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INDUSTRIALIZATION AS A POVERTY POLICY: TOWARD A MICRO ANALYSIS

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Industrialization as a policy is deeply imbedded in the literature of regional economic growth. Within this literature the reduction of poverty is an implicit or secondary goal. Moreover, it is usually tacitly assumed that the reduction of poverty is the mirror image of economic growth: An increase in per capita income is by definition a reduction in the extent of poverty.

Anderson (1), however, points out that economic growth acts in such a way as to shift the income distribution to the right past a constant absolute poverty line expressed in dollars. The proportion of the population in poverty will decrease slowly at first, then rapidly, and finally quite slowly as the lower tail of the income distribution moves over the poverty line (1; p. 514). Anderson presents evidence to indicate that the elasticity of poverty reduction with respect to national economic growth will decline in the future. This is so because those subgroups in the poverty population least affected by national growth form an increasingly higher proportion of the total poor (1; p. 524).

If this is so for the nation as a whole, one suspects that it is even more the case in poverty-stricken rural areas. The subgroups least affected by national economic growth bulk large in such areas. Hence,

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one can be skeptical regarding conclusions about industrial development as a poverty policy when they are derived from theories solely concerned with regional economic growth.

In the light of this skepticism I interpret my assignment as one of analyzing industrial development schemes and proposals that have reduction of poverty as the primary goal. Such an analysis is much more complicated than one concerned only with growth since one must be concerned with the distribution of growth as well as with growth itself. Hence, a rigorous treatment is beyond the scope of this paper. What can be done is to comment on the main lines of such an analysis. I take a micro view simply as a starting point, recognizing that a macro or national view is needed in the light of the recent political emphasis on a "rural-urban balance". Let me begin by attempting to clarify what it is industrialization is supposed to do for an area's poor.

Proposals to induce industrial growth typically involve the promotion and/or subsidization of the expansion of present nonfarm firms and the location of new firms in the area. The policy induced investment presumably leads to an increase in the area's population and income. Some part of the increase in income works its way through the private sector to the area's poor pulling some fraction over the poverty line. If the induced investment leads to a once and for all increase in income without affecting the area's growth rate, that is the end of the private sector effects. If the growth rate has been affected as well, increases in per capita income continue and an unspecified fraction of the poor continue to be pulled over the poverty line. There are, of course, public sector effects as well. These take the form of increased

investment in the area's public overhead capital. Some fraction of the increased services will go to the area's poor. In addition, transfer payments to the poor may be affected. Whether the increased investment continues depends on whether the area growth rate has been raised and the relationship between area growth and local public revenues.

Let me turn to examine the private sector effects in greater detail and attempt to identify sources of leakage which diminish the impact of industrialization as a poverty policy. The impacts on the public sector will then be examined.

The Private Sector: Factor Payments

The intent of industrial development proposals as they relate to the reduction of poverty is to increase the demand for labor, thus increasing employment, reducing underemployment, perhaps raising real wages, and raising the incomes of the poor. The possible ways to do this are as follows: (a) raise product prices of existing and/or potential firms via product price subsidies; (b) lower non-labor input prices via capital subsidies to induce investment, raise the capital/labor ratio, and hence labor's marginal product; (c) promote the area's desirability as an industrial site, inducing investment via raising expected returns to investment; and, (d) lower labor costs without lowering the wage rate via training, education, or by imposing a wage subsidy.

Of these possible ways capital subsidies and promotion are the most common. I include under capital subsidies investment in public overhead

capital. Product price subsidies are not used with the exception of the preferential treatment allowed to bids from depressed areas on government contracts. I know of no case in which wage subsidies are used. Education and training are already covered on the program and will not be discussed here. I shall concentrate on capital subsidies.

There are two important questions to be raised in ascertaining the private sector impact of an industrial development project on an area's poor. First, how great is the induced increase in total area income? Second, how much of any increase in total area income finds its way into the pockets of the poor? The first clearly depends upon the size of the subsidy and the size of the resulting induced investment; it can be ignored for the present. The second question involves identifying the leakages which diminish the fraction of the increase in income going to the poor.

