

# Walter Heller and the Introduction of Human Capital Theory into Education Policy

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## Abstract

Prior to 1958, there was no such thing as “human capital theory” in economics, much less in the discussion of education policy. Within five years, there was an active theoretical and empirical human capital research program in economics. Over the same short period, the new idea of public spending on education as a form of investment with a demonstrably high rate of return and the capacity to contribute to the achievement of important national goals was enthusiastically communicated to the public by opinion leaders, policy makers, and even a President. This paper aims to shed light on why the human capital idea so rapidly came to influence education policy: the human capital idea implied policies promoting education could advance goals – first faster economic growth, then poverty reduction -- that circumstances pushed to the top of the nation’s policy agenda during the period of human capital theory’s initial development; and an advocate of the theory who could persuasively explain the logic and the emerging empirical evidence linking education to those goals moved into a position of power and influence. We also argue that this episode is that it marks the beginning of, and was a contributing factor to, a profound transformation of the public discourse surrounding education policy in the United States.

“I propose to treat education as an investment in man and to treat its consequences as a form of capital. Since education becomes a part of the person receiving it, I shall refer to it as *human capital*.” Thus did Theodore Schultz begin his 1960 *Journal of Political Economy* article on “Capital Formation by Education”, one of the initial products of a research program that Schultz had been pursuing energetically since the mid 1950s. In the late 1950s and early 1960s Schultz played a crucial role in converting this idea of “human capital” from a suggestive metaphor to the basis for a wide-ranging and fruitful research program in economics.<sup>1</sup> He did so not only through his own work, but also through his efforts to guide, encourage, and facilitate research by young economists, including Gary Becker and Jacob Mincer, into questions raised by the human capital concept.<sup>2</sup>

Economists today may need reminding that Schultz’s human capital idea represented a novel way of thinking about education – about what it was, why people might want it, and how it affected society – that emphasized certain aspects of education, and abstracted away from others.<sup>3</sup> Schultz’s metaphor of human capital was quickly embraced by economists, and those

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<sup>1</sup> The focus of this paper is on the emergence and adoption of the human capital idea as a framework for thinking about education and education policy. However, it should be noted the Schultz also included health care, on-the-job training, and migration to take advantage of better job opportunities as activities that could be regarded as human capital investments, and that the analysis of these activities was also part of the human capital research program in economics from its inception (Schultz 1961, p. 1; Schultz 1962).

<sup>2</sup> In the late 1950s, Schultz was chair of the Chicago economics department and an influential and respected figure both within the profession and among officials of various research funding agencies. Upon learning of Mincer’s research on human capital investments and income distribution, he arranged a post doc for Mincer at Chicago (1956-57). Schultz played a role in the process by which Gary Becker came to work on a Carnegie Foundation-funded NBER project estimating the returns to education, out of which grew Becker’s *Human Capital*; and he encouraged, commented on, and promoted Becker’s work at every stage along the way. Becker made clear his debt to Schultz in the Preface to the first edition of *Human Capital*, and in interviews later in his life (e.g., his interview with Russ Roberts at [http://www.econtalk.org/archives/2006/07/an\\_interview\\_wi.html](http://www.econtalk.org/archives/2006/07/an_interview_wi.html)). Schultz also organized and secured funding for the 1961 NBER Conference on “Investment in Human Beings” (Schultz 1962), at which many of the seminal papers of the human capital research program were presented (Teixeira 2006, 2010, 2011).

<sup>3</sup> The novelty of the human capital idea was asserted by Schultz in the opening lines of his 1960 AEA presidential address: “Although it is obvious that people acquire useful skills and knowledge, it is not obvious that these skills and knowledge are a form of capital, (and ) that this capital is in substantial part a product of deliberate investment . . . Much of what we call consumption constitutes investment in human capital.” (Schultz 1961, p. 1). Schultz acknowledged that the idea was present in Adam Smith, and Kiker (1966) later identified it in the work of other prominent economists of the past. However, prior to the late 1950s, the idea of thinking of certain activities that

outside the profession also perceived it as new way of thinking about education being advocated by a social science that had previously given little systematic attention to the phenomenon. It is not the rapid acceptance of the human capital idea by economists that concerns us in this paper, however. Rather, our subject is how this new way of thinking, and the formal theoretical framework that developed out of it, rapidly became very prominent in discussions of federal education policy, ultimately altering the nature of federal education policy itself.

