North, Douglass C — Articles and speeches (1959)

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ECONOMIC DEVELOPMENT INSTITUTE

Seminar, October 20, 1959

AGRICULTURE IN REGIONAL ECONOMIC GROWTH

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I

Despite the existence of a few dissenters there seems to be agreement amongst many economists that agriculture contributes little to economic growth. The argument has developed along two lines: The first equates economic growth with an industrial revolution and argues that a "take off" into industrialization "fails to occur mainly because of the comparative advantage of exploiting productive land and other natural resources delays the time when self-reinforcing industrial growth can profitably take place". 1/ The argument stems from the classic view of diminishing returns in agriculture, the greater productivity of manufacturing and the difficulties associated with the shift of resources into secondary activities when diminishing returns obtain. 2/

The second argument is quite different and indeed stems from different theoretical underpinnings. 3/ It has been most cogently stated by Professor Theodore Schultz as the following hypothesis: "(1) Economic development occurs in a specific locational matrix; there may be one or more such matrices in a particular economy. This means that the process of economic growth does not necessarily occur in the same way, at the same time, or at the same rate in different locations. (2) These locational matrices are primarily industrial - urban in composition; as centers in which economic development occurs, they are not mainly out in rural or farming areas although some farming areas are situated more favorably than are others in relation to such centers. (3) The existing economic organization works best at or near the center of a particular matrix of economic development and it also works best in those parts of agriculture which are situated favorably in relation to such a center; and it works less satisfactorily in those parts of agriculture which are situated at the periphery of such a matrix." 4/ This hypothesis in effect states that it is industrial development which is the prime mover in economic growth and that agriculture is a dependent variable in the overall pattern of industrial urban growth.

1/ W.W. Rostow, "The Take-off into Self-sustained Economic Growth", The Economic Journal, Vol. LXVI, March, 1956, p. 28.

2/ The whole stage sequency of regional growth implicitly accepts this argument. See E.M. Hoover and J. Fisher - "Research in Regional Economic Growth" in Problems in the Study of Economic Growth (New York: National Bureau of Economic Research, 1949).

3/ The notion of diminishing returns is conspicuously absent. It is imperfections in the factor market rather than a relatively fixed factor supply which is strategic to the argument.

4/ Theordore Schultz, The Economic Organization of Agriculture (New York: McGraw-Hill, 1953) p. 147.

I find parts of both hypothesis attractive and indeed there is abundant evidence to support particular illustrations that add weight to them. 5/ Yet neither will stand generalization either in historical application or as policy guides in contemporary problems of economic growth. In this paper I shall argue that the successful production of agricultural (or indeed most extractive) commodities for sale without the region can be, and under certain conditions has been, the prime influence inducing economic growth, the development of external economies, urbanization, and eventually industrial development.

The argument baldly stated is as follows: (1) Specialization and division of labor have been the most important factor in the initial expansion of regions. (2) Production of goods for sale without the region has induced this specialization and that (3) involvement in the developing international economy (or national in the case of some regions in the United States) of the past two centuries has been the way by which regions and nations have accomplished economic development. The argument is of course the classic one of Adam Smith as succinctly restated recently in the title of an article by George Stigler "The Division of Labor is Limited by the Extent of the Market". 6/ While I have no quarrel with Schultz that manufactured goods (and particularly fabricated as contrasted with processed goods) have enjoyed the most rapid expansion in demand in recent U.S. economic history in contrast to the income inelasticity in demand for farm goods, the expanding demand for agricultural goods in the 19th century and the prospects for many primary commodities in world agriculture in the present century makes the case of the United States (and some other industrial nations) in recent years atypical. Whether we look at Denmark between 1865-1900, 7/ the Pacific Northwest between 1880-1920, 8/ the Canadian Economy between 1900-1913, 9/ or indeed anyone of a myriad of other possible illustrations, it has been the expansion from one or more agricultural commodities which has been the prime mover in initiating expansion. Since

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5/ See Rostow, op. cit. for supporting evidence. In connection with the United States however see my critical note, "A Note on Professor Rostow's 'Take-off' into Self-sustained Economic Growth", The Manchester School, January, 1958. In connection with Schultz's thesis see Anthony Tang, Economic Development in the Southern Piedmont 1860-1950 (Chapel Hill: University of North Carolina Press, 1958).

