flows are likely to result, relative regional prices also will tend to change. Fluctuations in international exchange rates, like those of a region's terms of trade, will influence the international or interregional distribution of the gains from trade.

While the Smith, Bechter/Chmura, and Bauer/Eberts articles focused on the differential impact of recent dollar appreciation/depreciation within the manufacturing sector, the fourth paper in our collection, by Gerald Carlino, Brian Cody, and Richard Voith of the Federal Reserve Bank of Philadelphia, focuses on a more aggregative investigation. Using recently released data on real Gross State Products, they attempt to measure the impact of exchange rate changes, after controlling for productivity differentials, on aggregate state output over the 1972 to 1986 period.

The authors identify eleven states in which movements in trade-weighted effective international exchange rates had a significant impact on long-term development patterns. Further, twelve states experienced significant changes in the growth rate of their GSP due to changes in relative (U.S. versus its major trading partners) productivity growth. These results clearly indicate the importance of the international environment to understanding recent regional growth paths. In addition, they clearly suggest that further efforts devoted to quantification of domestic interregional terms of trade should contribute to our understanding of the growth transmission process.

As is so often the case, pioneering research such as that reported by Carlino, Cody, and Voith poses further questions. How is the impact transmitted? What exporting sectors of the affected states' economies feel the brunt of the impact? What importing sectors? Are certain sectors immune? Differences in the composition of regional exports and export markets when combined with differing export price elasticities of demand and differences in effective exchange rate movements (e.g., U.S.-Canadian dollar, U.S. dollar-Dutch guilder) as well as complementary considerations on the import side of the ledger beg for more disaggregate research.

Clearly the contributions of Smith, Bechter, and Chmura, Bauer and Eberts, and Carlino, Cody, and Voith help provide clues to answering

the many questions raised. Although not providing the definitive view of the impact of the IBOP's current account on regional growth patterns, these studies, both individually and taken together, begin to sketch the outlines of what should be a rich and important mosaic depicting regional growth paths in an open economy.

Capital Account

Excluding from consideration the official settlement accounts and the statistical discrepancy as having minimal regional impact, the remaining components of the IBOP accounts to be dealt with are the short- and long-term capital entries. These elements of the capital account are quite large. In 1988 private (nonbank) short-term capital inflows into U.S. securities amounted to \$46.8 billion (net inflow \$39.4 billion). In the same year foreign direct investment (FDI) in the U.S. was \$42.2 billion (net inflow \$21.8 billion) (International Economic Conditions [7]). Both flows are likely to have significant impact on the domestic economy. At the regional level, the impact of short-term capital flows into new and existing securities is most likely to be interest rate sensitive and to diffuse in a spatial pattern congruent with the overall distribution of economic activity. On the other hand, FDI flows, as documented by our sixth and seventh articles by Giese and Kahley, are not regionally ubiquitous or neutral in their impact on the distribution of the capital stock.

Not only do current FDI flows favor certain regions and sectors of the economy, but the spatial and industrial patterns have changed over time. Given these facts, it is not surprising that the attraction of FDI has garnered the attention of policy makers concerned with economic development at the state and local levels. The efficacy of their efforts to attract FDI is the subject of the eighth and final essay, by Coughlin, Terza, and Arromdee, in this compendium. Before attempting to place these three essays (and the first paper in this section by Giese, Kahley, and Riefler) into the overall context of our discipline and discussing the research hypotheses and questions that emerge, it may be useful briefly to discuss the relevancy of the short-term account to regional economics.

Short-Term Capital Flows

Short-term international capital flows are often referred to as *hot money*. These flows are highly responsive to (risk-adjusted) real returns offered by the various security markets around the world. To the extent these funds are attracted to new security issues used to finance investment, they supplement the flow of domestic savings for

this purpose. These inflows, however, by lowering interest rates and domestic savings rates, may have displacement effects as well.² Focussing on the other side of the coin, if as a result of the inflow of foreign capital into previously existing securities funds are freed for current consumption purposes, again, the impact is likely to be national in scope rather than regionally differentiated. Although one could develop scenarios entailing differentiated regional impacts, the actual magnitude and importance of any likely regional dimension must await more definitive assessment of national effects.³ At this time we advance as our maintained hypothesis that short-term capital flows are unlikely to have a regionally differentiated impact.

Long-Term Capital Flows: Foreign Direct Investment

Given the proclivities of regional scientists to adopt and adapt international trade constructs in our studies of interregional commodity and service movements, it can be assumed safely that readers of this journal should be comfortable with the first four articles discussing elements of the IBOP current account. Such is not the case with the long-term capital account. International capital flows are influenced significantly by economic factors, but political and other institutional considerations also affect the direction and magnitude of these movements. For those not familiar with the literature pertaining to the factors that motivate FDI and the economic effects of these flows, the first article in Part II, authored by Alenka S. Giese, William J. Kahley, and Roger F. Riefler, attempts to summarize the rather voluminous literature on these two aspects of FDI. Although this article may aid in the assessment of FDI's regional impact, the objective and focus of analysis in this paper is more nonspatial in nature. The reader familiar with the literature on motivational factors and overall impact of FDI may wish to skip this contribution.

