STRUCTURAL CHANGE AND IMPORT SUBSTITUTION IN CHICAGO

ILLINOIS ECONOMIC DATA BASE, INC.

UNIVERSITY OF ILLINOIS AT CHICAGO
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Joseph Persky
Virginia Carlson

with the assistance of April Finnila

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UICUED

The Center for Urban Economic Development (UICUED) is a unit of the School of Urban Planning and Policy (SUPP) at the University of Illinois at Chicago. It is committed to stabilization and expansion of Chicago's economic base through the provision of research and technical assistance to community organizations and units of government.

PROJECT MANAGER

Joseph Persky, UIC

AUTHORS

Virginia L. Carlson, UICUED
Joseph Persky, UIC

RESEARCH ASSISTANCE

April Finnila

PRODUCTION

Virginia L. Carlson
Joseph Persky
Kathy A. Kolnick
Sasha D'Austin

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EXECUTIVE SUMMARY:

1. RISING IMPORT SHARES IN MOST CHICAGO INDUSTRIES: The Chicago economy has offset its growing import shares in most of its industries by increasing the share of activity in service and other industries with low propensities to import. Over the next several decades the shift toward services will slow down. If the rise in import shares can't be reversed, the area will either have to export more to balance higher levels of imports or its production levels will shrink. Programs to promote import substitution can play a major role in stabilizing the local economy.

2. IMPORT SUBSTITUTION GENERATES MULTIPLIER EFFECTS AS LARGE AS EXPORT GROWTH: A dollar of import substitution in an industry has just as large an effect on total output as an additional dollar of exports. The city's Regional Economic Model (REMI) forecasts that $100 million dollars of import substitution in Fabricated Metals will create 1880 local jobs, the same as $100 million of new exports in Fabricated Metals. Moreover, by raising the propensity to buy locally, import substitution actually raises the local multiplier for other industries. Policy analysts, however, must be careful not to confuse import substitution with the displacement of one local producer by another.

3. A NEW APPROACH TO TARGETING INDUSTRIES FOR IMPORT SUBSTITUTION:

The data base of the city's regional model allows the identification of a group of industries with significant existing export capacity but relatively low local sales. Over fifty such industries are identified for further study. Designing a program to assist import substitution in these industries promises substantial rewards to the city.

Structural Change and Imports

Import substitution is a process whereby a region begins to produce for itself what previously it purchased from others. Import substitution is a natural strategy of economic development. Most large urban areas reached their current size and diversification through a combination of export growth and import substitution.

While regional specializations in many agricultural products, several materials based industries and a few services follow regional comparative advantage, an increasingly large share of employment of all kinds is "footloose." These footloose industries have wide discretion in their locational choices. For a large city an import substitution strategy must build around the local market as a powerful magnet to attract and retain businesses.

For many years the dominant urban development strategy focussed on encouraging basic industries that produced for customers outside the region. Smokestack chasing with its large subsidies for major firms became the focus of activity. Increasingly, however, economic development practitioners have been advancing strategies that emphasize "home grown" businesses. Inevitably such an approach must consider seriously the prospects for import substitution in an area. Similarly, recent efforts to build around job retention naturally focus on maintaining supply relations within the local market.

In recent years the question of import substitution has received considerable attention from several research teams associated with the City of Chicago. One of the most direct ways the City can stimulate import substitution is through redirecting its own purchases. In 1988 a study by David Ranney and Patricia Wright (1988) of the Center for Urban Economic Development (UICUED) at the University of Illinois under contract with the Mayor's Office of Employment and Training focussed on the local effects of city purchases in various industrial categories. They identified three criteria for targeting industries: significant level of government purchases, level of local production and job impact. Using the REMI model and data generated from field work they suggested four industries for targeting: drugs and chemicals, machinery and heavy equipment, construction materials and steel products. Phillip Sandro (1990), formerly Coordinator of Research and Evaluation at the Mayor's Office of Employment and Training, also did an extensive analysis of city purchasing using the REMI model. He found that increasing the local share of city purchases up to 90% would create 7000 jobs in the short-run.