We believe that this is an interesting story for at least two reasons. First, it strikes us that such an immediate policy impact of a conceptual/theoretical innovation in economics is unusual. It is more often the case that novel theoretical frameworks and associated policy agendas which capture the imagination of economists are ignored by decades before being taken up by those who actually have the power to make policy, if they are ever taken up at all. We argue below that the surprisingly quick migration of the human capital idea from the technical literature of economics to the public comments of Presidents and their top policy advisors was facilitated by a convergence of political, economic and cultural trends in the post-war decades that made political actors particularly receptive to Schultz's message about "human capital" and its implications for understanding economic growth. Schultz's version of the human capital idea can in turn be seen as his reaction to efforts by economists in the 1950s to identify the sources of economic growth, a reaction shaped by a set of research strategies and interests he had developed over his career. We also document the key role in bringing the human capital idea into discussions of education policy played by the charismatic and influential economist Walter Heller. For Heller, Schultz's redefinition of education as investment in human capital, and his

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increased the inherent productivity of individuals as akin to investment in a form of capital had never become the basis of a substantial body of economic theory, nor was it ever central to economists' thinking about the role of the labor in production and distribution.

hypotheses about the relationship between human capital accumulation and aggregate economic growth, formed the basis for arguments that funding for education should be increased, and that the federal government was responsible for providing that increased funding. These arguments were ultimately accepted by the presidents under whom Heller served as chairman of the Council of Economic Advisors.

We believe that a second interesting aspect of this episode is that it marks the beginning of, and was a contributing factor to, a profound transformation of the public discourse surrounding education policy in the United States. Three assumptions that today play an important role in education policy discussions are that the Federal Government has an important role to play in both funding and regulating public education; that the central purpose of education is to increase students' future economic productivity and earnings capacity, and that economists possess expert knowledge that gives them important insights into the educational process. These assumptions were not widely accepted in education policy circles in the 1950s; that they are so now is partly due to Walter Heller's successful promotion of Schultz's human capital idea in the early 1960s.<sup>4</sup>

In the next section of the paper we give an account of how, in the years following WWII, increasing the rate of economic growth became the paramount goal of US economic policy. We then describe work by economists during the same period aimed at explaining economic growth, with particular attention given to the emergence of an empirical research program that attempted to quantify the causes of the economic growth in the US revealed in the historical time series of real national income constructed by Simon Kuznets. By the mid-fifties, this program had

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<sup>4</sup> This paper is a part of a much broader story of the transformation US education policy over the past fifty years, and how economists' methods and modes of thought interacted with other social and political trends in the 1960s to shape that transformation. The broader story is the subject of Holden's dissertation.

produced a puzzle, in that most of this economic growth could not be explained by increases in the measured capital stock and labor force. Theodore Schultz's reaction to this puzzle was to propose that it resulted from a failure to account for the growth of what he would soon label human capital. Schultz's initial ideas about the significance of the human capital concept and the most pressing research questions to which it gave rise differed from those of his fellow human capital pioneers Becker and Mincer, and we describe how these ideas grew out of Schultz's work in agricultural economics prior to 1955.

The second half of the paper details the story of Walter Heller's promotion of the human capital concept. During the late 1950s, Heller served as a consultant to the National Education Association, and he quickly seized on the idea of human capital to argue in support of legislation that would have increased federal spending on education. In the early 1960s, while Heller was serving as Chairman of the Council of Economic Advisors, he used human capital theory to convince President Kennedy that increased federal support of education should be part of the administration's portfolio of policies for raising the rate of economic growth. When the attention of President Kennedy, and then Johnson, turned to the problem of poverty, CEA economists recruited by Heller used human capital theory to formulate education policies for the War on Poverty. Prior to discussing Heller's activities we also offer a brief account of some of the fundamental assumptions underlying US education policy during the first half of the 20<sup>th</sup> century, in hopes of underscoring the extent to which the approach to education policy implicit in the human capital framework represented a break from prevailing attitudes.

