

FOREIGN IMPORTS AND NONMETROPOLITAN GROWTH

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Historically, the United States has been a rural country. The first census in 1790 indicated that 95 percent of the population was rural. Even at the turn of the century 60 percent of the people were living on farms or in villages. But, since then most of the nation's growth in population and economic activity has occurred in urban areas.

The growth of urban areas is indicative of the fact that most of today's industrial activity is not locationally tied to natural resources. It has been estimated, for example, that whereas less than 40 years ago nearly 30 percent of industrial activity needed to be located close to natural resources today only 7 percent is resource bound [9, p. 28]. In relative terms, what has largely replaced natural resource inputs in industrial production are fabricated or synthetic-type materials, specialized labor and business oriented services. In other words, the materials of more and more industries are now drawn from manufactured sources rather than natural ones. The development of these manufactured inputs for further production has been possible, of course, through advances made in technology, product refinement and the adaptability of labor to engage in specialized tasks. Such advances of a technical nature contributed to (and benefited from) the formation of metropolitan areas.

This phenomenon can best be summarized with the use of Gunnar Myrdal's concept of cumulative causation [11]. As an economic unit (i.e., the firm) grows, the division of labor within it increases and becomes more differentiated spatially as well as functionally. As division of labor increases, technical proficiency of the firm grows. As technical proficiency advances, more resources can be obtained from the environment. As resources expand, the longevity of the organization increases, and the firm adds employees and output leading to further division of labor and a more complex spatial differentiation of labor and so on in a seemingly never-ending spiral of growth towards larger organizations and, by implication, growth of urban areas. Such terms as localization economies, urbanization economies, agglomeration economies, external economies of scale, superior consumption possibilities, and the like have been used to capture the special advantages that metropolitan areas offer large and small industrial enterprises as well as the consumer.

While large metropolitan areas offer advantages such as specialized labor, professional counseling, innovative capabilities, educational institutions, and the like, there are also important disadvantages, such as air pollution, over-

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powering noise levels, high living costs, and economic anxiety. These factors can clearly affect attitudes, work habits, and productivity. Nonmetropolitan areas, on the other hand, offer a place for businesses and workers to escape the growing social costs of large cities. For businesses, the often cited locational advantage of the smaller city and rural community is lower labor costs. Continual successful operation in such areas has been further encouraged by the interstate highway system, growth of feeder airlines, available financing through the development of a sophisticated and integrated network of financial institutions, local job training programs, improvements in utility services, and a general feeling of acceptance by the community of new business activities.

While the cumulative causation thesis has been quite serviceable in explaining the pattern of urbanization in this country, recent public opinion surveys and population studies suggest the advent of a new era: a halt, if not reversal, to the pattern of urbanization. A Gallup Poll released in 1968 found that 56 percent of the respondents would prefer to live in rural areas or small towns if jobs are available. A similar survey conducted in 1971 for the Commission on Population Growth and the American Future showed that 64 percent of the respondents would prefer to live in rural areas or small cities/towns [6, p. 34]. Many of these particular respondents revealed further that they would still like to live close to a metropolitan area to take advantage of its special amenities, for example, professional sports, the theatre, and the like. Turning to population studies, population statistics for the 1970s illustrate a relative shift of population growth from metropolitan to rural areas (see Table 1). Such a dramatic reversal of historical trend, although admittedly tentative at this point, has attracted considerable interest. Various scholars have concentrated on measuring this phenomenon, explaining its causes and discussing its implications [2]. Others have discussed the more general issue of the determinants of rural development [7]. This paper has as its focus a much narrower objective: to investigate the influence which international trade, specifically foreign imports, has had on rural development, 1960-1975.

The first section of this paper offers the conceptual basis for the belief that international trade could be an important determinant of rural development patterns. The second section outlines the specific methods used in empirical research, while the third section presents a sampling of results. Finally, the fourth section summarizes these results, presents conclusions and advances some speculations for further research.

