INVESTMENT IN MAN: AN ECONOMIST'S VIEW

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My plan is first to comment on the state of our knowledge about investments that people make in themselves and, then, to consider briefly the reluctance that we have in thinking about human wealth, and to give reasons why modern economists have shied away from it. I plan, then, to show how wholly new and important questions can be examined, once we acknowledge the role of human wealth, and how a number of big puzzles in our economic data may be solved. I venture to suggest a human wealth hypothesis and to note that estimates from two recent studies are consistent with it.

It is a simple truth that people invest in themselves. They do it as individuals and as families and through their national and local communities. In making these investments, there are many different combinations of family and community arrangements. Our knowledge, however, of the comparative advantages of having either the family, or the community, or combinations of the two make these investments is very limited. Much of the income that is used in making these investments in ourselves is classified as consumption. Much of the human effort that enters is thought of as leisure, although education, which is one of these investments, is mainly hard work, as any student will say. No doubt most education rates high in serving both consumption and production. This should give it a special priority. But we go on counting expenditures for education as if they were only consumption. Then, by some strange twist, when we look at the vast expenditures that the U.S.S.R. has been pouring into education, we fail to see that many millions of families of that country have valued them highly as consumption and may well have looked upon their level of living as having risen accordingly.

THE NEGLECT OF THE STUDY OF HUMAN WEALTH

People are, also, an important part of the wealth of nations. Moreover, as
people invest in themselves they can augment the amount of human wealth: in many countries this form of wealth, measured by what it renders to production, is now vastly larger than all other forms taken together. But our knowledge about national wealth is almost wholly restricted to the non-human components, that is, to reproducible physical capital and land. The study of human wealth is everywhere neglected notwithstanding its importance and notwithstanding the fact that people all about us are investing in themselves.

Why are we so reluctant to acknowledge the role of human wealth? The mere thought of doing so seems to offend us; to discuss it openly appears to rub many people the wrong way. Why is it in bad taste? The answer is that we cannot easily rise above our values and beliefs; we are strongly inhibited from looking upon men as an investment, except in slavery, and this we abhor. Nor is it good by our lights for man to look upon himself as an investment, for it too could be debasing. Our political and legal institutions have been shaped to keep man free from bondage. All this must be seen against a long historical struggle to rid our society of indentured service and to eliminate all vestige of feudalism with its lord and vassal relations. Thus it is understandable why a study of man, treating him as if he were wealth, runs counter to deeply held values, for it would seem to reduce him once again to a material component, to something akin to property; and that would be wrong. Above all, free men are the object to be served. No less a person than J. S. Mill insisted that the people of a country are not to be looked upon as wealth because wealth exists only for the sake of a people.2

But surely Mill was wrong, because there is nothing in the concept of human wealth that implies that it may not exist wholly for the sake of a people. Mill saw this at a later stage of his work when he considered skills. If by investing in themselves people enlarge the choices that they can exercise, it follows that this is one way of enhancing, rather than impairing, the role (welfare) of free men.

Even so, it is the acknowledged task of poets and philosophers to keep us on guard. What is hard to explain, however, is the long neglect of investment in man by modern economists. Clearly, they have shied away from the study of human wealth. This may come as a surprise because economists are usually not thought of as being shy when it comes to abstracting from those values and beliefs that do not fit their particular calculus. It should be said that the philosopher-economist Adam Smith boldly treated all of the acquired and useful abilities of all the inhabitants or members of a society as part of capital, although he was also the father of errors in not seeing clearly that capital is a stock.