The UICUED (1989) economic audit conducted for the City's Economic Development Commission included a study on import substitution by Joseph Persky. This study continued the focus on targeting. From the special Chicago tabulation of County Business Patterns, it identified industries that showed ongoing evidence of import substitution. These industries included Chemicals, Fabricated Structural Metal

Products, Mortgage Bankers and Brokers, Computer Related Services, and Equipment Rental and Leasing.

Finally, a recent article by Geoffrey Hewings and Philip Israilevich (1991) in Chicago Economic Update also discusses potential gains from import substitution using data from the REAL model. They estimate minimum imports in manufacturing in 1987 at $7.73 billion (1982 dollars). The authors estimate the job expansion achievable through local production replacing (minimum) imports in chemicals and fabricated metals. In addition they identify sectors with higher than average imports: textiles, apparel, furniture, non-electrical machinery and primary metals.

This report uses the data base of the REMI model to extend the ongoing discussion of import substitution in the region. It is organized into three sections: 1. structural change in the Cook County economy and imports, 2. a comparison of the employment effects of import substitution, export expansion and local displacing business development for two industries already targeted by the city, and 3. an application of a new set of targeting criteria.

1. Structural Change and Imports

The REMI model contains a rich historical data base extending back to 1969. These data derived from numerous sources offer a detailed and internally consistent view of the regional economy. A unique feature of this data base is its long history of regional purchase coefficients (RPC's) for forty-nine industries. The regional purchase coefficient for an industry is defined as the proportion of local demand in that industry that is supplied by local sources. Thus (1 - RPC) gives the proportion of local demand in an industry that is supplied from sources outside the region, i.e. the proportion imported.

For each industry Table 1 gives the Cook County RPC's for 1969, 1979, 1984 and 1989. In general the RPC's for manufacturing goods are relatively small, the largest in 1989 being Printing (SIC 27) at 57%. The next highest was Fabricated Metals (SIC 34). By way of contrast most non-manufacturing industries have RPC's over 50%, the only exceptions being Mining, Hotels (SIC 70) and Motion Pictures (SIC 78) and Other Transportation. Understandably industries such as Real Estate (SICs 65 and 69) and Medical Services (SIC 80) have RPC's over 90%.

The trend in Cook County RPC's is down. For example, in 1969 Cook County provided 40% of its own demand for Fabricated Metals (SIC 34). By 1989 this share had fallen to 31%. This pattern of declining RPC's over time appears in almost all

Cook County industries in both manufacturing and non-manufacturing. The only exceptions to the rule are Lumber (SIC 24), Furniture (SIC 25), Textiles (SIC 22), Chemicals (SIC 28), Rubber (SIC 30) and Hotels (SIC 70). The same pattern emerges if we focus just on the period 1984-1989 with the exception of an increase in the RPC for real estate.

The pattern of declining RPC's tells us that within each industry Cook County now purchases a higher share from businesses outside the County than it did in 1969. This might lead us to believe that overall the propensity to import goods and services into the County has risen. However, this is not the case. In 1969 the REMI data show total imports accounted for 48% of all demand (for goods produced in the private sector) in the County. Thus in 1969 almost one dollar out of two spent in the County went to purchase imports. By 1989 the corresponding figure actually fell to 43%.

The explanation of this apparent paradox, the decline in RPC's for most industries and the rise of the overall RPC for the private sector, lies in the structural changes that have characterized Cook County as well as the nation as a whole. There has been a massive shift in the industrial distribution of demand away from manufacturing and towards nonmanufacturing. In 1969 manufacturing and mining accounted for 55% of all demand for privately produced goods and services. By 1989 this share had fallen to 40%. This percentage drop coupled with an absolute decline in demand implied a large fall in imports from $82 billion (1982 dollars) in 1969 to $68 billion (1982 dollars) in 1989.[1]

These patterns require serious consideration. Cook County has been engaged in a roundabout process of import substitution. This process has not focussed on replacing imports in industry x with local production in industry x. Instead the County has reduced its demand for imports in industry x and replaced them with local production in industry y. The dominant fact here is the shift toward a service economy.