## **The Nation's Growing Obsession with Economic Growth, 1945-1964**

During World War II, as economists and economic policy makers contemplated the problems and opportunities that would face the United States following the conclusion of hostilities, perhaps their chief worry was a return to Depression (e.g., Hansen 1939). Granted, one could find among economists and business leaders a few prophets of a new post-war abundance, but the general tone was one of concern, fueled by a raft of technical forecasts, based on the latest data and employing the most up-to-date statistical methods, predicting high levels of unemployment in the immediate post-war years.<sup>5</sup> In this atmosphere the Full Employment Act of 1945 was introduced, eventually passing (with substantial revisions) as the Employment Act of 1946. The Act for the first time gave the federal government responsibility for the nation's economic health, instructing it to "use all its plans, functions and resources . . . to promote maximum employment, production, and purchasing power". It was a bold commitment to eliminate the business cycle, thus solving the problem of unemployment and the loss of goods and services that accompanied it. It also identified economists, speaking to the President and Congress through a newly established Council of Economic Advisors, as the experts who would guide the effort.

The Employment Act of 1946 as originally passed was much more about economic stability than economic growth. But beginning in late 1940s CEA economists began to emphasize economic growth as a goal along with economic stability, and by the early 1960s increasing the rate of economic growth became the number one priority of US economic policy, with full employment and economic stability seen mainly as means to that higher end. This development was an outgrowth of a cultural shift that occurred in the US during this period, one that was reflected in the organs of elite opinion and commentary, the popular press, and even

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<sup>5</sup> These forecasts turned out to be wrong, prompting a fair amount of self-criticism among economists: see e.g., Klein (1946), Woytinsky (1947) or Hagen (1947).

public school textbooks (Yarrow 2010). Increasingly, Americans were hearing, articulating, and embracing the message that one of the key things that defined America's greatness was the ability of the American economy to produce increasingly large quantities of goods and services, so that the average American could look forward to a continuously rising material standard of living. As Yarrow puts it, "After World War II the United States became, culturally, first and foremost an "economy". America's democratic ideals and geopolitical power still very much mattered, but culturally the most important metrics of American Success were ever more economic". (Yarrow 2010, p. 3)

Several trends contributed to this cultural shift. One was the reality of post war prosperity itself. Real GDP was growing at an annual rate of around 4% between 1948 and 1965; production workers were seeing their nominal wages grow at about 4.5% per year over the same period. For a nation that had lived through the Depression, this was something to be celebrated.

A second was the emergence of an authoritative set of measures of the nation's economic performance. The official national income statistics of the US had been developed and improved during the 1930s, and had proved their usefulness during the war. During the post-war years, updated measures of the national income and the GNP were released on a regular basis, providing a numerically precise confirmation of the impression of growing prosperity created by what Americans could see all around them – more people with more cars, more clothes, more television sets, more everything. The measures were talked about and worried over by the press and by politicians, and they provided a measuring rod to compare the nation's current economic performance to its past, and perhaps more importantly, to that of other nations.