THE OMISSION OF HUMAN WEALTH BY ECONOMISTS

Nevertheless, the main stream of modern economics has by-passed undertaking any systematic analysis of human wealth. On why this has happened, let me venture these reasons: The classical tripartite treatment of land, labor, and capital has been a heavy hand; it should have been the services of land, man, and reproduc-

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ble capital forms, or of each as a stock, in which case human effort is represented by man. Then, too, economists have found it all too convenient to think of labor as a homogeneous input free of any capital components. Marx built his theory on a presumed dichotomy between capital and labor. Joan Robinson also takes her labor pure and straight. One can always adjust and thus try to standardize the unit of labor, but there was no "need" of doing even that until fairly recently, because for a long time in Europe and in the United States, too, the statistics on hourly earnings and prices were so shaky that no one could say for sure that real wages were rising. Then, as it became apparent that real wages had been rising, the rate of this increase for many decades was so small that it was both easy and plausible to attribute all of it to factors other than an improvement in the quality of the labor force. Although there is presently much uneasiness about a concept of labor in which one abstracts from capital that has been invested in man, the conventional measure of labor as an input is still "manhours worked." To add an hour of work of an electronic engineer and an hour of a migrant farm worker is to put together two very unequal hours of labor input; it may be likened to counting an acre of poor, dry-farming land and an acre of very valuable irrigated land that has been made highly productive by large capital outlays in irrigation structures, as if the two acres were still comparable in producing farm products.

Another and more compelling reason why economists have neglected human wealth has arisen from a conventional restriction on the concept of capital. Instead of developing and using an all-inclusive concept of capital, economists have restricted their definition of capital to include only those classes of wealth that are commonly bought and sold in the market place. Irving Fisher, in a series of papers published just before the turn of the century and then in his excellent but grossly neglected book, *The Nature of Capital and Income,* clearly and cogently presented an all-inclusive concept of capital. But the prestige of Alfred Marshall was too great; his ideas on this issue prevailed as his students and many followers entered upon the stage. Marshall dismissed Fisher's comprehensive concept of capital in these words: "Regarded from an abstract and mathematical point of view, his position is incontestable. But he seems to take too little account of the necessity for keeping realistic discussions in touch with the language of the market-place." Marshall concluded his appendix on "Definitions of Capital" by again making it clear that "...we are seeking a definition that will keep realistic economics in touch with the market-place. . . ."

Free men are not for sale, and, thus, Marshall's market-place concept of capital had the effect of excluding all capital that becomes an integral part of a people. Granted that for particular purposes it is appropriate to restrict the concept of capital that one uses and granted also that the particular restriction imposed by the notion of the "market place" is altogether too

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8 See *The Accumulation of Capital* (Homewood, Ill.: Richard D. Irwin, 1956).


narrow for many of the purposes to which I am addressing myself, Marshall’s view of capital, nevertheless, could have been given a much broader interpretation than it has received. Obviously, labor is in touch with the market place as wages and salaries are presently determined. These wages and salaries represent income streams, and, like the income streams from property, they too may be discounted, and appropriate capital values may be imputed to each of them. Furthermore, investments in man, like investments in property, are ways of establishing additional income streams. Inasmuch as it is possible to observe their rates of return, these investments in man would appear to fall within the scope of Marshall’s realistic economics. It is of course far from easy to estimate these rates from such statistics as are now being collected; useful statistics, however, could be had if we were to set our hand to the task.

I would be remiss if I did not acknowledge the fact that, in spite of the restriction that Marshall placed on his concept of capital, his writings are studded with gems of wisdom on the economic importance of adequate food, housing, and health and of developing the skills of workers. He, also, stressed the value of scientific training and the diffusion of scientific knowledge and looked upon education as a “national investment.”

NEW ECONOMIC HORIZONS

Once we are of a mind that it is meaningful to examine the role that investments in man perform in an economy, a wholly new set of questions becomes relevant and important. Underdeveloped countries everywhere want to accelerate their economic growth. Most of them are strongly committed to programs of constructing new dams and power facilities, roads and harbors, factories, and, above all, steel mills. Meanwhile, in many of these countries, few additional resources are being made available for training and education. The relevant and important question is clearly indicated: Are these countries making an optimum allocation of the resources at their command? To arrive at a valid answer we must use a concept of capital that includes both human and non-human wealth. To consider only the latter, as is almost everywhere the case, can give only misleading results. No wonder, therefore, that poor countries are in general being badly misled. There can be little doubt that they are presently allocating their resources in ways that are far from what would be required to achieve an optimum rate of growth. Harberger’s study concentrating on Chile strongly supports this view, for he finds that technical advances are the key factor in achieving rapid development and that additional expenditures to improve the quality of the (technically trained) labor force are of primary importance in attaining this end.\footnote{Arnold C. Harberger, “Using the Resources at Hand More Effectively,” to appear in the Proceedings of the American Economic Association (1959).}