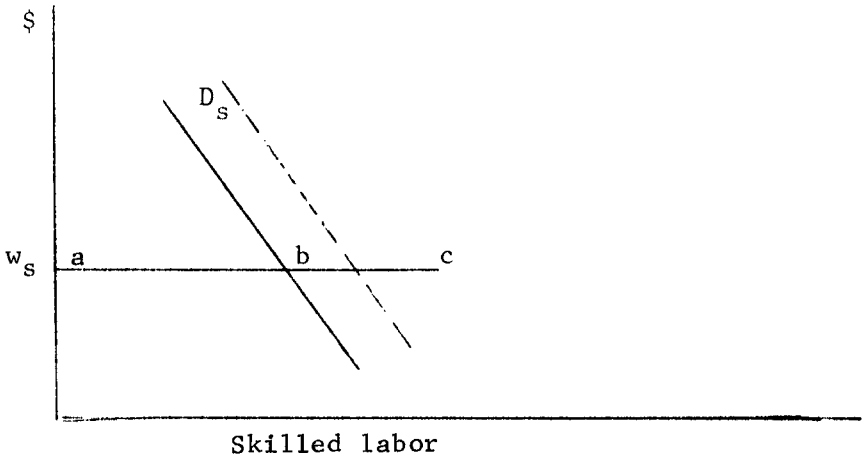
Reder's (7) model of the labor market is useful in approaching the second question. He postulates three interdependent segments of the labor market for any area; skilled, semi-skilled, and unskilled segments. Three distinct wage rates exist, one for each segment, with the skilled rate the highest and the unskilled rate the lowest. The wage structure is sticky downward. Semi-skilled and skilled rates are sticky downward because employers find it easier to adjust hiring standards than wage rates; i.e., non-wage labor costs are varied rather than wage rates. The lower bound of unskilled wage rate is set by law, by bargaining, or by social consensus: Reder called it the "social minimum". Except in very tight labor markets underemployment exists

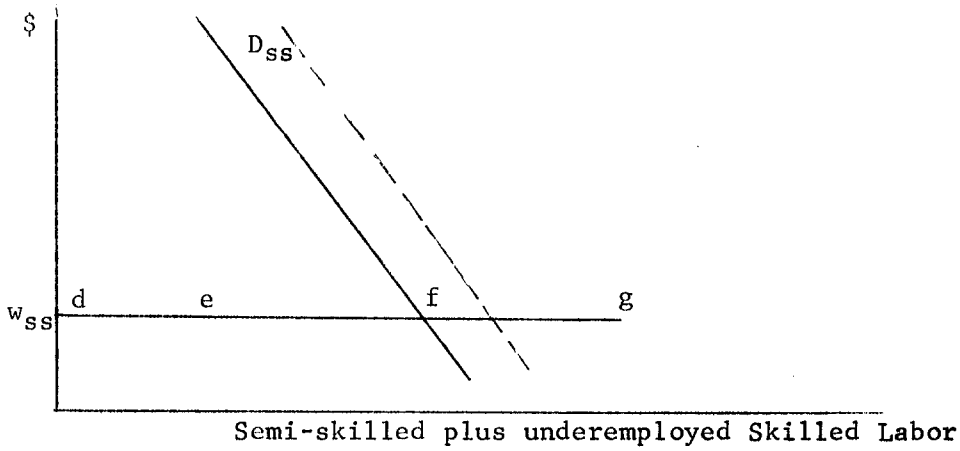
in the sense that there is skilled labor employed at semi-skilled wage rates and there is semi-skilled labor employed at the unskilled wage rate. The unemployed are unskilled except in very depressed conditions during which some of the semi-skilled and skilled are unemployed also.