The most important "other nation" with which the US compared itself during this period was the Soviet Union. Having just emerged from a major war in which superior economic power

had been a key to victory, and having moved into a Cold War with the Soviets which often seemed to be on the verge of turning hot, US citizens were naturally concerned with the relative economic strength of the US and the USSR. Clearly the US economy was larger and more advanced than that of the Soviet Union, but the Soviet economy was growing. No one was really sure quite how fast it was growing, but everyone agreed that it was growing quickly. Thus, the economic advantage the US enjoyed over the Soviets would erode away, unless the US also maintained a rapid rate of economic growth.<sup>6</sup>

Of course, economic comparisons between the US and the USSR were about more than potential military might. The Soviet Union based its claims to superiority over the United States as a society on its possession of a better economic system, pushing Americans to evaluate their own society increasingly in terms of the performance of the American “free enterprise” system. This increased the importance, in the public mind, of evidence on the levels of living standards being delivered by that system and the rate at which they were rising. These competing claims about which system really delivered the economic goods were not just for domestic consumption. There was a battle going on for the hearts and minds of the leaders and citizens of less developed nations, as each of these “third world” nations stood as a potential ally in the ongoing Cold War.

Although it can be found in the initial year-end reports issued by the CEA in 1946 and 1947, the idea that the Employment Act of 1946 gave the federal government the responsibility not just for maintaining economic stability, but also for promoting economic growth, became a central theme of the Council when Leon Keyserling became chair in 1949.<sup>7</sup> Keyserling’s CEA

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<sup>6</sup> For some representative contemporary discussions by economists of Soviet economic growth and potential, see Kershaw (1951) or Nutter (1959)

<sup>7</sup> The remainder of this section is based on Collins (2000), pp. 18-25, 29-32 and 42-51.



explicitly identified growth as the primary goal of federal economic policy with countercyclical policy taking a secondary role, and President Truman enthusiastically embraced the pro-growth message. Shifting ideas about US foreign policy provided another basis for arguing that the promotion of economic growth was a responsibility of the federal government. The National Security Council memo 68, which in 1950 laid out the theory underlying the US's policy of "containment" of International Communism, emphasized that it was both crucial and possible for the US to substantially increase its spending on defense without lowering material living standards at home: possible, because through appropriate economic policies higher rates of economic growth could be achieved.<sup>8</sup> Thus, the desirability of pro-growth economic policies became an important component of US foreign and defense policy as well. The initial attitude of the Truman administration that the Korean War could be fought with a minimum of diversion of resources from civilian consumption also reflected a belief that the federal government could and should act to maintain high rates of economic growth.

Dwight Eisenhower's CEA, however, embraced an interpretation of the Employment Act that once again identified "stability" as the primary goal of US economic policy, and cautioned that the unrestrained pursuit of growth could have dangerous economic side effects.

Eisenhower's first CEA chair, Arthur Burns, thought of stability mainly in terms of smoothing the business cycle, while his second chair, Raymond Saulnier, was more focused on price stability. Eisenhower shared Saulnier's concern about inflation, and on more than one occasion explicitly defended his administration's decision to make price stability a top priority, even if it

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<sup>8</sup> NSC-68, a then top-secret memo authored by George Kennan in 1950, is famous for its long-lasting influence on US foreign policy during the Cold War. Brune (1989) documents the influence of Keyserling's ideas on the sections of the memo related to economics.

meant slightly slower economic growth, since price stability was a prerequisite to “sound” economic growth.

During Eisenhower’s second term, a number of factions within the Democratic Party worked to make Eisenhower’s cautious approach to pursuing economic growth an issue for the 1960 campaign. They pointed to a seeming slowdown in the real rate of economic growth since 1954, and talked up the idea of potential growth, rather than zero growth, as the appropriate baseline against which to compare the economy’s performance. They were inadvertently helped in their efforts by Nikita Khrushchev, who on more than one occasion publically declared that Soviet economic growth would be the means by which Communism would triumph.<sup>9</sup>

The Democratic Party platform for the 1960 Presidential election included a commitment to maintaining a 5% annual rate of economic growth, and John F. Kennedy enthusiastically took the message of the pro-growth Democrats on the campaign trail. Sensing the public mood, his Republican opponent Richard Nixon tried to distance himself from what was coming to be perceived as the overly cautious approach of the Eisenhower administration, and stressed the need for growth (though not “government manipulated” growth) to satisfy the demands of national security while allowing continuously rising living standards.

