

A REGIONAL EXPORT-WEIGHTED DOLLAR: AN EXAMINATION OF THE REGIONAL IMPACT OF EXCHANGE RATE CHANGE

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Midwest manufacturing has experienced a resurgence in its competitiveness in export markets during the last decade. There is a widely held view that this increased competitiveness is importantly attributable to the depreciation in the foreign exchange value of the dollar. This article questions this view, in particular with regard to selected geographical regions of the United States. Based on the development of real regional export-weighted aggregate exchange rate indexes, this study finds that since 1988 Midwest exporters of manufactured goods, in the aggregate, have faced an appreciating (not depreciating) dollar.

INTRODUCTION

During the last two decades, manufacturing in the industrial heartland of the United States has undergone a restructuring that has contributed to a resurgence in the region's economic strength. By the mid-1990s, the "rust belt" of the 1970s and early 1980s had turned into one of the most economically dynamic regions in the country. Contributing to this renewed economic vitality was the apparent ability of Midwest industries to compete more effectively in foreign markets and the consequent growth in the volume of Midwest-originated goods entering export markets.

The deterioration in the Midwest's industrial competitiveness during the 1970s and early 1980s and its subsequent recovery occurred during a period that coincided with considerable turmoil in the foreign exchange value of the dollar. Economic recovery in the Midwest during the late 1980s coincided with rapid growth in overall export markets and a broad-based decline in dollar exchange

An earlier version of this paper—Hervey and Strauss (1996)—was presented at the workshop "Global Linkages to the Midwest Economy," Federal Reserve Bank of Chicago, September 18, 1996. Helpful comments were provided by Thomas Klier and Richard Mattoon, Federal Reserve Bank of Chicago, and Warren Weber, Federal Reserve Bank of Minneapolis. Comments by anonymous reviewers on an earlier draft were also useful. Research assistance was provided by Alex Urbina, Federal Reserve Bank of Chicago. Conclusions are the authors' and do not necessarily reflect the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.

Received February 1997; revised June 1997.

rates (following the sharp run-up in the first half of the 1980s) that began in early 1985 and extended well into the 1990s.

This confluence of developments spawned the view that the resurgence in manufacturing in the Midwest, and elsewhere across the country during the late 1980s and early 1990s was importantly attributable to the sharp depreciation of the dollar during the period 1985–88 and the continued and gradual depreciation of the dollar through the mid-1990s; see, for example Koretz (1988) and Prowse (1995). In short, the depreciation of the dollar materially contributed to Midwest manufacturing industries' renewed ability to compete in export markets.

Without question, export markets have become more important to the U.S. economy during the past two decades. While there has been some redistribution of those markets among U.S. regions—for example, the Midwest's share of U.S. manufactured goods exports declined from over 30 percent in the early 1970s to a little over 20 percent in the early 1990s, nonetheless the value of manufactured goods exports from the Midwest is estimated to have increased more than five-fold between 1969 and 1991.¹ However, the contention that the strength of Midwest export growth since 1988 is due importantly to the depreciation of the dollar may overstate the case. The unconventional contention presented in this paper is that Midwest manufactured goods export industries, taken as a whole, faced a real aggregate dollar exchange rate that was higher at the end of 1996 than was the case in 1970, the last full year prior to the 1971 dollar devaluation and the subsequent floating of dollar exchange rates in 1973.

An important caveat is that reference here is restricted to manufacturing industries and their exports to foreign markets. Because of data limitations that will be outlined later, reference to international markets, which is interpreted to include all of an industry's markets—shipments to foreign markets as well as domestic markets, is not appropriate. This distinction is critical to any conclusions drawn from the work.

RESEARCH INTENT

Numerous interrelated factors affect the ability of any given industry/country to compete in world markets. These factors include openness of the respective economies, the extent and quality of infrastructure development, relative productivity levels, relative unit labor costs, variety and quality of products available, relative rates of inflation, and changes in the relative real values of exchange for the relevant currencies. If one accepts the proposition that these factors affect relative competitiveness in world markets for whole countries, it seems reasonable to expect that such factors might also differentially influence the relative competitiveness of different regions within a country, in particular a country with as

¹Estimated from data presented in *Exports from Manufacturing Establishments*, Analytical Report Series, Annual Survey of Manufactures, selected issues 1983–91, and *Origin of Exports from Manufacturing Establishments*, selected issues 1969–81, U.S. Department of Commerce, Bureau of the Census.

large and diverse an economy as the United States. In short, it is expected that international trade—specifically exports of manufactured goods—differentially influences the economies of different regions of the United States.

This paper takes a nontraditional approach to define the measurement of one of the factors that might be expected to influence the ability of various regions of the U.S. economy to compete in foreign markets. The focus is to identify exchange rate variations and the differences in the composition of export markets with regard to selected geographical regions of the United States. This area of research is only beginning to receive attention in the literature. Paralleling this work, Clark, Sawyer, and Sprinkle (1997a, 1997b) have found “non trivial differences” between a “Southern” export-weighted dollar index and an index constructed for the rest of the United States. They have also found differences, relative to the U.S. total, in similarly constructed regional exchange rate indexes where the regions are defined as U.S. Census Regions.

The contention in this paper is that different geographical/economic regions of the United States, by virtue of their different industrial makeup and the different foreign markets in which their industries are active, face different composite exchange rates. Thus, for example, a general observation that “the dollar is depreciating” in foreign exchange markets may have different implications for different geographical regions of the country, indeed, may not be true for certain regions of the country.

This issue is examined by constructing a set of export-weighted dollar exchange rate indexes, which are identified by selected regions of the United States and broad industry composition. Underlying the construction of these indexes are differences in regions’ export composition and the market destinations of exported manufactured goods.

WHY A REGIONAL DOLLAR INDEX?

The United States is a unified market with a single monetary authority and a single currency. In terms of international trade, the individual states, or any regional aggregation of states, face a common external border. An exchange rate of 110 yen to the dollar means the same in Illinois as it does in Maine or Washington. From a firm’s perspective, exchange rates are of no direct concern with regard to a decision whether to locate a plant in Alabama, California, or Ohio. Given a single market and a single currency, one might reasonably ask: What justification is there for the proposition that different regions of the United States face different exchange rates, and as such might be differentially influenced by changes in foreign exchange markets?