Two related questions are raised by these observations: a) Do the declines in Cook County RPC's in manufacturing industries simply reflect the growth of service industries competing for prime locations and thus pushing local manufacturing out of the area? Or are these declines in manufacturing RPC's a long run tendency reflecting other competitive disadvantages? b) If and when the shift toward services in the American economy comes to a halt, will the declining RPC's of Cook County necessarily imply a major crisis?

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[1] Over the same period exports to the rest of the country actually rose 18%. The largest gain in exports again reflected the shift away from manufacturing as Cook County increased its exports in such locally based industries as Wholesale, Air Transport and Miscellaneous Business Services. While exports in manufacturing as a whole fell a small amount, this decline was not significant. Thus while Cook County buys less from its own manufacturers it continued to sell about the same amount in national markets.

a) To the extent that manufacturing and services use distinct inputs the notion that service growth led to lower RPC's seems unlikely. It is difficult to imagine primary metals in southeast Chicago being in active competition with legal offices downtown for space, labor or capital. Indeed, one of the major problems still facing the city is the difficulty of retraining displaced steelworkers for jobs in the service economy. Another argument against crowding out rests on the fact that manufacturing exports from Cook County remained virtually constant throughout the twenty year period under consideration. Thus while Cook County manufacturing firms continued to sell about the same amount of goods to the outside world, their sales both absolutely and as a share of County demand fell. This suggests a pattern of export specialization rather than of declines in production prompted by competition from services. Nevertheless the experience of manufacturing firms along the Clybourn corridor suggests that some crowding out may be at work. Perhaps such crowding out selectively impacts firms with local markets. Such firms may be in more direct competition with locally oriented services for both location and labor force.

b) Over the last twenty years the decline in RPC's in Cook County has been more than offset by the shift toward services. This means that the local economic base multiplier has actually risen as a result of the changing pattern. However there are real limits to the service shift. Once the pattern of demand stabilizes, a continuation of the decline in RPC's would create significant downward pressure on the economy as the economic base multiplier began to fall. At that point the city would be faced with two alternatives. The city would have to attempt to increase exports to offset the decline in the multiplier or work against the decline in RPC's in an effort to import substitute. Both strategies should be explored. Very likely, some combination of the two will prove most productive. The long run economic development plans of the city should be informed by an understanding of these issues. The seriousness of this potential crisis further motivates the discussion of import substitution that follows.

2. Employment Effects of Import Substitution

The REMI model is ideally suited to measuring the expected employment and other consequences of import substitution programs. The import substitution option of REMI doesn't just treat the new output and employment as exogenous or given. Instead it actually alters the regional purchase coefficient to reflect the new activity. This change in the RPC then continues into the future. It is built into the multipliers of the model and thus reflected in any future developments in the region.

As an example we performed a simulation using the Fabricated Metals industry (SIC 34). We increased local production for local demand by $100 million (1982 dollars) for the period 1992 to 1998. The model actually computes the implied change in the RPC. The $100 million increase raises the Cook County RPC for Fabricated Metals 3 percentage points from its base level of 31%.

This import substitution should create 988 jobs in the Fabricated Metals industry in the short run, leveling off to about 950 jobs by 1995. But this activity will feed into the multiplier process. Overall, REMI predicts an employment gain of about 1880 jobs. (See Table 2 for details of the impact analysis.) The key to these dramatic effects is that all the new jobs must be import replacing. If the new or expanding firms displace existing producers, obviously, the net effects for Chicago will be much more modest. The issue of displacement is particularly important for programs of import substitution. When policies encourage the growth of exporting firms the exports from new Chicago firms are relatively unlikely to compete with other Chicago firms in the export market. Chicago firms just don't make up a large share of these national markets. However in local markets, as the various RPC's attest, Chicago firms account for a significant share of the total. For example, Cook County firms account for only 3.8% of the national Fabricated Metals Market, but as we saw above the RPC or local share of the local market is 31%.

One possible way to model this competition with local firms is to assume that the market won by a new local firm is taken proportionally from other local firms and firms outside the city. The first of these proportions is just the RPC. Thus in our Fabricated Metals example we reduced the $100 million stimulus by the RPC of 31%. This implied an approximate decline of 31% in all the effects of the expansion program.