In his first State of the Union address, Kennedy re-emphasized his goal of raising the economic growth rate, while pointing out that “The American Economy is in trouble. The most industrialized country on earth ranks among the last in the rate of economic growth. Since last Spring our economic growth rate has actually receded.”<sup>10</sup> He also appointed a very pro-growth

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<sup>9</sup> “Growth of industrial and agricultural production is the battering ram by which we shall smash the capitalist system, enhance the ideas of Marxism-Leninism, strengthen the Soviet camp and contribute to the victory of the cause of peace throughout the world.” This and similar Khrushchev remarks from 1957-59 were read into the record of hearings of the Joint Economic Committee of Congress in 1959. See Collins (2000), p. 46.

<sup>10</sup> US Presidents, *Public Papers*, John F. Kennedy, 1961, p. 41.

Council of Economic Advisors, headed by Walter Heller, with James Tobin and Kermit Gordon as fellow council members. Upon introducing Heller at a press conference in December 1960, Kennedy commented that “What Dr. Heller and I are in agreement with, I hope, is that the economy of the United States must grow at a faster rate than it has been growing during the last five years, and we hope to stimulate that growth.”<sup>11</sup> Heller did indeed agree with that sentiment. By 1962, Kennedy, at Heller’s urging, had created an interagency Cabinet Committee on Economic Growth, and Tobin would write in 1964 that “in recent years economic growth has come to occupy an exalted position in the hierarchy of goals of government policy.” (Tobin 1964)

### **Economists’ Growing Fascination with Growth, 1945-1960**

Not surprisingly, the post-war years also saw an increasing interest in economic growth within the economics profession. Although this interest stimulated a number of important theoretical contributions to the analysis of economic growth, it is the empirical growth research of this period that has more bearing on our story.

Simon Kuznets was in the vanguard of the new empirical growth research. In his doctoral dissertation, published in 1930 as *Secular Movements in Production and Prices*, he had taken his first cut at analyzing the process of economic growth. He was soon after put in charge of the NBER’s national income accounting program, however, and the analysis of economic growth took a back seat to discovering what could be learned about business cycles from the new and more reliable national income numbers he was producing. This was in keeping with the central concern of both the NBER and the economic policy community at the time, as was his

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<sup>11</sup> Quoted in Collins (2000), p. 51.

application of national income data to questions of wartime planning and production during the early 1940s. With the war's end he turned his attention back to growth. In 1946 he published national income estimates for the US going back to 1869, and in a companion summary volume, devoted a chapter to describing the long-run behavior of the rate of growth in the national income (Kuznets, 1946a,b).

In 1948, in his capacity as chairman of the Universities-National Bureau Committee on Economic Research, Kuznets organized a conference devoted to "The Problems of Economic Growth".<sup>12</sup> The Committee had decided in the previous year to sponsor a series of stand-alone conferences on single topics, each designed to summarize existing knowledge and identify important research questions related to that topic. By Kuznets's account, "in a review of the various topics or areas for survey and exploration via such special conferences, the field of economic growth, particularly of large aggregates such as nations or regions, elicited the keenest interest among members of the Committee and the university groups canvassed." (Universities-National Bureau Committee 1949, p. ii). At the conference, Kuznets emphatically argued that future growth research must be rooted in a solid statistical base and have a strong quantitative component, if it were to produce something more than the "the vague and commonplace statements" of "Philosophies of History" (Kuznets 1949, p. 12). Measurement of growth came first, followed by analysis of the causes of growth, concentrating on factors that could also be measured, so as to strengthen the quantitative aspects of the inquiry.

During the 1950s, changes in both the nature of research being done at the NBER and the organization's public statements of its research priorities also reflected the growing fascination

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<sup>12</sup> The Universities-National Bureau Committee had been established by the NBER in 1935 to encourage interaction and coordination of research efforts between the in-house NBER researchers and economists based in leading universities. (Mitchell 1936, pp. 16-17)

with economic growth. NBER researchers had been involved in empirical labor productivity research since the early 1930s, and by 1938 the Bureau had established a formal program devoted to the study of historical trends in output, employment, and productivity. In the program's early years, however, analysis took a back seat to building the Bureau's collection of data on output and employment. When the program's researchers did offer tentative analyses or summaries of the productivity indexes they had constructed, the subject was as likely to be the impact of productivity increases on employment or income distribution as the relationship of productivity to economic growth.