6/ Journal of Political Economy, Vol. LIX, June 1951, pp. 185-193.

7/ A.J. Youngson, The Possibilities of Economic Progress, (Cambridge, the University Press, 1959), pp. 191-230.

8/ See the brief description in my article "Location Theory and Regional Economic Growth", Journal of Political Economy, Vol. LXIII, June, 1955.

9/ G.H. Meier, "Economic Development and the Transfer Mechanism", Canadian Journal of Economics and Political Science, XIX, Feb., 1953.

I have discussed the role of export industries in promoting regional economic growth in an earlier article in the Journal of Political Economy an extended discussion here is unnecessary. 10/ However, my original argument was incomplete. While the expansion of an export industry is a necessary condition for regional growth it is not a sufficient one. I should like to take this opportunity to elaborate the argument before returning to a specific rebuttal of the two hypothesis outlined above.

II

The first step in the analysis of regional economic growth consists of an exploration of the determinants of the export sector of the region. However, a necessary additional step is to examine the disposition of the income received from without the region. Certainly one of the perplexing problems in the study of economic growth has been the differential progress as amongst different regions resulting from an increment to income from the export sector. Why does one area remain tied to a single export staple while another diversifies its production and becomes an urbanized, industrialized region? Regions that remained tied to a single export commodity almost inevitably do not achieve sustained expansion. Not only will there be a slowing down in the rate of growth in the industry which will adversely affect the region, but the very fact that it remains tied to a single export industry will mean that specialization and diversion of labor are limited outside that industry. Historically it has meant that a larger share of the populace has remained outside the market economy. The answer lies (a) in the natural endowments of the region (at any given level of technology) (b) in the character of the export industry, and (c) in changes in technology and transfer costs. It is worthwhile to examine each of these in turn.

The natural endowments of the region dictate the initial export commodities of the area. If these endowments are such as to result in a tremendous comparative advantage in one commodity over any other then the immediate consequence will be for resources to concentrate upon its production. If, on the other hand, the region has broad production possibilities such that the rate of return upon the production of a number of goods and services is not too much less than upon the initial export commodity than with the growth of the region and accompanying change in factor proportions, the production of other goods and services is likely to be a simple process.

10/ In addition to the original article, Location Theory and Regional Economic Growth, Loc. Cit., see the discussion with Charles Tiebout in the Same Journal, Vol. LXIV, No. 2, April, 1955, pp. 160-69.

The character of the export commodity in influencing regional growth is more complicated since there are several facets to it. A number of important consequences stem from the technological nature of the production function. If the export commodity is a "plantation" type commodity which is relatively labor intensive and in which there are significant increasing returns to scale then the development will be in marked contrast to one in which the export commodity may be produced most efficiently on a family-size farm with relatively less absolute amounts of labor required. 11/ In the first case there will tend to result an extremely unequal distribution of income with the bulk of the population devoting most of their income to foodstuff and simple necessities (much of which may be self-sufficient production). At the other end of the income scale, the plantation owners will tend to spend most of their income upon luxury consumption goods which will be imported. In short, there will be little encouragement of residentiary types of economic activity. With the more equitable distribution of incomes, there is a demand for a broad range of goods and services part of which will be residentiary thus inducing investment in other types of economic activities. There will tend to develop trading centers to provide a wide variety of such goods and services in contrast to the plantation economy which will merely develop a few urban areas devoted to the export of the staple commodity and the distribution of imports.