Of course, the REMI model will allow us to make any assumption we want about the distribution of new employment or output as between the four categories: import replacing, local firm-local market displacing, new export and local firm-export market displacing. The model itself obviously can't predict these shares for new policies. But this flexibility encourages consideration by decision makers of a critical set of issues.

In the future serious attention should be paid to the displacement issue in designing programs. Thus efforts to raise the locally provided share of City purchases results in pure import substitution. The overall economic impact of such a program can be analyzed as above. However at the other extreme, efforts to encourage commercial revitalization must recognize that a sizable share of any "new" employment will just displace workers at other locations in the city. These proportions should regularly be estimated so that appropriate impact analyses can be run.

3. Targeting Strategies

Our earlier work on how to pick targets for import substitution concentrated on changes in location quotients--indexes of geographic concentration. The key criteria in that study were a location quotient less than one (i.e. less than proportional representation of an industry relative to the United States) and rising. The key assumption in using such criteria was that rising concentration in such industries was evidence of import substitution.

The RPC's in the REMI model can be used in a manner parallel to this earlier effort. Indeed, they are in principle much better suited for the task since they directly reflect actual local sales. Using location quotients can misidentify new exports as import replacements.[2]

At the finest level available (essentially three and four digit SIC codes) we repeated the earlier approach by looking at the change in RPC's between 1986 and 1989. Table 3 includes all those manufacturing industries which showed positive changes in this period. The shorter list of nonmanufacturing industries is presented in Table 4. Overlapping with our earlier work are industries with the Chemical group (28), Stone, Clay and Glass (32), Wholesale, and Medical (80). Interestingly this list also includes some industries within Food (SIC 20) and Fabricated Metals (SIC 34) which have already been targeted by the City.

The above approach emphasizes growth in regional purchase coefficients. Taking a somewhat different tack we identified industries with modest RPC's, but a high level of production relative to population in Cook County. These are industries in which

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[2] However, it should be kept in mind that the RPC's in the REMI model are themselves estimates. Again see discussion in REMI documentation.

the County already possesses a strong export base, but might reasonably expand its share of the local market. Once such targets are identified, the challenge would be to design programs to aid these successful exporters to market their products more aggressively on the local level.

In this approach we reverse the usual logic of import substitution as proposed by Jane Jacobs and others. Those scholars have emphasized the role of import substitution as nursery for local firms still too inefficient to attack national markets. Without questioning the usefulness of such an infant industry argument, we may at the same time encourage some of our more successful industries at the national level to expend additional energy on serving the local market. This may often mean broadening product lines or servicing smaller local clients. Or it may involve opening new distribution channels. If successful, it will still be import substitution.

We took as an index of concentration the ratio of Cook County production to Cook County demand over 2.0, i.e. in a potential target industry the county must produce more than twice what the county actually buys. We then picked out only those industries with an RPC less than 50%. Thus these are industries in which only 25% of local production is used to satisfy local demand even though they produce for export an amount at least three times as large. These are industries with considerable "cross-hauling."

Table 5 presents the results of this exercise. The list that emerges is quite different from that chosen on the basis of growth in rpc's. Only three of the industries in Table 5 appeared in Table 3: lubricating (SIC 2992), enameled metal sanitary ware (SIC 3431) and conveyors (SIC 3535). None of the industries from Table 4 make it to Table 5. This is understandable since the inherently local service industries seldom export as much as they sell locally.

Reviewing the industries in Table 5 several, such as chewing gum (SIC 2067), are unlikely candidates for import substitution. These are industries in which strong brand loyalties explain much of the existing cross-hauling. In other cases, such as food products machinery (SIC 3551), the range of products maybe so broad that local producers could not be expected to compete effectively in all branches of the industry.

Taking Table 5 as a starting point, the next step would be to contact representative firms in these industries to discuss why they have not won a larger share of local markets. As in chewing gum and food products machinery there may be strong barriers, not easily altered by public policy. Hopefully, however, such field work will suggest program initiatives to aid these firms' expansion into local markets.