By the early fifties, however, labor productivity's link to economic growth was eclipsing its link to employment as the central concern of the NBER productivity studies. The Bureau's 1954 annual report, penned by Fabricant, highlighted the theme of "Economic Progress and Economic Change." Fabricant, who had succeeded Arthur Burns as NBER Director of Research in 1953, claimed that the Bureau had always been interested in research related to the nation's long run economic progress, but that recent developments in the research program prompted him to "highlight what our work suggests of the rate and nature of this country's economic progress." "This emphasis on the long term growth," he explained, "is especially desirable when the public's attention is being absorbed by the problem of stability". Arguably, Fabricant had it backwards – previous annual reports written by Burns portray a research organization still very concerned with business cycles at a time when the topic of economic growth was practically becoming an obsession among economic policy makers and other elites (Rutherford 2005).

Fabricant's account of the Bureau's past and prospective contributions to an understanding the causes of economic growth included a sketch of the research plans of John Kendrick, who took over the productivity research program in 1953. Kendrick had begun to use

the capital stock measures being developed at the Bureau to combine measures of output per unit of capital with the existing measures of output per worker, leading to measures of productivity growth that could correct some of the misleading conclusions about the sources of economic growth that might be drawn from examining labor productivity indexes in isolation (Fabricant 1954, pp. 10-11). In his first progress report on this research, Kendrick would speak of the “paramount importance” of productivity growth in raising living standards, strengthening national security, and providing for future economic growth (Kendrick 1956, p. 1).

The NBER’s most emphatic proclamation of its commitment to growth research came in the 1959 annual report, entitled simply “The Study of Economic Growth.” Fabricant did not waste any time getting to the point. Within a page readers understood that little was actually known about the causes of economic growth or how to promote it; that having such knowledge was very important while seeking it was uncertain, even risky; and that almost everything that NBER researchers were doing would contribute in some way to building that knowledge. If readers were not completely sure of why it was important for the nation to learn how to increase its growth rate, there was a long discussion of an NBER study on economic growth in Russia, which was “an important, if not the overriding, fact of our time.” Fabricant explained how NBER research – Kuznets’s work on national income and Kendrick’s refinement of and additions to productivity data – had led to the by-then familiar finding that “a large part of the explanation of the rise in production remains to be determined”. Studies were underway at the Bureau to correct this deficiency, including research associate Gary Becker’s contributions to a promising new line of research that regarded expenditures on education as investments in “educational capital”, a previously unmeasured input that undoubtedly contributed to production. (Fabricant 1959, p. 13)

At the time that this report was written, the NBER was in something of a crisis. It had lost the support of the Rockefeller Foundation in the previous year, and was awaiting a decision from the Ford Foundation on a request for the large amounts funding necessary to resolve an unsustainable budgetary situation.<sup>13</sup> That Fabricant would at this crucial time prepare an annual report arguing that nearly every NBER project contributed in some way to an understanding of economic growth stands as another piece of evidence of the great importance that had come to be attributed to the subject by members of the two overlapping audiences that he needed to persuade: leading members of the economic profession and influential figures in the Foundations.