The primary rationale for an aggregate dollar index of any type is that during any given period, exchange rate changes across countries are not uniform in magnitude in direction of change. During 1994 and the first half of 1995, the exchange value of the U.S. dollar was depreciating rapidly, in particular with respect to the Japanese yen, the German mark, and most other continental Euro-

pean currencies. But by no means was the dollar depreciating against all currencies. Indeed, the dollar appreciated or remained stable against other Western Hemisphere currencies and several of the Pacific Rim currencies, e.g., Hong Kong, Taiwan, and Singapore (markets that accounted for nearly one-half of U.S. goods exports and more than two-fifths of goods imports during 1995).² The appeal, then, of an aggregate exchange rate index is that it to some degree takes into account varying and counter trends among numerous exchange rates. (See for example, figure 1, which highlights the divergent paths of the U.S. dollar exchange rate relative to the yen, DM, British pound, and the Canadian dollar during the 1970–96 period. For comparison purposes, figure 1 also presents the J.P. Morgan “real broad effective foreign exchange rate index” for the U.S. dollar.)

Taking the rationale for the development of an aggregate exchange rate index one step further, the premise underlying construction of a regional dollar index holds that there are differences in the foreign markets, or export shares, served by different regions of the United States. These differences are in part dependent on variation across regions in industrial mix and proximity to foreign markets for the output of that industrial mix. Consequently, specific geographical regions tend to engage in international trade with certain countries. Thus, to the extent that exchange rate changes are not uniform across countries, one might expect that exports (and associated economic activity) from different U.S. regions might be differentially affected by exchange rate movements.

EXPORT SHARES

A comparison between the market shares of major export market destinations for total U.S. exports and the market shares of major export market destinations for geographic subregions of the United States provides a clue to the kind of diversity one might expect to observe across regional exchange rate indexes. Figure 2 presents the share of total manufactured goods exports (1993–94 average) to the ten largest foreign markets (except China—the yuan is not included in the regional indexes) of the United States and eight sub-regions.

Differences in magnitude between the U.S. total and the regional totals appear to support the idea that regional aggregate exchange rate indexes might prove useful to the understanding of trade developments and aggregate movements in economic activity in various regions of the United States. Note for example, that the Midwest exports nearly 43 percent of its total manufactured goods exports to Canada, more than 12 percent to Mexico, another 13 percent to major European markets, and 5 percent to Japan.

²Based on data contained in U.S. Department of Commerce, Bureau of the Census, *U.S. Merchandise Trade*, FT-900 1995.

On the other hand, the United States as a whole ships only 23 percent of its manufactured goods exports to Canada and about 10 percent to Mexico, while it ships 15 percent to major European markets and about 10 percent to Japan. By comparison, country share data for the Far West show that region's shipments to Japan account for a substantially larger share of its total exports—around 18 percent.

These share data indicate that Midwest exporters of manufactured goods depend substantially more heavily on foreign markets in which the dollar has appreciated in recent years (Canada and Mexico) relative to overall U.S. exports of manufactured goods. For the latter, exports to Europe and Japan (currencies against which the dollar generally depreciated) are relatively more important.

REGIONAL INDEX CONSTRUCTION

Characteristics of the regional export-weighted dollar indexes are defined as follows:

REGIONS

Nine indexes are identified. Eight state aggregations correspond to the U.S. Department of Commerce, Bureau of Economic Analysis (BEA), geographical breakdown of the United States.³ An aggregate U.S. index is also constructed. The primary focus is on the BEA's "Great Lakes" region, referred to here as the "Midwest" (Illinois, Indiana, Michigan, Ohio, and Wisconsin).

Technically, the regions can be defined as small as an individual state. Disaggregation to this degree is not reported here, however, because of data distortions that are exaggerated by the use of individual state data. Specifically, it is common practice that the manufacture of intermediate components may be carried out in one state. The components are then shipped to one or more other states during various stages of assembly before the product is exported as a final good or a more advanced intermediate component. Individual state export data are not based on value added in the state, but rather by the state of location of the exporting "Shipper's Export Declaration." This means that the value of intermediate goods eventually exported may not be attributed to the appropriate state. The aggregation of states into "economic regions," that is, the BEA regions, should reduce, although it will not fully eliminate, this mismeasurement.

³ **New England**—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont; **Mideast**—Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania; **Great Lakes**—Illinois, Indiana, Michigan, Ohio, Wisconsin; **Plains**—Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota; **Southeast**—Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia; **Southwest**—Arizona, New Mexico, Oklahoma, Texas; **Rocky Mountain**—Colorado, Idaho, Montana, Utah, Wyoming; **Far West**—Alaska, California, Hawaii, Nevada, Oregon, Washington.

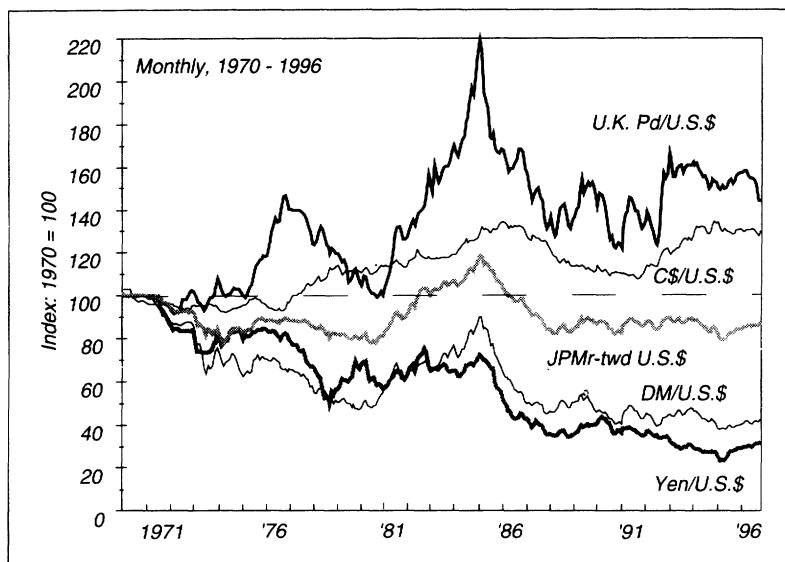


FIGURE 1. Indexes of Selected Dollar Exchange Rates

COUNTRY CURRENCIES

Currencies of 44 countries are incorporated in the regional dollar indexes. They are the same countries used in the J.P. Morgan "real effective exchange rate indices."⁴ The J.P. Morgan real index countries are used, in part, to provide a known index for comparison at the national level.