Conceptual Underpinnings

In the past 15 years world trade has increased tremendously. During the 1960-1975 period the total value of U. S. commodity trade increased, in current dollars, almost six-fold. U. S. commodity imports increased from \$15 billion to almost \$97 billion, a 543 percent jump [17, p. 850]. Not only has the volume of trade increased, but the institutional framework in which this trade takes place has also changed. While this is not the place to recount the demise of the Bretton Woods Agreement, the scrapping of fixed exchange rates in favor (of at least some form) of flexible exchange rates and the OPEC oil embargo, it is the place to inquire into the implications of these developments for rural growth in the United States.

TABLE 1: Population Growth Rates, 1960-1975

<u>Area</u>	Annual Population Growth Rate		
	1950-1960	1960-1970	1970-1975
United States	1.7%	1.3%	0.9%
Metropolitan Areas	2.3	1.5	0.7
Central Cities	1.1	0.6	-0.6
Outside Central Cities	3.8	2.4	1.8
Nonmetropolitan Areas	0.5	0.7	1.2
Adjacent counties*	NA	0.7	1.5
Nonadjacent counties	NA	0.1	1.2
Entirely rural counties	NA	-0.4	1.4

*Nonmetropolitan counties adjacent to SMSA's.

Source: Niles Hansen, "Are Regional Development Policies Needed?" The Review of Regional Studies, v. 6, n. 1, p. 14, and Calvin L. Beale, "Current Status of the Shift of U. S. Population to Smaller Communities," paper presented to the Population Association of America, St. Louis, April, 1977.

The approach used in this study can best be illustrated by juxtaposing two theories of what has been called industrial filtering. The "filter down" concept, as applied to interregional competition, is largely credited to Wilbur Thompson who suggested that "industries filter down through the system of cities, from places of greater to lesser industrial sophistication" [7, p. 6-12]. What this basically means is that when a marketed product reaches large-scale buyer approval, standardized means of production will be developed. When this stage in the product's life cycle is reached, it may be more profitable to carry out this more routine process of production in a nonmetropolitan environment where a sufficient supply of low cost labor is available to undertake routine tasks.

In light of Thompson's filter down theory, firms that in general can best profit by locating in a nonmetropolitan area will likely possess some (or all) of the following characteristics [8].

1. There will be few specialized labor skills required for production purposes. Labor will perform mostly routine tasks.
2. Production will be more oriented to the assembly of purchased parts than to the fabrication of those parts.
3. The major function of the plant will be production; market distribution will be handled by the 'home' office through warehouse operations.
4. Inventories can be kept on hand for production runs rather than relying upon 'hand-to-mouth' purchasing.
5. Consistent with Thompson's notion of a product's life-cycle, these plants will be faced with low profit margins.
6. There will be few professional workers such as engineers, physicists, and mathematicians attached closely to the manufacturing process since the process has been standardized.
7. The physical layout of the plant will reflect an assembly line method of production.

These characteristics fit well the interregional, industrial location patterns of the United States. The industries which moved to the low wage, nonmetropolitan areas tended to be industries that produced fairly standardized products, and hence, these industries had no important reason to be close to a sophisticated industrial environment. As examples, the grey goods, cotton sheetings, and men's shirt plants moved south, while the producers of high-style dresses or other unstandardized items, remained for the most part, in the large urban markets. In the electronic industry, it was the mass producers of tubes, resistors and other standardized high-volume components that filtered out of the large cities. A similar pattern occurred in printing and in chemical production.

Raymond Vernon has advanced a theory of industrial filtering in the international sphere [20]. Briefly, he suggests that industries go through three

phases or stages in the development process. In stage one, or the developmental phase, new firms, attracted mainly by communication and external economies, initially begin their operations in the United States. In stage two, as product demand expands and a certain degree of standardization takes place, production units are set up in other advanced nations. Finally, in stage three, once economies of scale have been fully exploited and the industry has matured, as evidenced by decreasing rates of increase in consumption (especially in developed economies) the industry is likely to be attracted by lower labor costs to locations in less developed countries. Vernon further noted that the products of these industries would indicate a fairly clear-cut set of economic characteristics. These characteristics are: (1) significant inputs of labor; (2) high price elasticity of demand; (3) standardized production techniques; and (4) high-value products and relatively low transport costs. The similarity between Vernon's list of industry characteristics and the earlier list describing the industry characteristics of Thompson's filter down thesis is obvious. Thus, it can be conjectured that nonmetropolitan areas of this country are likely to find themselves in competition with the products of the less developed world. The growth rate and changing industrial structure of nonmetropolitan areas in this country should reflect the results of this competition. Hence, the focus of this paper: foreign imports and U. S. nonmetropolitan growth.