### **Discovering and Measuring the “Residual”: From Copeland-Martin to Solow**

This steadily increasing concern with economic growth in the postwar period among both economists and their clients provided the context for a line of empirical research devoted to discovering and quantifying the causes of economic growth, which led to what Griliches (1996) later called “the discovery of the residual”. At the 1936 meeting of the NBER’s Conference on Income and Wealth, Morris Copeland had briefly proposed a method for decomposing the growth in real national income into that which was due to the physical growth in the labor input, that which was due to the increase in physical wealth used in production (i.e., capital), and that which was due to “changes in the efficiency of operation of the economic system”. At the following year’s conference, in a paper coauthored with E.M. Martin, Copeland fleshed out his suggestion. The method he proposed was essentially the method used today to calculate indexes of total factor productivity, that is, the comparison of an index of the growth of output to an

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<sup>13</sup> See Rutherford (2005, pp. 126-30) for a detailed account of this period in the NBER’s history.

index measuring the growth of real inputs. The index of output growth was derived from the by-then familiar measure of real national income, while the index of inputs was defined as a weighted average of an index of the labor input and an index of physical capital, the latter created by using a specially constructed price index for capital goods to deflate a time series of the money value of capital used in production. Milton Friedman, a discussant of the Copeland and Martin paper at the conference, was probably not alone when he questioned the empirical feasibility of this proposal. He pointed out that the well-known biases inherent in the use of price indexes to produce measures of real output would also plague attempts to create measures of real input, and “the divergence of two indices, each of which is subject to a bias, can scarcely provide an accurate measure of changes in technology.” Further problems were created by the difficulty of measuring the quantity of capital, or its price, or the quantities of other resources (Friedman, in Copeland and Martin 1938, pp. 126-127). Copeland, reflecting the gung ho attitude often found among empirically oriented economists of the time, responded that preliminary versions of the all the necessary components of their measure were already being constructed, and that “those who insist on a high degree of precision had best choose some field of activity other than estimating national wealth and income.” (Copeland and Martin 1938, p. 134).

With the creation and refinement of capital stock measures at the industry, sector, and economy-wide level during the 1940s and 1950s, it became possible to implement the Copeland-Martin procedure to construct indexes of total factor productivity. It is not too surprising that first application of the procedure to data for the US economy as a whole was due to one of Simon Kuznets’s graduate students, Jacob Schmookler (1952), who constructed an index of real output over combined real inputs with an explicit reference to Copeland and Martin’s suggestion of



1938.<sup>14</sup> Schmookler observed that his index grew more slowly than existing labor productivity indexes; and that about half of the increase in GNP over the period represented the effect of increased resources, the other half reflecting “the effect of increased efficiency in their use.” Two years later, Fabricant (1954), using indexes of labor hours and real capital being assembled by NBER researchers, calculated that while real national income had grown at an annual rate of 1.9% between 1870 and 1950, the annual rate of growth of the combined index of capital and labor inputs had been only 0.3%. The total factor productivity index calculated by Moses Abramovitz in his 1956 paper on “Resource and Output Trends in the United States since 1870” pointed to a similar conclusion: “almost the entire increase in net product per capita is associated with a rise in productivity.”<sup>15</sup> While an index of capital plus labor utilized per capita had increased by 14% since 1870, the productivity of a “representative unit of all resources” had increased by 250%. Abramovitz also found this answer sobering, if not discouraging. Using a phrase that would be quoted frequently in the coming years, he commented that “Since we know little about the causes of productivity increase, the indicated importance of this element may be taken to be some sort of measure of our ignorance about the causes of economic growth in the United States”.

By far the most influential application of the Copeland-Martin approach to measuring to technical change was that found in Robert Solow’s (1957) article on “Technical Change and the Aggregate Production Function.” Indeed, it would be difficult to exaggerate the impact of this article, along with Solow’s 1956 article “A Contribution to the Theory of Economic Growth”, on

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<sup>14</sup> Griliches (1996) identifies two earlier published applications of the Copeland-Martin approach: Stigler (1947) and Barton and Cooper (1948), the latter being an elaborate application of the method to measuring efficiency growth in the agricultural sector that included indexes for eight agricultural input categories.