WEIGHTING SCHEME

Trade weights applied to the individual currencies are based on the average of 1993–94 manufactured goods exports by state to the 44 countries, respectively, by industry [at the two-digit Standard Industrial Classification (SIC) code]. The use of "export-only" trade weights requires some explanation, as it is an unusual methodology in the construction of an aggregate exchange rate index.

Aggregate exchange rate indexes typically use a weighting mechanism based on bilateral trade weights for the currencies/countries included in the index

⁴The J. P. Morgan "Broad" index incorporates 21 OECD currencies (plus the U.S. dollar) and 23 LDC currencies. The foreign currency markets are Canada, Japan, Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, Ireland, New Zealand, Turkey, Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Venezuela, Hong Kong, Indonesia, the Republic of Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand, India, Kuwait, Morocco, Nigeria, Pakistan, Saudi Arabia, and South Africa.

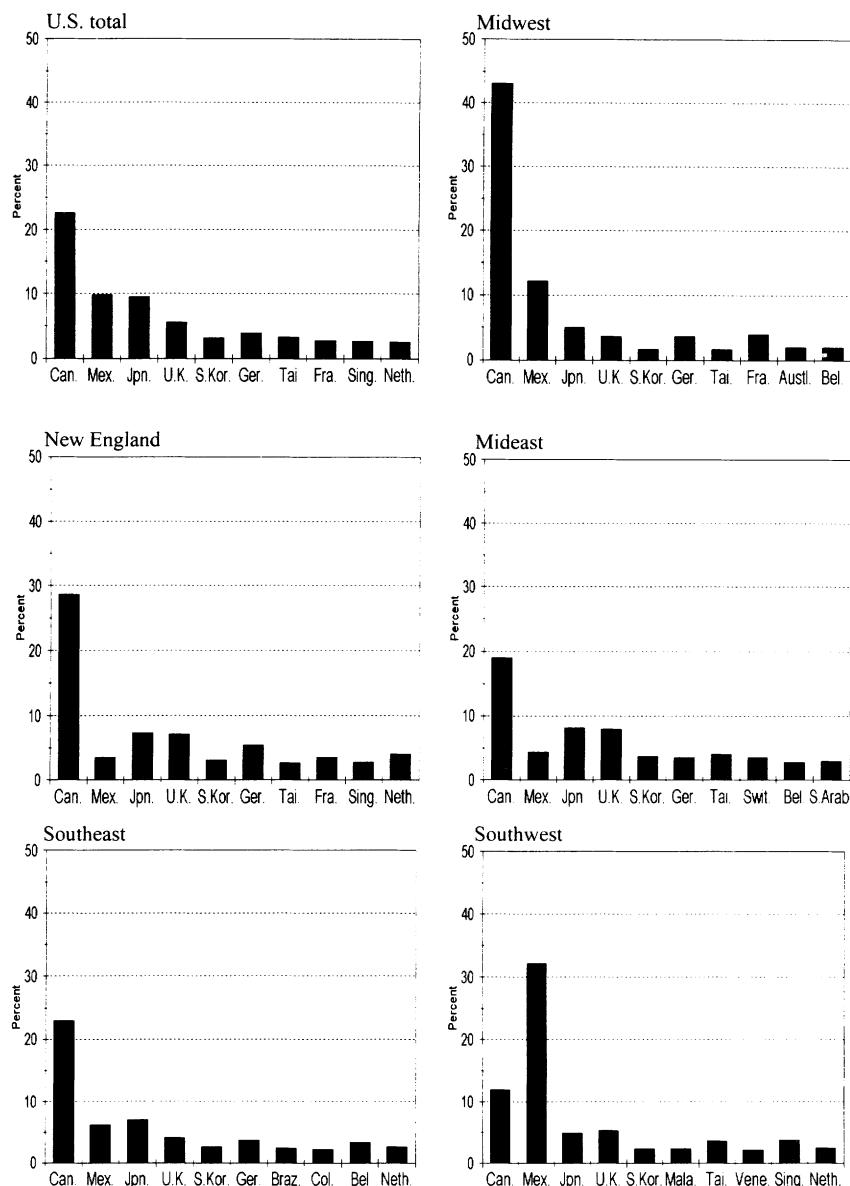
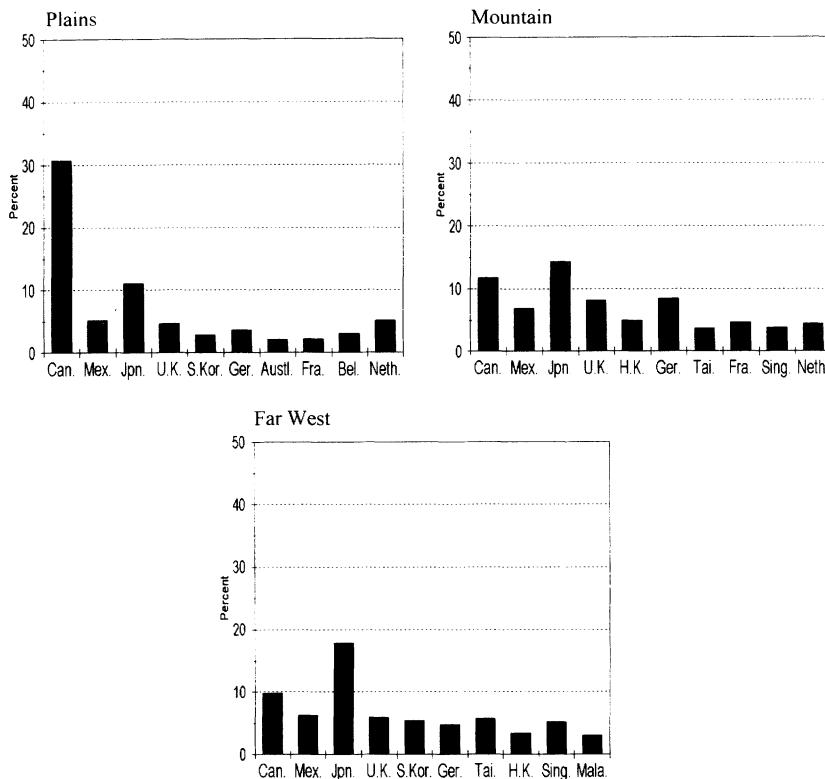