Conclusions

The Chicago economy has offset its declining RPC's in most industries by increasing the share of activity in service and other high RPC industries. Over the next several decades the shift toward services must slow down. If the RPC's continue to fall imports will then rise. If the fall in RPC's can't be reversed, the area will either have to export more to balance higher levels of imports or its production levels will shrink. Programs to promote import substitution can play a major role in stabilizing the local economy.

A dollar of import substitution in an industry has just as large an effect on total output as an additional dollar of exports. Moreover, by raising the RPC it actually raises the local multiplier for other industries. Policy analysts, however, must be careful not to confuse import substitution with the displacement of one local producer by another.

Traditional efforts to target likely industrial candidates for import substitution have emphasized identifying those industries with rising local shares. In addition to such self-starters, we have tried to identify a group of industries with existing export capacity that might attempt to expand their local sales more aggressively. Designing a program to assist such efforts in these industries promises substantial rewards to the city.

TABLE 1: COOK COUNTY REGIONAL PURCHASE COEFFICIENTS (RPC'S) FOR 49 INDUSTRIES FOR 1969, 1979, 1984 AND 1989

TABLE 2: SUMMARY TABLE: THE EFFECT OF IMPORT SUBSTITUTION OF $100 MILLION IN SALES ON FABRICATED METALS (SIC 34)

TABLE 3: CANDIDATES FOR IMPORT SUBSTITUTION BASED ON RISING RPC'S 1986-1989 (MANUFACTURING INDUSTRIES)

2-DIGIT INDUSTRY GROUP	SUBCOMPONENTS WITH RISING RPC'S
20 FOOD	2043 CEREALS
	2079 SHORTENING ETC.
	2091 CANNED FISH
24 LUMBER AND WOOD	2426 HARDWOOD DIMENSIONS AND FLOORING
	2435 HARDWOOD VENEERS AND PLYWOOD
	2451 MOBILE HOMES
	2452 PREFAB WOOD BUILDINGS
28 CHEMICALS	2869 INDUSTRIAL ORGANIC CHEMICALS
	2879 PESTICIDES AND AGRICULTURAL NEC
29 PETROLEUM	2911 PETROLEUM REFINING
	2951 PAVING MIXTURES AND BLOCKS
	2952 ASPHALT FELTS AND COATINGS
	2992 LUBRICATING OILS AND GREASES
32 STONE,CLAY,GLASS	3251 BRICK AND STRUCTURAL CLAY TILE
	3271 CONCRETE BLOCK AND BRICK
33 PRIMARY METALS	3333 PRIMARY ZINC
	3354 ALUMINUM EXTRUDED PRODUCTS
34 FABRICATED METALS	3431 ENAMELED METAL SANITARY WARE
	3463 NONFERROUS FORGINGS
35 NON-ELECT. MACHINERY	3535 CONVEYORS
	3547 ROLLING MILL MACHINERY
	3581 AUTOMATIC MERCHANDISING MACHINERY
36 ELECTRIC EQUIPMENT	3622 INDUSTRIAL CONTROLS
	3672 CATHODE RAY PICTURE TUBES
	3674 SEMICONDUCTORS
39 MISCELLANEOUS MANUF.	3942 DOLLS
	3996 LINOLEUM

TABLE 4: CANDIDATES FOR IMPORT SUBSTITUTION BASED ON RISING RPC'S 1986-1989 (NONMANUFACTURING INDUSTRIES)

2-DIGIT INDUSTRY GROUP	SUBCOMPONENTS WITH RISING RPC'S
WHOLESALE	
COMMUNICATIONS	COMM. EXCLUDING RADIO/TV
63-64 INSURANCE	INSURANCE CARRIERS
	INSURANCE AGENTS AND BROKERS
73 MISC. BUSINESS SERVICES	
	DWELLINGS & OTHER BLDG SERVICES
	PERSONNEL SUPPLY SERVICES
	MANAGEMENT CONSULTING SERVICES
	DETECTIVE AND PROTECTIVE SERVICES
	EQUIPMENT RENTAL AND LEASING
	OTHER BUSINESS SERVICES
80 MEDICAL	NURSING AND PERSONAL CARE FACIL.
	OTHER MED. & HEALTH SERVICES