The second and third articles in Part II, authored by Alenka S. Giese and William J. Kahley respectively, focus on the geographical and industrial pattern of FDI. The geographic concentrations of the two

² To date, most studies have shown no significant relationship between short-term capital inflows and domestic savings rates.

³ Thus, for instance, the significant monetary flows generated by the drug trade, which likely influence the magnitude of short-term capital flows and the statistical discrepancy, undoubtedly is having an effect on the distribution of income and, possibly, the overall rate of growth in certain urban and regional neighborhoods.

articles differ; Ms. Giese is more concerned with the current level and historic trends of FDI in the Chicago Federal Reserve district and its concentration in that region in the automotive and auto parts industries. Dr. Kahley's objective is to similarly place FDI in the Atlanta Federal Reserve district in perspective. These essays largely complement each other; what emerges is a picture of current and recent changes in FDI flows at the regional level.

These two articles, while presenting an excellent summary of the knowledge obtainable from currently available statistics on the regional impact of FDI, generate at least as many questions as they answer, like the articles in Part I. Although data on industrial composition and regional distribution of FDI are available, albeit at a higher level of aggregation than ideal, questions of the mix of FDI (e.g., real estate versus reproducible asset acquisition), the form of investment (e.g., outright acquisition, merger, minority control, joint venture, etc.), and size (and age) distribution of assets acquired are often more difficult to unearth. This generates further questions for research: How much FDI is in new assets versus the purchase of existing productive capacity? How common is the industrial clustering of FDI (such as that documented by Ms. Giese in auto assembly/parts industries)? To what extent do such investments exhibit agglomeration tendencies?

A cross tabulation of FDI, if available, by industrial composition, form, size, region, etc. would increase our knowledge of the spatial effects of such flows. Comparison of FDI flows into and out of the U.S. by industry and region should better enable us to assess the net effect of FDI on competition as well as to determine the impact of current investment flows on future international and interregional trade patterns. Japanese investment in auto making facilities, for instance, appears to have responded to actual and potential U.S. restrictions on auto imports; such investment will influence both future U.S. import levels and the domestic pattern of interregional exports. In addition, events such as the further integration of the EEC in 1992 and the possibility of higher external barriers to trade with Europe seem to be influencing current international capital flows to that continent. Such capital flows are likely to affect future U.S. exports to the continent differentially and, as documented by Dr. Smith's article, have a nonhomogeneous impact on domestic regions.

Apparently, as the above examples suggest, FDI both can lead and lag adjustments in the current account. Which type of adjustment is more common? Because FDI in the U.S. seems to exhibit differential regional propensities (as do regional propensities to export), what are the regional implications of substituting capital flows for trade flows (and vice versa)? What are the regional growth implications of substituting external supply flows of a factor of production (e.g., FDI) for external

demand flows of goods and services (e.g., trade)? Although it may be a convenient fiction to separate regional analysis of the current and capital components of the IBOP, ultimately a comprehensive assessment of the regional impacts of the international economy will necessitate an integrated approach.

Local and state officials concerned with economic development, of course, have not been immune to the lure of attracting FDI as a vehicle for regional growth. Several examples of the length to which these officials will go in their attempts to attract such investments are documented in the first three articles in this section. Clearly economic development officials view the attraction of FDI as an example of generative (versus competitive) growth. FDI is seen by these officials as a positive sum game for the various regions involved and as a zero sum game, at worst, from a national perspective. How effective have been regional policies to attract FDI? The final essay in this compendium, by Cletus C. Coughlin of the Federal Reserve Bank of St. Louis, Joseph V. Terza, The Pennsylvania State University, and Vachira Arromdee, University of Georgia, attempts to answer this question.

Applying statistical techniques, the relationship between state-level FDI and various policy tools utilized to attract investment is investigated by these authors. The evidence supports a significant negative relationship between state taxes, measured in a variety of ways, and FDI flows. Results using dummy variables for specific tax, employment, and financial incentive programs were not as robust, but use of such variables and restriction of the analysis to one year clearly indicates the need for further study. Analysis such as that reported in this paper points to the need to better delineate the nature of FDI flows and to better define, identify, and quantify state (and local) policy instruments. As the authors suggest, their results when combined with others', demonstrate that state government fiscal policies can affect the location of FDI. State policies, on both the tax and expenditure sides, designed to attract foreign and domestic investment are likely to be a fruitful arena for further research.

Overall, the papers in this volume are representative of the pioneering research currently being pursued on the regional impact of the international economy. The Federal Reserve System and its regional analysts are at the forefront of this developing literature. Given the regional structure of the system, its growing emphasis on regional analysis, and its natural affinity for investigating the domestic impact of international issues, the Fed is in a unique position to continue to contribute to this literature. The globalization of industry and the commensurate increase in the international flow of commodities and factors clearly indicate that the international economy does, and will

continue to, have an impact on differential regional growth patterns and standards of living within the United States. We hope that *RSP* will remain at the forefront of efforts to document, analyze, and explain these important occurrences.

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