FIGURE 2. Regional Share of Total Manufactured Goods Exports by Country of Destination (Share by Market, 1993-94 Average)



Source: MISER, State of Exporter Location Data (Series II), 1993, 1994.

FIGURE 2. Regional Share of Total Manufactured Goods Exports by Country of Destination (Share by Market, 1993–94 Average) (continued)

(e.g., U.S. exports plus imports by country of destination or source) or multilateral trade weights [e.g., total world trade (i.e., exports-to-the-world plus imports-from-the-world) for each country in the index]. A bilateral weighting scheme for a regional index suffers from the lack of reliable state import data (at any level—for state of initial destination or state of final utilization). Multilateral trade weights have the desirable characteristic of being better able to take into account the third-country effects of exchange rate changes. However, the aggregate exchange rate construction pursued in this paper does not allow this issue to be addressed, as multinational weights would impose the same set of country weights on each state/region, which would negate the premise of the work. Nonetheless, the “third-country” issue is of substantial importance and needs to be

acknowledged, although it is not dealt with here. In sum, the third-country issue boils down to this: The dollar may experience a real depreciation (appreciation) relative to a bilateral trading partner. That exchange rate change affects the relative competitiveness of the U.S. goods relative to the bilateral partner. But it may also affect the relative competitive position of U.S. goods exports and those of the bilateral trading partner, relative to mutual third-country trading partners.

The restriction to the use of export-only weights requires that any conclusions be carefully drawn. These indexes relate only to an aggregation of exchange rates that exporters face directly. While the question, "what aggregate exchange rate do exporters face?" is an important issue to address, it nonetheless begs the question; "what are the effects of exchange rate change on the regional domestic market?" Bilateral indexes (export and import weights), if they were feasible, would more fully address that question. There are then, at least two areas of inquiry in which one might be interested: the regional impact of exchange rate change on the export market and the impact of exchange rate change on the regional import market. At this stage, only the exporter side is addressed.⁵

INDUSTRY CLASSIFICATIONS—DURABLE AND NONDURABLE

In an attempt to hold the first stage of the index construction agenda to a manageable size the industry data, which are based on 20 two-digit manufacturing SICs, are aggregated to form three classes—durable goods, nondurable goods, and total manufactured goods.⁶

EXPORT DATA

Data for the state and industry weights in the indexes are based on U.S. Bureau of the Census "state of export—location of exporter" series.⁷ Exports by country of destination allocated by SIC for the years 1993 and 1994 are used in the weighting scheme. The "location of exporter" series was first made available (on a continuous basis) by the U.S. Department of Commerce for the year 1993.

⁵An alternative measure holds some promise for getting at the import competitiveness issue. A scheme utilized by Hayward and Erickson (1995), who in a somewhat different context sought to measure the size of import competing industries, by state by SIC, appears potentially useful in this regard. This work is in the process of being extended to include the construction of an aggregate bilateral index that utilizes a modification of the Hayward-Erickson measure for imports by region.

⁶**Durable goods:** SIC-24, lumber and wood products; 25, furniture and fixtures; 32, stone, clay, and glass products; 33, primary metal industries; 34, fabricated metal industries; 35, industrial machinery and equipment; 36, electronic and other electric equipment; 37, transportation equipment; 38, instruments and related products; and 39, miscellaneous manufacturing industries. **Nondurable goods:** SIC-20, food and kindred products; 21, tobacco manufactures; 22, textile mill products; 23, apparel and other textile products; 26, paper and allied products; 27, printing and publishing; 28, chemicals and allied products; 29, petroleum and coal products; 30, rubber and miscellaneous plastics products; and 31, leather and leather products.

⁷Bureau of the Census, U.S. Department of Commerce, *FT-900 Supplement* "location of exporter" series.

These data series are superior to the Department of Commerce "origin of exporter" series, available from 1987, which biases the valuation of exports by individual states toward those states where the port of export is situated. The Census location data are adjusted for exports unallocated by state and industry classification and are made available by the Massachusetts Institute for Social and Economic Research (MISER).⁸ The MISER location, or "series 2," formulation is used here. The three industry classifications for each of the eight regional aggregations, plus the U.S. total, result in a total of 27 indexes.

There is an issue of some concern with regard to the 1993-94 period selected for the export and industry weights. It is well established in the literature that during the period 1970 through the late 1980s, marked changes in U.S. trade patterns were recorded. Hickok and Orr (1989 and 1990), Hervey (1990), and Hickok (1991) document substantial change in the foreign market shares for U.S. exports and in the industrial composition of exports during that period. The selection of a fixed period base for a trade-weighted index, therefore, raises questions about the potential bias in the indexes as they move away from the base period. Work on aggregate indexes by Hervey and Strauss (1987a, 1987b) suggests that export weights that use a moving average to account for change over time in the composition of trade by destination would be desirable. More recently, Coughlin, Pollard, and Betts (1996) make a case for the use of chained weights in the construction of aggregate exchange rate indexes to lessen the well known problems associated with the fixed period base of the Laspeyres type index used in most aggregate exchange rate indexes, including the ones constructed in this study. Acknowledging these shortcomings, this work, nonetheless, is constrained to use fixed-year weights because of the limited availability of the state export data set.