Methodology

The method of analysis was rather straightforward. First, the universe of rural or nonmetropolitan areas was defined. Second, those industries, largely at the five digit SIC level, which could be considered as "rural-oriented" were identified. Third, import statistics for the rural industries so identified were assembled. Fourth, those counties in the rural universe having a significant fraction of their employed labor force in the industries isolated in step two were located. Finally, the population growth of the sample counties were compared with that of the appropriate foreign import time series. This section will outline, in more detail, these basic steps.

The first two steps in the methodology relied heavily on the work of others. Identification of rural areas was based on work done by Calvin L. Beale for the Economic Research Service, Department of Agriculture. Using 1960 Census data Beale had identified 1,718 counties, out of the total of 3,096, as non-commuter counties [14]. Other counties were either classified as urban or commuter areas. Although based on 1960 data, Beale's noncommuter counties in the contiguous United States were adopted as the rural universe for the 1960-75 period. While urbanization in the 1960s may have changed the noncommuter nature of some of these counties, it is doubtful that such changes affected those counties in the subsequent sampling of this universe.

Rural industries were defined on the basis of research done by the U. S. Department of Commerce [19]. For the purpose of this study an industry was classified as nonmetropolitan if at least 50 percent of the firms responding to Commerce's survey indicated that they were located in a town of less than 50,000 population and if at least 20 percent of these firms (or plants) were located at least 50 miles from a city of 50,000 or more residents. Seventy-four

five digit SIC industries were identified.¹ It should be noted that this list is undoubtedly incomplete due to inadequate firm response in certain surveyed industry groups. Most notable is the complete absence of all food processing groups under the general heading (SIC 20) of Food and Kindred Products along with the sparse representation from the textile, apparel and footwear industries. To partially remedy this gap, but more importantly, to add those industry groups that possess some (or all) the characteristics of the filter-down-type plant, the primary sample, which makes up the 74 five digit SIC industries, was expanded to include textiles (SIC 22), apparel (SIC 23) and footwear (SIC 314). This larger sample is referred to below as the expanded sample.

Import data for 1964 through 1975 were obtained for the five digit industries from government publications [18]. Consistent foreign import statistics could be obtained for 33 of the 74 five digit industries previously identified. Import data at the two digit level for the 1960-1975 period were obtained for textiles and apparel and import data at the three digit level for the same period were obtained for footwear. These data were found in the Statistical Abstract of the United States [17].

Rural counties containing significant concentrations of employment in the 33 rural industries for which import data were available were obtained using County Business Patterns [15]. "Significant concentrations" were defined on the basis of the percent of the employed manufacturing labor force engaged in the designated activity. Primary interest was devoted to those counties having over 50 percent of their manufacturing labor force employed in one of the five digit industries. But, to increase sample size and geographic representation, counties with concentrations in the 10-30 percent and 30-50 percent range were also recorded. Of the 33 five digit industries matched with import data, 26 were further matched with rural counties.² The total number of rural counties matched with rural industries was 142. Population estimates, 1960-1975, for these 142 counties were obtained from various reports by the Bureau of the Census [16]. An analogous procedure was used to identify those counties associated with textiles, apparel and footwear; the 50 percent cutoff (of manufacturing labor force) was used. There were 183 counties in that sample.

Results

The working hypothesis is that the advent of (more) flexible exchange rates in 1973, preceded by two devaluations of the dollar, being the equivalent of a tax or tariff on imported products, would have the effect of increasing the competitiveness of rural industries in the domestic market. More specifically, in those rural industries, either of the filtered or resource-oriented type, where import competition was a threat, the overvalued dollar of the 1960s put domestic production at a disadvantage and resulted in relatively slow growth

¹A list of these 74 five digit SIC industries is available from the authors.