A natural consequence of the divergent patterns described in the previous paragraph will be the attitude towards investment in knowledge. 12/ Under the plantation type with very unequal income distribution, the planter will be extremely reluctant to devote his tax monies to expenditures for education or research other than that of the staple commodity. As a consequence skills and knowledge not directly related to the export commodity will be at a low level. In contrast the region with more equitable income distribution will be well aware of the stake in improving its comparative position through education and research and will accordingly be willing to devote public expenditures in these directions. The result will be to relatively improve its comparative position in a variety of types of economic activity and therefore broaden the resultant economic base.

Equally important is the investment induced by the export commodity or service. If the export is such as to require substantial investment in transport, warehousing, port facilities and other types of social overhead investment, then the external economies are created which facilitate the

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11/ This argument has been explored by R.E. Baldwin in some detail. See "Patterns of development in Newly Settled Region", the Manchester School of Economic and Social Studies, Vol. XXIV, No. 2, May 1956, pp. 161-79.

12/ I am in Professor Schultz's debt for focusing my attention on this problem in the course of a series of very stimulating discussions this past Spring.

development of other exports. Furthermore, if the export industry induces growth of subsidiary industries and if technology, transport costs and resource endowments permit these to be locally produced rather than imported, then this will induce further development. Both in the case of social overhead investment and investment in subsidiary industry the consequence is to promote urbanization and increased specialization and development of additional residentiary activity geared to the increasing local demand for consumption goods and services. At the other extreme is the export industry which requires only the immediate development of a few centers for the collection and export of the commodity and entails the development of little subsidiary industry or perhaps entails the development of such subsidiary industry and marketing facilities, but they are of a nature to be most efficiently imported. 13/

Changes in technology and transport may completely alter the region's comparative advantage either favorably or unfavorably. 14/ Technological change may increase the potential rate of return in the production of other goods and services and lead to the exploitation of new resources and a shift of resources away from the old export industry. The initial development of transportation facilities to implement the export industry tends to reinforce dependence upon it and inhibit more diversified economic activity in several ways. The early development of transport typically (under competitive conditions) leads to a rapid fall in the transport rate and therefore increases the comparative advantage of the export commodity. 15/ Moreover, with newly settled regions the transportation is typically one way. The outward shipment of a bulky product having no counterpart in the inward shipment which must be made mostly empty or in ballast. In consequence, inward freights are very low and compete with locally produced goods. As a result a good deal of local industry which had been protected by high transport costs or might develop if high transport costs continued, faces effective competition from imports. 16/ In summary the disposition of income earned from the export industry (ies) plays a decisive role in the growth of the region. Related to this argument is the region's propensity to import. To the extent that a region's income directly flows out in the purchase of goods and services rather than having a regional multiplier-accelerator effect, 17/ then it is inducing growth elsewhere,

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13/ In part at least therefore the development of subsidiary industry depends upon the first point discussed above, the natural endowments of the region.

14/ A further discussion of this point is to be found in my article, "Location Theory and Regional Economic Growth", pp. 254-56.

15/ See my article "Ocean Freight Rates and Economic Development 1750-1913". The Journal of Economic History, December, 1958, for a discussion on this point.

16/ The early sanguine hopes of Gallatin and Tench Coxe which rested upon the burgeoning development of manufacturing during the Embargo as reported in the 1810 census was in good part for the local market and completely unable to compete with imports following the end of the 2nd War with England.

17/ See J.S. Dusenberry, "Some Aspects of the Theory of Economic Development", Exploration in Entrepreneurial History, Vol. III, No. 2, December 1950.

but reaping few of the benefits of increased income from the export sector itself.