TABLE 5: CANDIDATES FOR IMPORT SUBSTITUTION BASED ON HIGH LOCAL CONCENTRATION OF PRODUCTION AND RELATIVELY LOW RPC'S

INDUSTRY SUBCOMPONENT	PRODUCTION/DEMAND	RPC
2013 SAUSAGE	2.37	44%
2052 COOKIES AND CRACKERS	3.66	44
2067 CHEWING GUM	3.94	33
2083 MALT	38.67	28
2514 METAL HOUSEHOLD FURNITURE	2.03	20
2542 METAL PARTITIONS & FIXTURES	4.01	22
2591 BLINDS,SHADES & DRAPERY HRDWR.	2.41	15
2753 ENGRAVING AND PLATE PRINTING	3.17	46
2795 LITHOGRAPHIC PLATEMAKING	4.24	48
2842 POLISHES AND SANITATION GOODS	3.82	23
2844 PERFUMES,COSMETICS...	3.10	18
2851 PAINTS,VARNISHES,ENAMELS...	2.44	20
2891 ADHESIVES AND SEALANTS	4.46	17
2893 PRINTING INK	3.51	17
2992 LUBRICATING OILS AND GREASES	10.24	39
3031 RECLAIMED RUBBER	3.74	14
3111 LEATHER TANNING AND FINISHING	2.37	35
3293 GASKETS,PACKING & SEALING	4.38	47
3316 COLD ROLLED STEEL	2.06	13
3353 ALUMINUM SHEET	2.49	16
3361 ALUMINUM FOUNDRIES	2.02	6
3398 METAL HEAT TREATING	2.56	10
3431 ENAMELED METAL SANITARY WARE	3.79	33
3432 BRASS PLUMBING	2.57	28
3462 IRON & STEEL FORGINGS	2.68	32
3466 CROWNS & CLOSURES	5.33	32
3471 ELECTROPLATING	2.08	38
3493 STEEL SPRINGS, EXCEPT WIRE	2.16	23
3497 METAL FOIL AND LEAF	2.61	39

TABLE 5: CONTINUED

INDUSTRY SUBCOMPONENT	PRODUCTION/DEMAND	RPC
3535 CONVEYORS	2.32	24
3542 MACHINE TOOLS, METAL FORMING	4.07	30
3544 SPECIAL DIES	2.10	31
3551 FOOD PRODUCTS MACHINERY	2.64	24
3555 PRINTING TRADES MACHINERY	2.24	17
3563 AIR AND GAS COMPRESSORS	2.55	22
3566 SPEED CHANGERS & IND. DRIVERS	4.59	27
3567 INDUSTRIAL PROCESS FURNACES	3.39	21
3576 SCALES & BALANCES	2.47	18
3582 COMMERCIAL LAUNDRY MACHINERY	3.51	8
3586 MEASURING & DISPENSING PUMPS	4.17	21
3613 SWITCHGEAR	2.92	31
3644 NONCURRENT WIRING DEVICES	6.02	37
3645 RESIDENTIAL LIGHT FIXTURES	4.21	30
3646 COMMERCIAL/IND. LIGHT FIXTURES	4.56	28
3661 TELEPHONE APPARATUS	3.10	38
3662 RADIO & TV TRANSMITTING APP.	3.90	34
3671 RECEIVING ELECTRON TUBES	2.63	27
3676 ELECTRONIC RESISTORS	2.42	11
3677 ELECTRONIC COILS & TRANSFORM.	2.21	9
3678 ELECTRONIC CONNECTORS	2.75	16
3743 RAILROAD EQUIPMENT	4.37	36
3823 INDUSTRIAL MEASUREMENT DISPLAY	3.86	10
3953 MARKING DEVICES	3.34	11
3955 CARBON PAPER	2.91	12
3963 BUTTONS	4.37	3
3993 SIGNS AND ADVERTISING DISPLAYS	3.00	26

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