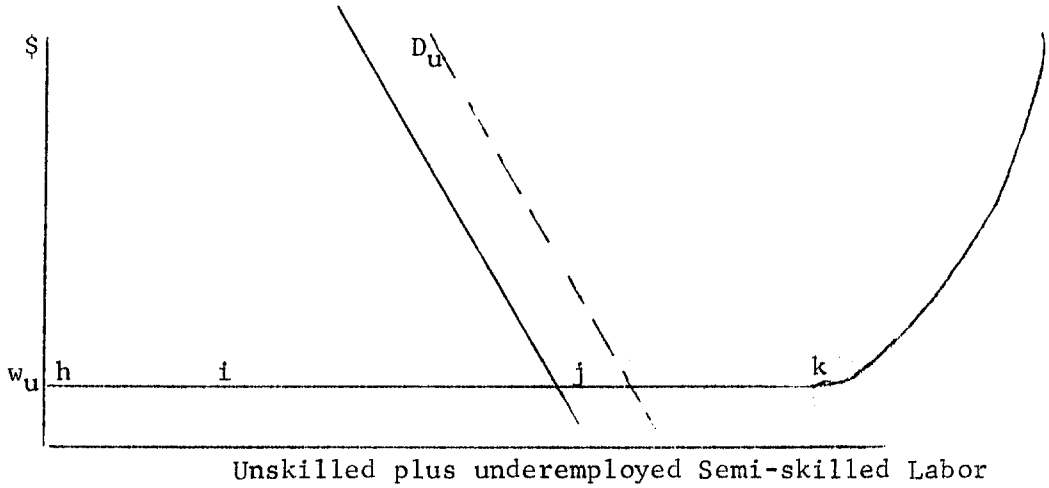
The segmented labor market is represented in Figure 1.[1/] From top to bottom, Figure 1 portrays the skilled, semi-skilled, and unskilled segments of the labor market respectively. In the top diagram "ac" is the supply of skilled labor in the area. It is perfectly elastic; employers can enlarge the supply of skilled labor at the skilled wage rate, w_s, with an increase in unit labor costs (via increased searching, training, etc.). Line segment "bc" represents those workers qualified for but not employed in skilled jobs. They are employed as semi-skilled workers at the semi-skilled wage rate, w_{ss}, and are represented by "de" in the middle diagram. As with the skilled segment, the supply of semi-skilled workers is perfectly elastic and is of size "dg" without a rise in unit labor costs. Line segment "fg" represents labor qualified for but not employed in semi-skilled jobs. They are employed as unskilled labor at the unskilled wage rate, "w_u", and are represented by "hi" in the bottom diagram. The supply of unskilled labor is perfectly elastic until full employment is reached, after which it has a positive slope. Beyond "k" the labor force participation rate rises as more people are drawn into the labor force by an increase in real wages.

1/ This is a variant of a diagram suggested to me by J. Frank O'Connor.

Figure 1. The segmented labor market of an area.







The sum of "bc" ("de") and "fg" ("hi") represents the underemployed. Line segment "jk" represents the unemployed. A large fraction of the area's employed and employable poor presumably are among the ranks of the unskilled. A small fraction are semi-skilled and skilled, either underemployed or not.

Given this model of an area's labor market, it is possible to trace an industrial development subsidy through to its effects on the different segments of the labor market. This will clarify the distribution of any induced increase in income among the poor and non-poor. If the subsidy is viewed purely as a poverty policy, the fraction of the increased income going to the non-poor must be viewed as a leakage, at least from the private sector.

Suppose there is a capital subsidy which lowers the price of capital in the area relative to other areas and relative to labor in the area. The new equilibrium positions of the demand curves for labor are represented by the dashed lines in Figure 1. These shifts in the labor demand curves have two distinct components. First, there will be a substitution of existing capital for labor, shifting the demand curves for labor to the left. If the capital subsidy is applicable to new capital only, these shifts will not occur. If they do occur, they will depend on the elasticities of substitution of existing capital for labor and constitute a leakage.

Second, the capital subsidy will induce an increase in investment, bringing about an increase in the capital/labor ratio and a shift to the right in the labor demand curves. These shifts will be made up of a substitution effect dependent on the elasticities of substitution of

new capital for labor, and an expansion effect dependent on the elasticities of demand for labor with respect to capital, given the new factor price ratios. The substitution effects constitute leakages while the expansion effects do not.