Let me briefly illustrate the argument of the preceding papers by contrasting the economic structure of the South and the West in the years prior to the Civil War. 18/

Both regions enjoyed a thriving export trade in the years between the end of the second war with England and the Civil War. The cotton trade of the South accounted for more than half of total U.S. exports during the period with rice, sugar and tobacco as subsidiary commodity exports. The value of cotton exports alone increased from $17.5 million in 1815 to $191.8 million in 1860. The West enjoyed an expanding trade in wheat and corn and derivatives thereof (pork, bacon, lard, flour, whisky) first with the South and then increasingly after the mid 1840's with the Northeast and Europe. However at this point their similarity ends. Let me point up the contrasts.

1. The South was characterized by its concentrated production for the market of a single export staple with a comparative advantage so great that even in periods of low cotton prices, resources could not receive an equal return from alternative types of economic activity. The West had no overwhelming comparative advantage in a single commodity but rather branched out into mining (lead in Missouri, copper in Michigan and iron at Pittsburgh) and various kinds of processing.

2. Large scale organization typified the southern plantation and a resultant extremely unequal pattern of income distribution reinforced of course by the institution of slavery. Wheat and corn in the West could be produced most efficiently on the "family size farm" given early 19th century technology. In consequence the pattern of consumer demand was markedly different. The South was almost totally lacking in urban development during the period (with the exception of New Orleans which served as an entrepot for western foodstuff for the southern planter and as a port for cotton exports) and its states were conspicuously at the bottom of the list of retail stores per thousand population in the 1840 census. A large percentage of the South's population remained outside the market economy. In contrast small community centers dotted the West to serve the local populace and served as nuclei for residentiary industry

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18/ This very brief account is a summary from two chapters of a study I am completing on U.S. economic growth from 1790-1860. Of necessity the supporting statistical and qualitative evidence cannot be presented in this short paper.

and trade and services. While these early developed to serve local consumer needs, with the gradual expansion of the market and the development of external economies, many came to serve an increasingly large area and become export industries. With each surge of expansion in the West (1816-18, 1832-39, 1849-57), an increasing percentage of western farmers shifted out of self-sufficiency and became a part of the market economy.

A further consequence of these contrasting structures was the differential investment in education. The South had the highest illiteracy rate (as a percentage of the white population), the lowest ratio of pupils (to white) population, and the smallest number of libraries. Even western states that were just emerging from the pioneer stage were conspicuously higher than the South in educational investment. 19/

3. Little additional investment was necessary for the efficient export of southern cotton. Neither transportation development nor extensive subsidiary industry were required. The factor with his ties with northern credit and shipping served as both the exporter of the planter's cotton and imports of his foodstuff (from the West) and manufactures (from the Northeast and Europe). Large scale investment in the South was devoted solely to the opening up of new cotton lands and the acquisition of slaves. Extensive investment in transportation (as well as other facilities to implement the export of goods) was essential to opening up the West. Moreover, there were important locational advantages to processing wheat and corn products into flour, corn meal, ham, bacon, salt pork, lard, and whisky within the region rather than without. In consequence a variety of such manufacturing grew up and promoted urban development in the West.

4. The unique characteristics of the ocean freight trade which resulted in one way cargoes from the cotton ports resulted in back hauls of manufactured goods being imported into the cotton region at very low rates. As a result there was no protection for local consumer oriented industries from the cheap imports of the Northeast and Europe. In contrast, manufactures had to come to the West either over land or via the long route back up the Mississippi and this protection thereby assisted the early development of consumer oriented industries in the West.

19/ For interesting figures on investment in knowledge see H.R. Helper's, The Impending Crisis of the South (New York: A.P. Burdick, 1860), pp. 144, 288-89.