"REAL" ADJUSTMENT

In any aggregate exchange rate index, one must be concerned about the relative rate across countries of within-country price or productivity changes. This is especially the case when countries within the index experience marked differences in their relative rates of inflation or productivity. Consequently, from the perspective of measures of international competitiveness, a simple change in the exchange rate between two currencies tells only half the story. In fact, two levels of price change are of concern: the price of one currency in terms of another (the nominal exchange rate) and critically, the relative internal change, across countries, in prices of the traded goods (i.e., domestic inflation). In short, the focus is on a "real" exchange rate, one that is adjusted to account for differences in rela-

⁸The state export data as reported by the Bureau of the Census contain a substantial category of "unallocated" exports. The Massachusetts Institute for Social and Economic Research, "MISER State of Exporter Location Data (Series II)" adjusts these data to account for the unallocated portion. These adjusted data series are made available on a by-state-by-country of destination at the two-digit SIC classification. In 1994, these adjustments accounted for nearly 7 percent of total manufactured exports.

tive rates of inflation between the index currency (U.S. dollar) and the other currencies included in the index.

The preferable “internal” price series for this exercise would be one that relates specifically to the goods traded. However, price series with such detail are not available for the spectrum of countries and industry groups included in the regional indexes constructed here. The “real” adjustment is constructed using “producer prices” series (provided by J.P. Morgan) for the respective 44 countries incorporated in the indexes, relative to producer prices for the United States.⁹

Exchange rate series for countries used in the indexes are monthly averages taken from the International Monetary Fund, International Financial Statistics series, except for Taiwan and Hong Kong, which are from the Federal Reserve Board series.

Calculation of the regional “export-weighted” dollar takes the following form:

$$RGTWD_{k,i,t} = 100 \left[\prod_{j=1}^{44} \left[\frac{XR_{j,t}}{XR_{j,0}} \div \frac{PPI_{j,t}}{PPI_{US,t}} \right]^{Wgt_{k,i,j}} \right],$$

where

$RGTWD$ is regional export-weighted dollar,

k U.S. region with n states,

j Country (1 to 44),

i U.S. manufacturing industry category (SIC 20–39),

t is time period (observations are monthly from January 1970 through December 1996),

XR is an exchange rate of country j with respect to the U.S. dollar (foreign currency/U.S.dollar), index 1990 = 100,

PPI is a producer (wholesale) price index for country j or the U.S., 1990 = 100,

Wgt is a share of U.S. exports of industry i , from region k , to country j (weights are an average of 1993 and 1994 U.S. good exports).

Note: The indexes are constructed with the base year 1990 = 100. For expository purposes, the indexes, once constructed, are rescaled to the year 1970 = 100.

THE EXPORT-WEIGHTED INDEX RELATIVE TO A BILATERAL STANDARD INDEX

Recall that the real export-weighted indexes constructed here include the same 44 currencies and use the same price series as the “real effective exchange rate indices” constructed by J.P. Morgan. Consequently, differences between the two indexes at the national level should be due primarily to differences in trade

⁹These price indexes were provided by the Economic Research group of J.P. Morgan. In this paper, the price indexes carry from January 1970 through December 1996.

weights—bilateral weights in the J.P. Morgan index or export weights as used here. The two indexes are in fact closely linked during most of the period 1970 through the first quarter of 1985 and are virtually identical as late as the first quarter of 1985 (1970 = 100). However, during the second half of 1985, the two indexes begin to "unlink." Presumably this occurred as the response to a shift in the influence of the relative influence of imports vis-à-vis exports plus imports on the trade weights as reflected in the Morgan index. This was a period where virtually all exchange rate measures recorded a substantial depreciation of the dollar.

Both indexes record a marked depreciation in the dollar from the first quarter of 1985 into the 1987–88 period, although the Morgan index records a more rapid and deeper decline. For example, during the first quarter of 1987 the Morgan index averaged 11.7 percent lower than the export-weighted index. Interestingly, from late 1988 through the end of 1996, movements in the two indexes "relink" and move parallel to each other (are essentially flat), albeit over that period the level of the Morgan index remains, on average, 9.7 percent lower than that of the export-weighted index (percentages are logarithmic).

SOME MYTHS DIE HARD

Recall that an argument has been made that during the last decade, international competition was a major factor in the restructuring of U.S. manufactured goods industries. An important element of the argument centers on the dramatic appreciation of the dollar exchange rate during the first half of the 1980s and the consequent deterioration in the competitive position of domestic industries that allegedly resulted. The exchange rate impact resulted in higher foreign currency costs for U.S. goods vis-à-vis foreign goods and lower U.S. prices for foreign made goods vis-à-vis domestically produced goods. In short, U.S. manufacturing industries were faced with two hard choices: restructure so as to remain viable competitors in world markets (foreign and domestic), or close up shop. In this environment of intense international competition and volatile exchange rates, the impact of dollar exchange rate developments came to be viewed as a critical factor influencing the competitive position of manufacturing export industries in the Midwest.

The argument further held that the depreciation of the dollar during the last half of the 1980s, extending into the mid-1990s, was an important element contributing to the rejuvenation of the Midwest's industrial economy during that period. Expanding export markets, encouraged by a cheaper dollar, it was argued, were critically important in contributing to that rejuvenation.

Indeed, based on its performance in export markets, Midwest industry apparently became more competitive in those markets in the late 1980s through the mid-1990s. But, was a depreciating dollar an important contributor to that development? Recall that it was also the case that during this period the dollar was

appreciating against the currencies of major trading partners, such as Canada, the United Kingdom (see figure 1), and Mexico.

By every available measure, there was a large appreciation of the dollar exchange rate during the 1980–85 period. That this development adversely affected the competitive position of U.S. industry in export markets is not in question here. It is also widely acknowledged that this development contributed toward an awakening of U.S. industry to the need to become more competitive in order to remain a factor in export markets. Furthermore, it is noncontroversial that the large depreciation of the dollar from early 1985 into 1988 contributed to reversing the adverse competitive impact of the earlier appreciation.