²SIC's included: 22720, 24324, 24326, 26414, 28191, 33210, 32291, 33212, 33214, 33220, 33522, 33991, 34211, 34945, 35191, 35442, 35452, 35482, 35614, 36211, 36410, 36426, 36742, 36792, 38410, 38421.

for the counties involved in their production. During the 1970s the situation should have been reversed, increasing the competitiveness of domestic rural industry in the domestic market and, thus, relatively stimulating those counties specialized in the production of these goods.³ The emphasis on the relative nature of the expected changes is necessitated by the implied ceteris paribus nature of the previous statement. Clearly, rural county growth patterns may and probably will reflect other influences as well as the one posited.

Tables 2 and 3 contain some support at the aggregate level for this contention. First, as shown by Table 2, rural imports behaved as expected. During the 1960s, a period of hypothesized increased foreign competitiveness and inroads into the domestic market, rural imports grew more rapidly than total imports. In the 1970s, while total imports continued to grow at an impressive absolute rate, imports of rural goods increased at a relatively lower rate than in the 1960s and at a rate significantly below that for total U. S. imports. Population statistics, contained in Table 3, also illustrate the expected population trends. During the 1960s the 142 counties in the primary sample show almost no growth. While faring better than rural counties as a whole, these counties grew at a rate less than one-tenth that for the nation. Again, in the 1970s the pattern is reversed. The growth of the sample counties approximates that of the rural universe and exceeds that for the nation as a whole by 33 percent.

To narrow further the focus and concentrate on those counties (18) and those five digit industries (11) where over 50 percent of the labor force was "import competitive" a similar pattern is found: 1960s annual average population growth was 0.3 percent; 1970s rate, 1.3 percent. Fourteen of these counties agreed with the hypothesized pattern (1960s, -0.04 percent/year; 1970s, 1.7 percent/year). The four remaining counties exhibited a contradictory pattern (1960s, 1.1 percent/year; 1970s, 0.04 percent/year). Of the former 14 counties 12 were specialized in a five digit SIC industry where the average annual growth in imports in the 1960s exceeded that in the 1970s. More important, the ratio of import growth to domestic output growth (the latter at the four digit SIC level) in the 1960s exceeded that in the 1970s: the competitive challenge of imports was greater in the 1960s and the success of that challenge appears to have a significant role in the sluggish growth of these domestic counties. For those four counties violating the expected pattern, two exhibited a contrary import pattern also--imports grew more rapidly in the 1970s than the 1960s and the ratio of import to domestic growth was greater in the 1970s. While not matching expected results, it still appears that the growth history of these counties was significantly affected by international developments.

Tables 4-6 show much the same pattern for the two digit SIC industries, textiles and apparel and the three digit SIC industry of footwear, respectively. While the county growth column in these tables refers to annual growth rates in

³By implication of the Vernon-Thompson filtering theories, if correct to extremes, competition between domestic and foreign products should be confined to "second stage" and "third stage" (filtered and primary resource) industries. Given the wider availability of substitutes in stage three, demand for domestic and imported goods should be more price elastic for what we have called rural industries.

TABLE 2: International Trade Growth

	Annual Average Growth	
	<u>1964-1970</u>	<u>1970-1975</u>
Total U.S. Exports	10.3%	29.8%
Total U.S. Imports	18.8	28.6
Rural Imports		
- Primary Sample*	37.5	17.0
- Expanded Sample*	24.8	14.2

*Defined in text

TABLE 3: Population Growth

	Annual Average Growth	
	<u>1960-1970</u>	<u>1970-1975</u>
Total Population*	1.3%	0.9%
Rural Population*	-0.4	1.4
- Primary Sample ⁺	0.1	1.2
- Expanded Sample ⁺	N.A.	N.A.

*See Table 1, "entirely rural counties"

⁺See text

TABLE 4: Textiles

	Annual Average Growth Rates			
	<u>Rural Counties</u>	<u>Domestic Output</u>	<u>Imports</u>	<u>Exports</u>
1960-1970	-0.1%	5.1%	8.0%	4.2%
1970-1975	0.8	6.4	3.0	24.5

TABLE 5: Apparel

Annual Average Growth Rates

	<u>Rural Counties</u>	<u>Domestic Output</u>	<u>Imports</u>	<u>Exports</u>
1960-1970	-0.2%	4.6%	16.4%	7.8%
1970-1975	1.3	5.2	15.2	16.2