To consider a somewhat narrower question: Has India in recent years spent too much on irrigation and all too little on training her cultivators on how best to use the additional water? From reports that I get, this has been happening. The error appears to be a very costly one. In Iraq, where the government has been obtaining huge amounts of revenue from oil, the De-

\footnote{Ibid., Book IV, pp. 216–17.}
velopment Board, according to Yudelman,\(^8\) will have spent close to $1,400 million by 1960—virtually all on flood control, irrigation, drainage, and other physical structures and only a pittance on training and education to prepare farmers and others in the use of these new facilities. Yudelman concludes that this one-sided allocation represents a most serious error in the efforts of Iraq to achieve agricultural development.

But these are the mistakes of poor countries, especially those in which there are massive governmental programs. Although we may be giving some of these countries bad economic advice, presumably this does not impair our economy. We are always ready to take comfort in our long, gradual development, in the open and decentralized character of our economy, and in our large and impressive investments in what I am calling human wealth. There is, however, no room for complacency. We, too, are constantly confronted by the same allocative problem, that is, how much or how little to invest in non-human wealth relative to what we put into ourselves. How well or how badly we are doing on this score is subject to debate. But what is not debatable is the fact that there is little or no economic analysis to draw upon because these aspects of this problem have been almost wholly neglected.

In terms of both consumption and economic growth, I have little doubt that in recent years we have been allocating altogether too many of our resources to automobiles and roads compared to what we have allocated to education. But this is an opinion; let me consider situations in which there is some evidence. Negroes on the average earn only a fraction as much as do white workers. May not much and even most of this vast discrepancy in earnings be a direct consequence of the lower productivity of Negroes arising from the deplorably bad education that they have been obtaining? Morton Zeman’s study of “White and Non-White Income Differentials in the United States”\(^9\) strongly supports an affirmative answer. The very low earnings of many of the migrant farm workers may also rest primarily on this factor.

To take still another of the serious income inequalities marked against our national record, namely, the chronic poverty of so many of the rural areas in and about the Appalachian country consisting largely of whites: Is this poverty, also, rooted mainly in the relatively small investments that people in these areas have seen fit and have been able to make in themselves? Tang,\(^10\) in a recent study of two groups of counties in the southern Piedmont region, has found that whereas they started from an equal income position at about the turn of the century, farm people in his “developed” counties have gained importantly in farm income per worker relative to those in his “under-developed” counties. This divergency in farm income per farm worker has become increasingly larger over time. Even the prosperous and full employment conditions that prevailed between 1940 and 1950 did not change this “trend toward increasing income disparity.”\(^11\) Tang’s findings are not in-


\(^9\) Ibid., p. 220.
consistent with the industrialization hypothesis that he sought to test. A preliminary examination of his data would seem to indicate that they are also consistent with another hypothesis, namely, one based on education and related investments in people as the principal explanatory variable.

PUZZLES AND A PARADOX

Some major puzzles in our economic data may be resolved, once we take investments in man into account. As the stock of capital increases and its use deepens, we might expect the capital-income ratio to increase. So it did for a long time. Kuznets\textsuperscript{12} gives these ratios of reproducible capital to annual income:

<table>
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<tr>
<th></th>
<th>Ratio</th>
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<tbody>
<tr>
<td>Great Britain</td>
<td></td>
</tr>
<tr>
<td>1875</td>
<td>4.6</td>
</tr>
<tr>
<td>1905</td>
<td>6.5</td>
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<tr>
<td>United States</td>
<td></td>
</tr>
<tr>
<td>1879</td>
<td>2.8</td>
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<tr>
<td>1909</td>
<td>3.4</td>
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For the period since 1909, I turn to Goldsmith.\textsuperscript{13} His national wealth estimates also include land and, therefore, give a larger ratio than those of Kuznets, cited above. Goldsmith's ratio of national wealth to annual national income declined 25 per cent between 1909 and 1949:

<table>
<thead>
<tr>
<th>Year</th>
<th>National Wealth</th>
<th>Net National Income</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>1909</td>
<td>145</td>
<td>29</td>
<td>5.0</td>
</tr>
<tr>
<td>1949</td>
<td>898</td>
<td>237</td>
<td>3.8</td>
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If we restrict ourselves to estimates of the private sector of the United States economy, it is abundantly clear that we have not been winning our increases in income from the use of more tangible capital\textsuperscript{14} relative to income. Between 1919 and 1957, total income rose at an annual rate of 3.1 per cent while that of tangible capital rose at a rate of only 1.8 per cent.\textsuperscript{15} But all these estimates of capital exclude human capital represented by training, education, additional capabilities based on health and new knowledge.\textsuperscript{16} The stock of this human capital has been increasing more rapidly than that of tangible capital; therefore, the observed decline in the capital-income ratio may be largely, or even wholly, an illusion resulting from the omission of human capital.

There is, also, the Leontief paradox indicating that the United States exports mainly wage-goods and imports largely capital-intensive goods, contrary to what one might expect for a country with much capital and with very high real wages. But here, again, no account is taken of the human capital that is represented by the acquired skills and abilities of engineers, chemists, and other workers. This human capital renders important services in the produc-

\textsuperscript{12} Simon Kuznets, “Towards a Theory of Economic Growth” (lecture at the Bicentennial Celebration of Columbia University, May, 1954), Table 9.


\textsuperscript{14} As this capital is now conceived and measured.

\textsuperscript{15} Solomon Fabricant, Basic Facts on Productivity (Occasional Paper No. 63 [New York: National Bureau of Economic Research, 1959]), Table 5:

<table>
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<tr>
<th>Average Annual Percentage Rates of Increase</th>
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<tr>
<td>1889–1919</td>
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<tr>
<td>Total output</td>
</tr>
<tr>
<td>Labor (weighted manhours)</td>
</tr>
<tr>
<td>Capital (weighted tangible capital)</td>
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<tr>
<td>Total inputs</td>
</tr>
<tr>
<td>Divergency: percentage line 4 of line 1</td>
</tr>
</tbody>
</table>

\textsuperscript{16} It is necessary to distinguish between new knowledge that becomes embedded in tangible capital and new knowledge that becomes an integral part of a people. As tangible capital is presently measured, however, even much of the new knowledge that becomes a part of it is also being missed.
tion of these wage-goods that we export. The value productivity of these particular forms of human capital may exceed that obtained on tangible (physical) capital used in producing the capital-intensive goods that we import.

The central puzzle, however, the one that encompasses the others, is in our economic growth as it is revealed in the many estimates that indicate a large and increasing divergency between the rise in income and in the resources that we use to produce the additional income. Our income has been going up much the faster of the two. For example, between 1889 and 1919 the rate of increase of labor and tangible capital combined was only 67 per cent as large as that of income (both are for the private sector of the domestic economy).\(^{17}\) Even so, between 1919 and 1957 the rate of increase of manhours worked and of tangible capital, taken together, was down to a mere 32 per cent of the rate at which our income rose. It is hard to believe, but wonderful if true, and if true, why? That is the puzzle.

**A HUMAN WEALTH HYPOTHESIS**

What is it that we have been doing that has given us a rate of economic growth that is three times as large as the rate of increase of labor and capital? My hypothesis is that the explanation is to be found in the large and rapid accumulation of human wealth that is being excluded from our conventional measures of "manhours worked" and of tangible capital.