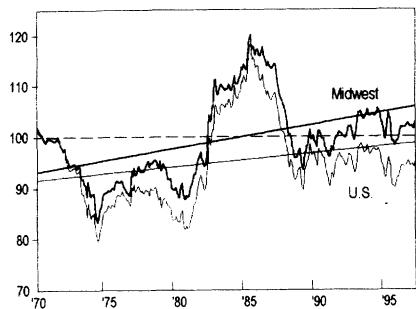
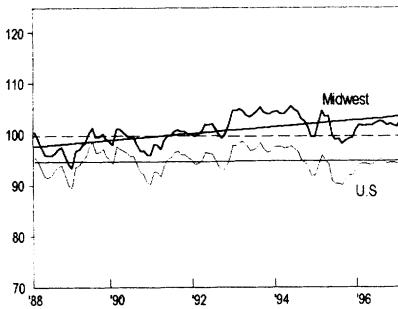
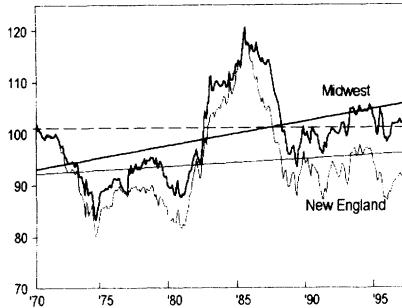
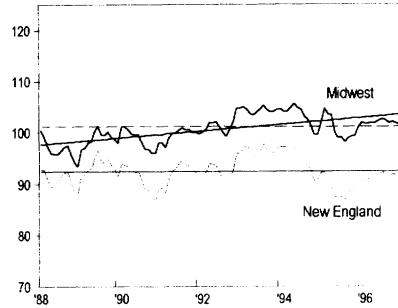
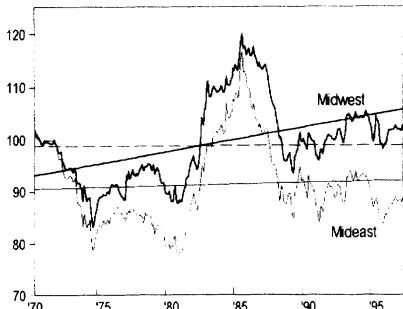
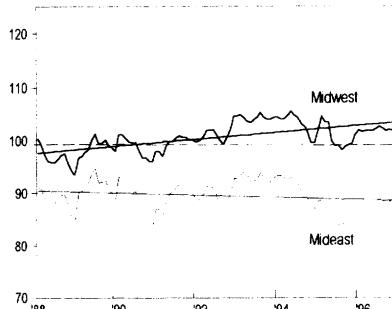
REGIONAL INDEXES

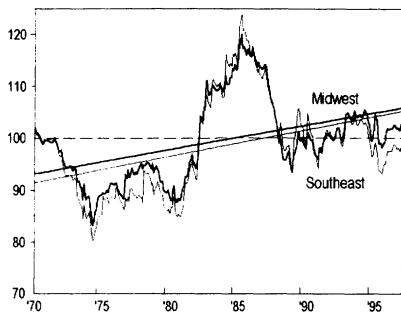
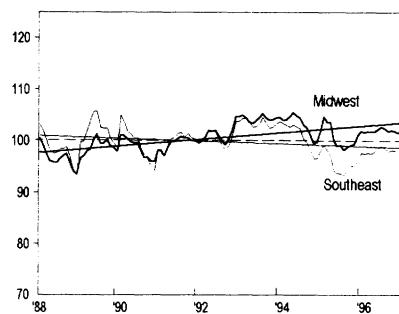
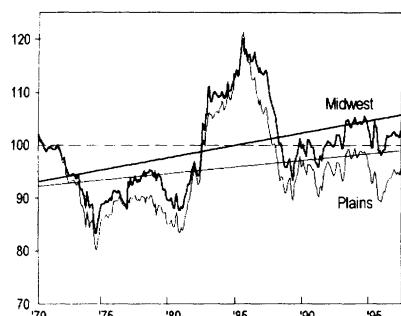
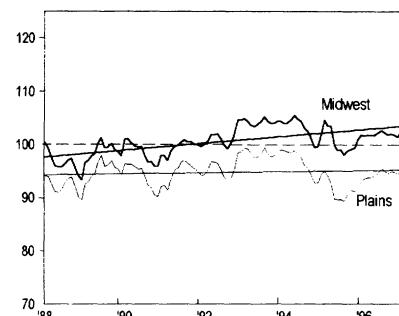
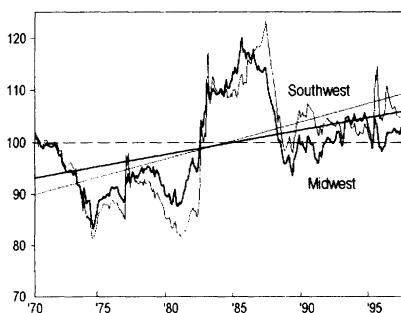
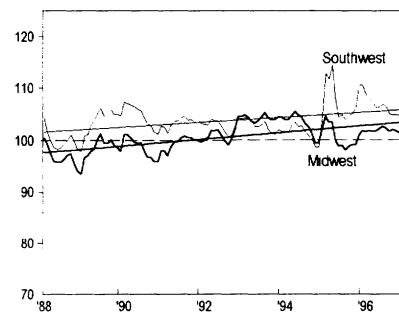
The regional export-weighted dollar indexes suggest a result that is in some cases contrary to the common perception regarding the dollar exchange rate: That perception being that the real aggregate exchange value of the dollar continued the depreciating trend, following the 1985–88 period, into the mid 1990s. In fact, the aggregate Midwest export-weighted real dollar index shows an appreciating trend, not only for the period 1988–96, but also for the entire period 1970–96, and most particularly the period 1974–96 (figure 3, panels 1a and 1b). This appreciation is due primarily to the fact that Midwest manufactured goods exports to Canada and Mexico have accounted for 50 to 60 percent of total goods exports from the region in recent years.