Clearly, employment will increase given a capital subsidy. The employment effect will be greater, the higher the elasticities of demand for labor with respect to capital, and the lower the elasticities of substitution of new and existing capital for labor of the three qualities. Some labor qualified for skilled jobs will shift from semi-skilled to skilled employment. Similarly, some labor qualified for semi-skilled jobs will shift from unskilled to semi-skilled employment. And previsously unemployed workers will become employed. Hence, both under- and unemployment will decline.

Total area product and total area income will increase as a result of the subsidy. Owners of the new investment have increased their incomes and owners of existing capital may have increased their factor shares depending on the elasticities of substitution (2). The fraction of the increase in total product going to capital represents a leakage to the non-poor assuming that the poor own little or no capital (11). Part of the increase in income goes to the previously underemployed but now fully employed because their wage rates have increased. And some previously unemployed workers became employed at the unskilled wage rate and so increased their incomes. Some of the increased income due to the reduction in underemployed must be counted a leakage to the non-poor. Most of the income going to the previously unemployed goes to the poor.

Two other leakages are present; one may be important, the other not. A leakage occurs to the extent that the newly employed are previously unemployed members of non-poor families. More important, the new investment may stimulate an in-migration of labor. The in-migrants may be former residents who return on the expectation of gaining employment at the new plant. Since they may have gained industrial experience elsewhere, they may be hired in preference to the area's unemployed and underemployed. Or, they may fail to gain employment and remain in the area (8). In either case the impact of the subsidy on the area's poor is diminished. From the national viewpoint, however, it may not be a leakage if the in-migrants were poor to begin with or vacated jobs elsewhere that would be filled by the poor.

Quite different sorts of leakages occur if a product price subsidy, a wage rate subsidy, or promotion occurs. Without going through the analysis, one can speculate that high elasticities of substitution of capital for labor have the reverse effect on the poor; the higher the elasticities of substitution, the greater the increase in employment. The reason is that capital subsidies evoke a greater substitution of capital for labor than subsidies which raise product prices, lower wage rates (to employers), or which manipulate the views of investors about the area without affecting prices at all.[2/] Hence, high elasticities of substitution of capital (new and existing) and labor add

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2/ The work of Borts (2) and of Borts and Stein (3) suggest these conclusions, although their models are different than the one used here and their objectives are different.

to the impacts of these subsidies on employment and on the incomes of the poor: they do not constitute leakages.

Not surprisingly, the private sector effects of industrial development subsidies do lead to a reduction in the extent of poverty. However, there are important leakages if the reduction of poverty is the only goal; leakages to owners of capital, leakages to the employed non-poor who cease to be underemployed after the subsidy, and leakages due to in-migration. This last source of leakage may be very important in terms of the local area.

To this point in the discussion it has been assumed that a capital subsidy has called forth an increase in investment which, in turn, calls forth an increase in income. The area growth rate has been ignored. The subsidy, if massive or if attractive to specific types of industries, will increase the growth rate. Following export base theory (5), the probability will be high that the growth rate will be increased if the firms induced to locate or to expand are in the export sector. It is unlikely that capital subsidies which induce import substitution will increase the growth rate. New residentiary industry which substitutes for imports will raise the area's income level but in all probability not the growth rate. The marginal propensities to import consumer and producer goods must be suppressed greatly if import substitution is to lead to self-sustaining growth. This is improbable in poverty-stricken rural areas.

If the growth rate increases, then the private sector effects described above will continue. There are three reasons why the benefits

to the area's poor of an increased growth rate may diminish, however. In-migration will increase and in-migrants will take jobs the poor would have obtained otherwise. Through time the capital/labor ratio of new capital will increase, leading to smaller employment effects per dollar of new investment. And, the remaining poor increasingly will be unemployable because of age, education, and infirmity. Hence, the benefits to the area's poor of an increased growth rate will damp out through time. A rigorous analysis of the dynamics of the process is necessary, however, if these statements are to be more than speculative. Let me turn briefly to the public sector effects.