The preliminary results from two studies lend support to this hypothesis. The first of these is based on a study that I have made of the formation of human capital, represented by education beyond the eighth grade. This form of capital not only has become very large but has been increasing much more rapidly than has the formation of conventional non-human capital.\(^{18}\) In estimating the gross capital formation entailed in a high-school education, I found that in current prices it cost the U.S. economy $127 per student in 1900, and $1,493 in 1956. My estimates for college and university education are $385 for 1900 and $3,580 for 1956; most of these costs are of the nature of opportunity costs because they consist of earnings that students have foregone while they were in school studying. The national totals for all public and private schools must suffice for now; they show that only $180 million of this capital (gross) was formed in 1900, whereas in 1956 it had become no less than $22,700 million. To compare this increase with that of non-human capital, I need burden you with only the percentage that one was of the other in each of the two years: In 1900, the formation of this kind of capital, i.e., represented by high school, college, and university education, was only 4 per cent of that of all physical capital; by 1956 it had risen to 28 per cent of that of physical capital. This dramatic rise in the relative position of this one form of human capital, as I have measured it, nevertheless, substantially underestimates the real relative increase because I am here relying on gross capital formation figures and it is the net figures that count. There are many indications that the net fig-

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\(^{17}\) See Fabricant, *op. cit.*

\(^{18}\) My paper carries the title, "Gross Capital Formation Represented by High School, College, and University Education in the United States, 1900 to 1956" (AER Paper No. 5807, Department of Economics, University of Chicago, April 29, 1958).
ures have gone up even more because, whereas the useful life of physical capital has been declining, that of human capital has been increasing.

The other study tells us something about the rates of return on this form of human capital. Here I draw on some of the estimates that Becker reported in a recent lecture. He has found that, as of 1950, males were earning a 14.8 per cent return on what they had privately invested in acquiring their high school, college, and university education, measured by their opportunity costs (earnings foregone while in school) and their direct costs (tuitions, books, etc.). When the other costs, those not borne by students or their families directly, are added to these private costs, this rate of return was still no less than 11 per cent. How does this compare with the rate of return that owners of property were obtaining? Compared to that of corporations before taxes, it is probably not very different. What about the rate of return on all non-human wealth, namely, on the approximately $1,000 billion of national wealth, as estimated by Goldsmith? This figure includes all land (agricultural, forestry, and urban), producer and consumer durables, apartment buildings and private residences, government structures, inventories, livestock, monetary metals, and net foreign assets. It is hard to believe that the 11 per cent return on this human capital did not exceed by a wide margin the rate of return that was being real-

ized on this huge stock of non-human wealth.

It should be pointed out that in both Becker's and my study none of the private or "public" costs of this education was charged to consumption or to other important goals. This means that we have overestimated the relevant costs of this kind of capital formation because a very substantial part is incurred for these other purposes and it should be attributed to them.

It should be evident that this has been a very preliminary treatment of the investments that we are making in ourselves. Education beyond the eighth grade is only one of the forms that this kind of capital formation takes, albeit a large and increasing form. Elementary education, which we take for granted, may rate even higher in what it renders to an economy. How else, for example, can one explain the early remarkable achievements in agriculture in Japan? Many poor countries are neglecting their elementary education relative to what they are spending on physical plants and equipment; moreover, the cost of this form of education is relatively low because of the low opportunity costs of taking students at that age away from other useful work.

On-the-job training is another way of accumulating some of this human capital. Still another goes back to measures that increase the strength and energy of a people and improve their health and vitality. New, useful knowledge is undoubtedly of strategic importance both in changing the nature of the useful skills that are of most value and in altering and improving the quality of the physical plant and equipment that we employ. I have not touched on the very important question of how we

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28 Gary S. Becker, professor at Columbia University, in a lecture given before the Economic Development Workshop at the University of Chicago, February 5, 1959. In this lecture he drew on a major study that he has been making of the economics of education for the National Bureau of Economics Research.
perpetuate this human capital in the home and through institutions other than through organized education.

I have tried to show that the state of our knowledge of investment in man is very meager. Our values and beliefs have hindered us greatly in thinking clearly about it. Economists too have missed seeing the important role that the increasing stock of human capital has come to play in the economy. A concept of capital restricted to tangible property will not do. A much more comprehensive concept of capital is required—one that will include human capital. Once we take this more comprehensive view, the central puzzle in our estimates of economic growth looks solvable; the human wealth hypothesis appears to gain support from studies now under way and it may go a long way in explaining the kind of economic growth that we have been achieving and that poor countries everywhere would like to understand with a view of using this experience to improve their economic lot. Finally, even though this approach to the investment in man were to put us on the right track, much hard thinking and research remain to be done.

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