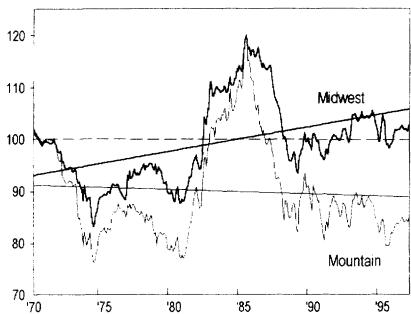
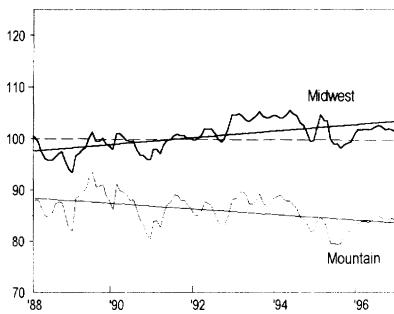
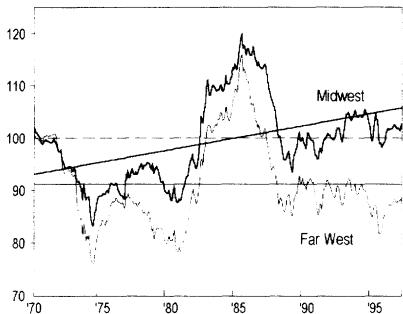
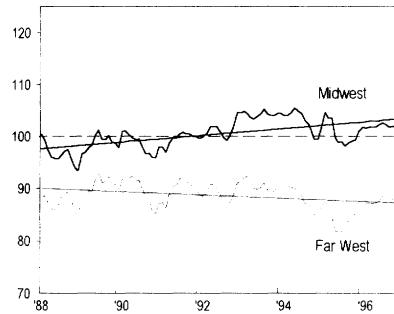
Marked differences also emerge from an examination of the other regional indexes. Data presented in figure 3 also show substantial contrast between the various regions in the level and trend of the indexes over time. For the period 1988–96, divergent trends from that recorded for the Midwest appear prominently in the indexes for the Mideast (figure 3, panel 3b), the Mountain states (figure 3, panel 7b), and the Far West (figure 3, panel 8b). Each of these three regional indexes records a marked depreciating trend during the 1988–96 period, compared with the Midwest's appreciating dollar. During the post-1987 period, the indexes for New England and the Southeast show slight depreciating trends. During that same period the Southwest, with exports heavily influenced by Mexican trade (figure 3, panel 6b), is the only region besides the Midwest to record an appreciating dollar trend.

The differential between the Midwest and Far West indexes is particularly interesting in that it clearly shows the influence of different foreign market composition on the two regions. The Midwest index, heavily influenced by the dominant share of exports shipped to Canada and Mexico, shows an appreciation during the 1970–96 period (3.6 percent from the 1970 average to December 1996) and the 1988–96 period (6.6 percent from the 1988 average to December 1996).¹⁰ The Far West region, showing the relatively greater importance of the

¹⁰Percentage changes in the indexes are reported on a logarithmic basis.

Panel 1a: Midwest and the U.S., 1970–96**Panel 1b:** Midwest and the U.S., 1988–96**Panel 2a:** Midwest and New England, 1970–96**Panel 2a:** Midwest and New England, 1988–96**Panel 3a:** Midwest and Mideast, 1970–96**Panel 3b:** Midwest and Mideast, 1988–96**FIGURE 3. Regional Export-Weighted Exchange Rate Indexes for Manufactured Goods (1970=100)**

Panel 4a: Midwest and Southeast, 1970–96**Panel 4b: Midwest and Southeast, 1988–96****Panel 5a: Midwest and Plains, 1970–96****Panel 5b: Midwest and Plains, 1988–96****Panel 6a: Midwest and Southwest, 1970–96****Panel 6b: Midwest and Southwest, 1988–96****FIGURE 3. Regional Export-Weighted Exchange Rate Indexes
for Manufactured Goods (1970=100) (continued)**

Panel 7a: Midwest and Mountain, 1970–96**Panel 7b: Midwest and Mountain, 1988–96****Panel 8a: Midwest and Far West, 1970–96****Panel 8b: Midwest and Far West, 1988–96**

**FIGURE 3. Regional Export-Weighted Exchange Rate Indexes
for Manufactured Goods (1970=100) (continued)**

Japanese market, records a downward trending to virtually flat index for the two respective periods. As of December 1996, the Far West's dollar index stood 12.7 percent below its average for 1970 and was only 0.9 percent above its 1988 average.

The appreciating trend for the Southwest dollar index also stands out. The trend and its variability clearly reflect the influence of the multiple devaluations of the Mexican peso on the real dollar exchange rate that the region faces in export markets. The trend recorded in the Southeast index also reflects the importance of the Mexican and other Latin American markets to that region. Interestingly, the trend for the Southeast over the 1970–96 period shows a marked appreciation; however, during 1988–96, the trend is marginally downward.