TABLE 6: Footwear

	Annual Average Growth Rates			
	<u>Rural Counties</u>	<u>Domestic Output</u>	<u>Imports</u>	<u>Exports</u>
1960-1970	-0.3%	4.2%	17.3%	NC
1970-1975	1.0	0.7	15.8	NC

NC: not calculated

rural counties specialized in these industries, the remaining three columns contain total domestic output, import, and export growth, respectively. Since, at the two and three digit level, the ability to purge statistics of urban domestic output (e.g., high fashion apparel) and noncompetitive foreign imports (e.g., seal skin coats) is doubtful, care must be used in interpreting these tables. Clearly, however, once again the pattern is one of declining population and rapidly increasing imports in the 1960s and a reversal of this pattern in the 1970s.⁴ Although the lower rate of increase in clothing and footwear (8 percent and 9 percent lower, respectively) may seem small, these categories are especially likely to contain highly differentiated as well as standardized (e.g., rural) products. It seems reasonable to assume the greatest declines have come in the differentiated lines; for instance, witness the current plight of New York City's garment district.

Returning to the five digit SIC rural industries identified above and the associated rural counties (called the primary sample), 16 of the 21 industries matched the expected pattern.⁵ In 15 cases import growth was less in the 1970s than in the 1960s, and this was matched by higher population growth in the 1970s; in one case import growth increased, and the rate of population growth decreased in the 1970s. In seven of the former 15 cases the decline in import growth was matched by a decline in the expansion rate of domestic output. In all but one of these cases the impacted counties lagged behind the population growth rate recorded by the primary sample. Tables 7 and 8 contain typical examples of this pattern.

For the eight remaining cases the rate of increase in imports declined, the rate of domestic production growth increased, and rural county growth rates increased in the 1970s. For four of these five digit SIC industries 1970s population growth rates exceeded those of the 142 counties in the primary sample. Tables 9 and 10 exhibit this pattern. Table 11, for gray iron foundries, illustrates a contrary example where, despite a fall in imports in the 1970s accompanied by a marked rise in domestic production growth rates, rural counties specializing in this product lagged behind the 1.2 percent per year growth rate of the primary sample rural counties.

Finally, Tables 12 and 13 exhibit population growth patterns not consistent with the import-induced growth hypothesis. In Table 12, for electronic components, despite a precipitous decline in import growth, population growth declined in the impacted counties. The relative stagnation of domestic output seems to explain this decline. In Table 13 for valves and pipefittings, import growth increased

⁴In addition to the caveat mentioned in the text it should be noted that, due to the tendency of especially new textile and apparel mills in the South to be repelled from locations presently containing such facilities, our definition of impacted counties, defined on the basis of [15], may be an underestimate [22]. It should also be mentioned that textile imports in the 1970s could have been greatly curtailed as a result of international agreements including the so-called "voluntary" export restrictions practiced by Far East countries.

⁵Although 26 five digit import series for rural industries could be matched to non-commuting counties, ten of these were combined into two five digit "industries" (i.e., SIC 24324 and 24326) due to availability of employment data published in [15].

TABLE 7: SIC 33522 - Rolling, Drawing, Extruding Aluminum

	<u>Average Annual Growth</u>				
	<u>Rural Counties*</u>	<u>Imports</u>	<u>Production</u>	<u>Total Imports</u>	<u>Rural Imports</u>
1964-1970	-0.3% ⁺	11.8%	9.9% ⁺	18.8%	36.5%
1970-1975	0.9	-3.6	8.0	28.6	17.0

*Primary sample counties for this SIC

⁺1960-1970 average annual growth rate

TABLE 8: SIC 22720 - Carpets/Rugs

	<u>Average Annual Growth</u>				
	<u>Rural Counties*</u>	<u>Imports</u>	<u>Production</u>	<u>Total Imports</u>	<u>Rural Imports</u>
1964-1970	-0.2% ⁺	0.6%	35.7% ⁺	18.8%	36.5%
1970-1975	0.7	-3.6	8.0	28.6	17.0

