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P R E F A C E

THIS study attempts to measure the growth of physical farm capital in five major categories from 1870 to 1950, and that of all financial assets used in farming after 1900; to relate this growth of capital to that of the farm labor force and to output; and to discover the principal determinants of investment in the various types of agricultural capital and the sources of financing that made the investments possible.

Where possible the data were developed and analyzed by type-of-farming regions. Such treatment not only permitted a closer identification of capital formation with historical and geographical influences in general, but it revealed also the particular influence of the type of farming that was dominant in each region. Here, to be sure, the picture may be somewhat blurred by reason of the lack of complete homogeneity of farm operations even in regions differentiated according to type of farming. But there was no really satisfactory alternative. Complete homogeneity of farm operation cannot be found even in single counties, and basic agricultural data are not widely available by type of farm product. Thus procedures by which the influence could perhaps be more clearly revealed were not feasible, and we rely on regional comparisons to reflect the influence of type of farming on capital formation even though the image may not always do full justice to this factor.

Some of the knottiest problems that arose as the work progressed dealt with regional distribution of countrywide totals, and with the adjustment of regional estimates to a 1910-14 price base. In a few instances (e.g. cash balances) no reasonable basis for distributing the totals could be found. The problems and the solutions need not be enlarged upon here as they are dealt with in detail in the text and appendixes. But it may not be out of place to sound a warning here, as well as elsewhere, that regional estimates probably contain larger margins of error than the countrywide totals.

Some of the estimates and findings have already appeared in the National Bureau's Occasional Paper 44 entitled *The Growth of Physical Capital in Agriculture, 1870-1950*, and in "Trends in Capital Formation and Financing in Agriculture" (*Journal of Finance*, May 1955). These are included here in substantially the same form together with subsequent estimates and analyses that round out the study.

Since the basic data for the inquiry were mainly enumerations and estimates of the Bureau of the Census and of the Bureau of Agricul-

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tural Economics, I was fortunate to be able to make the study in Washington as a member of the Bureau of Agricultural Economics professional staff. I am deeply grateful to President Howard Lowry and Dean William Tausch of the College of Wooster who generously arranged for the extended leave of absence which made this arrangement possible. The many perplexing and often baffling problems that arose as the inquiry unfolded would have been far more difficult to resolve if I had not been able to draw upon the knowledge, judgment, and experience in agricultural research possessed by BAE's professional staff, and which its members freely put at my disposal.

As a consequence of this unflinching readiness to help I have had assistance, counsel, and encouragement from many more persons in BAE than it will be possible to name here. Particularly I want to acknowledge my great debt to Norman J. Wall who encouraged me to undertake the study in the first place and who, at every stage, gave strong support through wise counsel on technical problems and generous provision of professional and clerical assistance even when I was no longer formally associated with the Division which he heads.

My debt to Russell W. Bierman also is especially heavy. Dr. Bierman assembled and developed much of the material in Appendix H, and wrote an early draft of it. His expert and painstaking assistance in this intricate and thorny task, and his generous cooperation after I returned to the College of Wooster have been important factors in bringing the study to completion at this time.

I am also under special obligation to Fred L. Garlock for general constructive criticism of all phases of the study, and for helpful suggestions pertaining to the estimates of farmers' financial assets and debts; to William H. Scofield and Hugh H. Wooten for fruitful leads, sound advice, and assistance in estimating real estate values at constant prices; to Glenn Barton, Martin Cooper, Ernest Grove, and Harry Norcross for cogent suggestions and criticism in connection with the development of a series for the period 1870 to 1950 that would reflect, as well as existing data permitted, farm output by regions; and to Mrs. Irma P. Elliott for skillful supervision of the operations by which the data were assembled and processed.

My obligations to members of the professional staff of the National Bureau of Economic Research are less widespread, but certainly they are among the deepest that I owe. This study has been immeasurably improved at many crucial points by the imaginative suggestions, sage advice, and penetrating criticism of Harold Barger, George Brinegar, Daniel Creamer, Solomon Fabricant, John W. Kendrick, George Kuznets, Simon Kuznets, and Geoffrey H. Moore. My obligations to

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Special acknowledgment is made to the Advisory Committee on the Study of Capital Formation and Financing, which assisted in drafting plans for this investigation, conferred with the National Bureau staff and myself at several stages of the work, and reviewed the final manuscript. Members of the Committee were: Leo Wolman, chairman; Sherwin C. Badger, Donald R. Belcher, Claude L. Benner, Percival F. Brundage, Arthur F. Burns, W. Braddock Hickman, Edgar M. Hoover, DeLong H. Monahan, and Geoffrey H. Moore.

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It goes without saying that errors of fact, judgment, or interpretation that may still be present in the study must remain my responsibility alone.

ALVIN S. TOSTLEBE

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