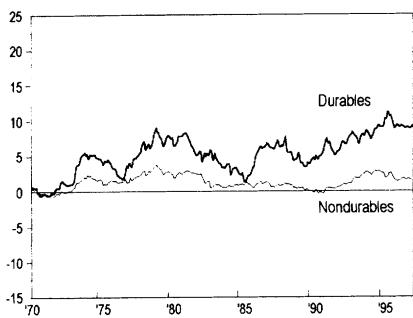
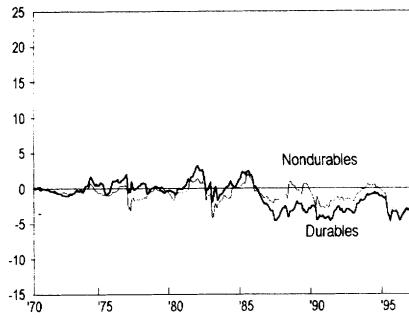
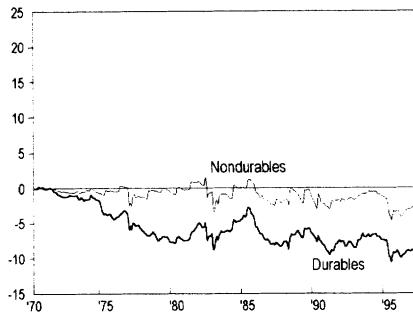
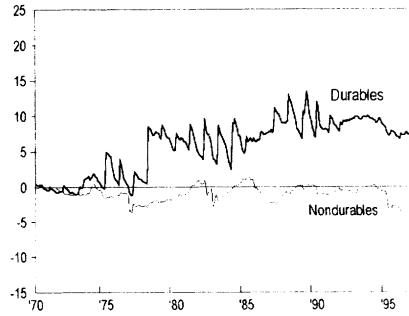
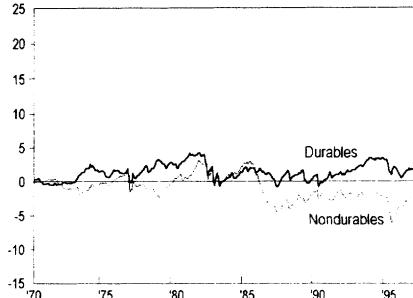
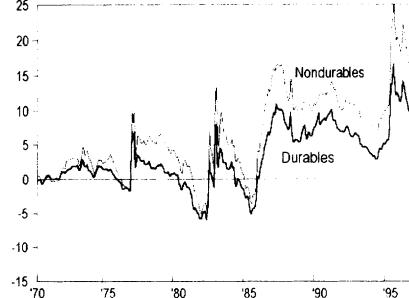
Industrial composition of exports also appears to influence the regional exchange rate pattern. For the U.S. total, the export-weighted real indexes for durable and nondurable goods are virtually identical. The similarity between the durable and nondurable for the U.S. is used to highlight the durable and nondurable indexes for the various regions. Regional durable and nondurable indexes are presented in figure 4 in relation to the U.S. total for those respective indexes. For example, for each region the percent difference of the region's durable/nondurable indexes from that of the respective total U.S. durable/nondurable indexes is calculated. A positive divergence indicates that the regional index is appreciating relative to the total U.S. index.

The Midwest durables index (figure 4, panel 1) records a substantial positive divergence from the U.S. average, while the region's nondurable index is close to the U.S. average. Two other regions, the Southeast and the Southwest (figure 4, panels 4 and 6) also record large positive divergence from the U.S. average for exported durable manufactured goods. The Southwest shows a large positive divergence from the U.S. for durable and nondurable goods—the only region to record this pattern. Regions that show a large negative divergence for durables industries, that is depreciation relative to the U.S. average, are the Mideast, the Mountain states, and the Far West (figure 4, panels 3, 7, and 8, respectively). Among this latter set of regions, only the Far West also records a marked depreciation, relative to the U.S., in the nondurables industries. Indexes for the New England and Plains regions (figure 4, panels 2 and 5) more closely parallel the U.S. average.

SUMMARY

While it is true that industries within the United States that engage in international trade face a common external border and a common set of national exchange rates, it is also the case that from a regional perspective and an industry perspective, the specific set of exchange rates faced may be quite different, depending upon the destination of the exporters' products.

Construction of a set of regional export-based exchange rate indexes indicates that in the aggregate, Midwest manufactured goods exporters, as well as those in the Southwest, by the nature of the composition of their foreign markets and their heavy concentration in durable goods industries, have faced an appreciating dollar since the late 1980s (abstracting from third-country effects). Indeed, except for the 1980–87 “blip” in the dollar exchange rate, Midwest manufactured goods exporters, in the aggregate, have faced an appreciating-trend dollar since early 1974. In December of 1996, the real dollar exchange rate faced by the aggregate of goods manufacturing exporters located in the Midwest stood 17.2 percent higher than the average recorded for the year 1974 and 3.6 percent higher than in 1970, well before the initial formal devaluation of the dollar. Since 1988, the export-weighted dollar has generally strengthened. In December of 1996, the Midwest's real export dollar stood 6.6 percent above its average 1988 level.

Panel 1: Midwest and the U.S.**Panel 2:** New England and the U.S.**Panel 3:** Mideast and the U.S.**Panel 4:** Southeast and the U.S.**Panel 5:** Plains and the U.S.**Panel 6:** Southwest and the U.S.**FIGURE 4. Regional Exchange Rate Indexes Relative to the U.S. Indexes for Durable and Nondurable Goods (Percentage Difference)**

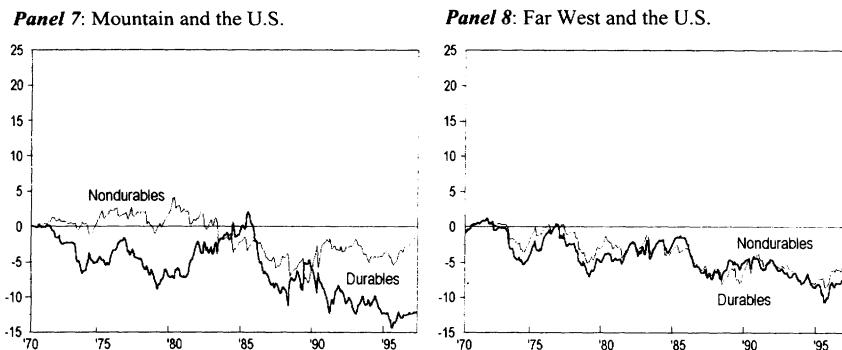


FIGURE 4. Regional Exchange Rate Indexes Relative to the U.S. Indexes for Durable and Nondurable Goods (Percentage Difference) (continued)

It is widely acknowledged that Midwest manufacturing exporters have become more competitive in export markets over the past decade. However, given the foreign markets that Midwest manufacturing is active in, it would appear that this increased competitiveness has been accomplished not because of a depreciating dollar, as conventional thought has often contended, but rather, Midwest manufacturing exporters, in the aggregate, have become more competitive in the face of an appreciating real dollar.

Finally, it should be remembered that this conclusion tells only half of the story. These indexes provide no clue as to the regional implications of changes in the dollar exchange rate on import competition in the primary market for U.S. manufacturing industries—that is, the domestic market. This important issue will be examined in a forthcoming study.

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