*Primary sample counties for this SIC

⁺1960-1970 average annual growth rate

TABLE 9: SIC 24324/6 - Veneer, Plywood

	<u>Rural Counties*</u>	<u>Average Annual Growth</u>			
		<u>Imports</u>	<u>Production</u>	<u>Total Imports</u>	<u>Rural Imports</u>
1964-1970	0.1% [†]	84.7%	7.6% [†]	18.8%	36.5%
1970-1975	1.5	19.2	10.6	28.6	17.0

*Primary sample counties for this SIC

[†]1960-1970 average annual growth rate

TABLE 10: SIC 36211 - Motors and Generators

		<u>Average Annual Growth</u>		<u>Total</u>	<u>Rural</u>
	<u>Rural Counties*</u>	<u>Imports</u>	<u>Production</u>	<u>Imports</u>	<u>Imports</u>
1964-1970	0.1% ⁺	39.3%	4.9% ⁺	18.8%	36.5%
1970-1975	1.4	19.8	9.8	28.6	17.0

*Primary sample counties for this SIC

⁺1960-1970 average annual growth rate

TABLE 11: SIC 33212/4 - Gray Iron Foundries

	<u>Average Annual Growth</u>				
	<u>Rural Counties*</u>	<u>Imports</u>	<u>Production</u>	<u>Total Imports</u>	<u>Rural Imports</u>
1964-1970	-0.4% ⁺	24.2%	1.8% ⁺	18.8%	36.5%
1970-1975	0.4	-2.6	19.0	28.6	17.0

*Primary sample counties for this SIC

+ 1960-1970 average annual growth rate

TABLE 12: SIC 36742/792 - Electronic Components & Access

		<u>Average Annual Growth</u>		<u>Total</u>	<u>Rural</u>
	<u>Rural Counties*</u>	<u>Imports</u>	<u>Production</u>	<u>Imports</u>	<u>Imports</u>
1964-1970	0.6% [†]	70.7%	19.2% [†]	18.8%	36.5%
1970-1975	0.5	12.2	0.4	28.6	17.0

*Primary sample counties for this SIC

[†]1960-1970 average annual growth rate

TABLE 13: SIC 34945 - Valves and Pipe Fittings

	<u>Average Annual Growth</u>				
	<u>Rural Counties*</u>	<u>Imports</u>	<u>Production</u>	<u>Total Imports</u>	<u>Rural Imports</u>
1964-1970	0.9% [†]	34.0%	10.0% [†]	18.8%	36.5%
1970-1975	1.3	101.2	14.4	28.6	17.0

*Primary sample counties for this SIC

[†]1960-1970 average annual growth rate

in the 1970s, as did the rate of growth in domestic production, but the latter effect dominates as population growth in the affected counties increased 44 percent.

Summary and Conclusions

Given the complex of forces responsible for the historical pattern of urbanization in the United States, it is not surprising that scholars have found a panoply of factors accounting for the recent reversal of this trend. Previous research has identified university growth [3, 4], nonmetropolitan retirement [4, 10], recreation [10, 12], and mineral development [4, 12] among the sources of accelerated rural population growth. International similarities in the pattern of population dispersal from metropolitan areas have been documented and the "push" of urban diseconomies hypothesized as interacting with previously mentioned rural "pull" factors [21]. In commenting on this burgeoning literature, however, Wilbur Zelinsky has pointed to "...the crying need for at least a serious start on meaningful theory-building, so that we are not forever sprinting to catch up with unanticipated events we can never quite explain" [23, p. 177]. We believe that, by wedding Thompson's theory of domestic industrial filtering with Vernon's international variant, we have isolated a crucial determinant of not only recent patterns in ruralization, but future pattern as well.

Our results indicate that, other things equal, foreign import competition has had an impact on the relative development pattern of certain rural counties. It must be emphasized, however, that we chose our sample to maximize the probability of obtaining these results. As such our results cannot and should not be interpreted as refuting other factors such as amenity or mineral-oriented sources of rural growth in other instances. Even Thompson's original work on industrial filtering suggests a potential source of rural development not addressed by this paper, namely, that rural areas may grow by attracting industries earlier in their life cycle. Rather, to state our conclusions in a positive fashion, theoretically, based on the filtering concepts of Vernon and Thompson, a specific relationship between foreign trade and rural development was expected in certain cases; empirically such results were found.

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