The Public Sector - Transfers and Investment

The public sector impacts on the poor in a poverty-stricken rural area depend on the type of capital subsidy, the effect of induced increases in area income, on local public revenues, the use to which the increased local public revenue is put, and the location in the area of the poor relative to the location of new or improved public facilities and services.

A capital subsidy may be direct or indirect. If direct, it typically takes the form of low interest, long term loans, and tax relief, either implicitly or explicitly. Industrial development bonding usually does all three (9, 10). Indirect capital subsidies occur when an area invests in public overhead capital in an effort to lower the costs of expanding or locating firms. This investment can range from better

roads, water and sewerage facilities and police and fire protection to new and improved hospitals, schools, libraries and parks.3/

Direct capital subsidies affect the poor through the private sector only by their impacts on net local public revenues. Because the private sector effects have raised the incomes of some of the poor, local public welfare expenditures will decline somewhat. Further, local tax revenues will increase as area income increases. The increase will be determined by the rise in property values and any induced increase in property tax rates since few if any poverty-stricken rural areas have local sales taxes. The rise in property values will be the result of the industrial expansion plus any induced residential construction. To the extent the capital subsidy includes tax relief the rise in the value of industrial property will not affect local tax revenues.

Subsidization via investments in public overhead capital affects the poor indirectly through the private sector in the manner sketched above. Improvements in public overhead capital affect the poor directly through the provision of increased facilities and services. The services and facilities provided the poor will be greater, the higher the proportion of the investment which is spent on schools, hospitals, and the like. However, lack of access to these facilities will diminish

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3/ The former tend to be capital subsidies in that they lower capital costs to the firm. The latter tend to be labor subsidies in that they lower the firm's labor costs or provide amenities to labor. Hansen calls the former economic overhead capital and the latter social overhead capital (4).

the impact on the poor. A new school, for instance, may be located so that few of the children of the poor attend.

Finally, the incidence of local taxes must be mentioned. Increasing local taxes resulting from industrial growth typically will place a burden on the poor since local taxes are typically regressive.

As with the private sector, the leakages in the impacts on the poor from industrial growth can be substantial. One may speculate that the impacts are greater and the leakages fewer if subsidies to stimulate industrial growth take the form of public sector investments. And the impacts of the poor will be greater if the public investment emphasizes investment in human capital.

A Summary

An attempt was made in this paper to move toward an analysis of industrialization viewed solely as a poverty policy. Growth was considered only to the extent it has an impact on an area's poor. The analysis was micro and hopefully identified the important leakages in the private and public sector effects which diminish the impact of industrialization on the poor. Only capital subsidies were examined because they are typical of the stimuli used by local areas to induce industrial growth.

Factor payments to capital and the effects of in-migration appear to me to be the major private sector leakages diminishing the impact of industrial growth on the poor. Leakages from the public sector effects appear to revolve around the proportion of investment in public overhead capital which constitutes investment in human capital; the higher the proportion, the smaller the leakage. If the efforts to

industrialize a poverty-sticken rural area succeed only in raising the income level, then some fraction of the increase in income goes to the poor. If, however, the growth rate is increased, a continuing fraction of the additional increase in annual per capita income goes to the poor. It is likely that the fraction will decline through time as in-migration continues, the capital/labor ratio of new capital rises, and as the unemployable as a fraction of the total poor in the area increases.

No attention has been paid to a macro or national analysis of regional development as a poverty policy. The nation is currently faced with two dilemmas in its execution of poverty policy. The first is posed by the Anderson analysis (1) which indicates that the effect of national economic growth on poverty declines as economic growth proceeds. The second dilemma is posed by Phillips Curve analyses (6) which indicate that the unemployment rate can be pushed down only at the cost of a higher rate of inflation. Ever higher costs, therefore, are incurred in the manipulation of the rates of national economic growth and unemployment to reduce the extent of poverty. Perhaps a regional redistribution of national gains in income per capita and employment might raise Anderson's elasticity of poverty reduction relative to national growth and flatten the Phillips Curve. An analysis which examines this hypothesis is needed to clarify the status of regional development policy.

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