Is this purely historical argument with little relevance for the contemporary scene? I think not. The special institution of slavery, like the special characteristics of land tenure systems, are capable of being examined in terms of economic analysis and we only beg analytical answers by retreating to the institution per se as an explanation. 20/ The characteristics described above go far to explain the differential success of regional economics in the contemporary world. A positive restatement of the thesis elaborated above is that the development of a successful agricultural export industry will result in an increase in income to the region and under the favorable conditions outlined above will lead to:

1. Specialization and division of labor with a widening of the regional market, (2) The growth of facilities and subsidiary industry to efficiently produce and market the export commodity, (3) The development of residentiary industry to serve local consumers some of which may, in consequence of expanding markets and external economies developed in association with the export industry, lead to a broadening in the export base, (4) a natural consequence of the above conditions will be the growth of urban areas and facilities, (5) an expanded investment in education and research to broaden the region's potential. Under these conditions a good deal of industrial development will occur naturally as a consequence of the conditions described above. Indeed as the regional market increases in size more and more manufacturing will find it feasible to establish branch plants there.

Where the unfavorable conditions outlined above obtain then there is room for effective governmental policy to modify them. The alteration of land tenure systems (which should not be done at the expense of productivity, however) and the redirection of public expenditure into research, technology, and education promise to yield very handsome returns. 21/

20/ See A.H. Conrad and J.A. Meyer, "The Economics of Slavery in the Anti-Bellum South," The Journal of Political Economy, Vol. LXVI, No. 2, April, 1958.

21/ See Arnold C. Harberger, "Using the Resources at Hand More Effectively", Proceedings of the American Economic Association, May 1959, pp. 134-46.

III

Let me point up the differences between the argument advanced in this paper and the two hypothesis of Professors Rostow and Schultz. My argument with Rostow is, I think, more fundamental. Rostow's thesis is, in effect, the same as one presented at the annual meetings of this Association in 1951 by Professor J.K. Galbraith in a paper entitled "Conditions for Economic Change in Underdeveloped Countries". 22/ Growth is associated with industrialization and stagnation with agriculture. It is my contention that this misses the whole problem of economic change and reflects a basic misreading of the economic history of the past two centuries. 23/ Involvement in the larger market economies, despite the evident hazards entailed, has been the classic way by which regional economies have expanded. It has resulted in specialization, external economies, the development of residentiary industry, and the growth of vertical "dis-integration" as a result of the widening of the market to which Professor Stigler rightly attributes a good deal of the increase of manufacturing productivity. 24/ I have made clear in the previous section the factors that can prevent successful regional expansion, but it should also be clear that these are not synonymous with agriculture per se.

My quarrel with Professor Schultz is not the application of his "retardation hypothesis" to the contemporary American scene, but rather with his contention that economic history strongly supports his argument that economic development has taken place in primarily industrial-urban matrices. 25/ I don't think that the 19th century economic history of the Midwest from 1815-1860, the Pacific Northwest from 1880-1920, or even California from 1848-1900 (where it was first the impetus of mining and then agriculture) support his argument. There is certainly not the space in this paper to explore the relative shifts in demand and supply, and the income elasticities which make for the difference of opinion and indeed it is not necessary at the point since the facts of the matter are that these (and other U.S.) regions grew up, developed urban centers, external economies, and manufacturing in consequence of a successful agricultural export trade. I have no quarrel with Professor Schultz's argument with respect to imperfections in the factor market and the importance of investment in human capital and indeed I believe that they fit in very well with the argument I made in the previous section of this paper. I would simply

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22/ This Journal, Proceedings, November 1951, pp. 689-96.

23/ See A.J. Youngson, Possibilities of Economic Progress (Cambridge: The University Press, 1959), for evidence from the economic history of four regions to support this argument.

24/ Stigler, *op. cit.* p. 190

25/ Schultz, *op. cit.* p. 147.

argue that a successful agricultural export trade can and has induced urbanization, improvements in the factor markets, and a more effective allocation of investment funds.

In conclusion I should like to restate the positive position that the relevant problems of regional economic development revolve around the issues raised in the main body of this paper. They are not issues of agriculture versus industrialization but rather revolve around a region's ability to become integrated into the larger markets of the world through exports, and of the resultant structure of the regional economy which will influence its ability to achieve sustained growth and a diversified pattern of economic activity.