<sup>15</sup> Abramovitz 1956, pp. 5, 11. Because Abramovitz was attempting to explain growth in NNP per capita rather than total GNP, his conclusion that “almost the entire” growth in NNP per capita was due to rising productivity is comparable to Schmookler’s conclusion that about half of the growth in GNP was due to rising productivity.

both the theoretical and empirical study of economic growth for the remainder of the 20<sup>th</sup> century.<sup>16</sup> The 1956 paper had no empirical component, but served as an impressive demonstration of what could be accomplished by building a theoretical model of growth around a neoclassical aggregate production function. Similarly, Solow's "Technical Change and the Aggregate Production Function" would show the usefulness of the aggregate production function as a tool for organizing the empirical analysis of economic growth. Solow identified as the "new wrinkle" offered by the paper the explication of "an elementary way of segregating variations in output per head due to technical change from those due to changes in capital per head" (Solow 1957, p. 312), and his conclusion on that score was that 7/8ths of the increase in output per man-hour over the period was due to technical change, and 1/8<sup>th</sup> to increased intensity of capital per worker.

Solow's use of what he called a "neoclassical" production function in his two seminal articles on economic growth also had repercussions for ongoing discussion of appropriate policies to encourage economic growth. Solow's "Contribution to a Theory of Economic Growth" was, to be sure, written for other economic theorists, and presented by Solow himself as an exploration of a rather narrow theoretical matter: the consequences of relaxing certain assumptions in the growth models of Roy Harrod and Evsey Domar, one of those being the assumption of a fixed capital-output ratio. In the 1950s, however, this assumption was beginning to take on significance beyond the world of formal economic theory. The developing historical statistics on the capital stock, capital formation, and national income were such that a case could be made that the capital/output ratio, both marginal and average, was constant over long periods of time within particular economies. Given the widely acknowledged imprecision of the capital

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<sup>16</sup> The essays in Boianovsky and Hoover (2009) serve to place Solow's two articles in context of 20<sup>th</sup> century growth theory (especially those in part 2) and discuss their subsequent influence on growth economics.

data, the case was certainly debatable. But the evidence led some to consider the possibility that the ratio of capital to output was a technological datum, with the implication that the most direct, if not the only, means of increasing an economy's growth rate was through increasing the rate of capital accumulation, with either government-provided incentives to investment or direct investment by the government itself. This approach to thinking about policies to promote economic growth and development later came to be known as "capital fundamentalism".

While the Harrod-Domar model along with the work of pioneering development economist Arthur Lewis (Lewis 1955) provided formal theoretical foundations for capital fundamentalism, Solow's model, in which the capital-output ratio was not constant, responded to factor prices, and was independent of the long term rate of economic growth, provided a foundation for arguments questioning capital fundamentalism.<sup>17</sup> Likewise, Solow's 1957 paper stood as one more empirical demonstration that the rapid growth of the capital stock in the US over the late 19<sup>th</sup> and early twentieth century had actually played a very small role in US economic growth over that period, calling into question the idea that policies to encourage faster capital accumulation were a key to economic growth.<sup>18</sup>

If capital accumulation did not explain economic growth, what did? If one took the Schmookler-Fabricant-Abramovitz-Solow results seriously, the "measure of our ignorance" on

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<sup>17</sup> The case for a constant capital output ratio is made by Kuznets (1952) for the US, while Gordon (1956) is an example of one who did not see the US evidence as supportive of the constancy assumption. Gordon (1956) and Aukrest (1959) are contemporaneous references to perceived links between the belief in a constant capital-output ratio, the Harrod-Domar model, and discussions of policies to encourage economic growth. Yotopoulos and Nugent (1976, p. 12) and Easterly (2001) include retrospective accounts of the origins of capital fundamentalism, the impact of the Harrod-Domar and Solow models on it, and its powerful influence on development policy in the 1950s and 1960s.

<sup>18</sup> Solow recognized this implication of his results, and rejected it, at least obliquely, in his 1957 paper when he noted that he did "not mean to suggest that the observed rate of technical progress would have persisted even if the rate of investment had been much smaller or had fallen to zero" as "much, perhaps nearly all, innovation must be embodied in plant and equipment to be realized at all (316)" Within a few years, he had developed an influential model around this idea of the embodiment of technical change in new capital goods (Solow 1959, 1962). Kennedy's CEA embraced this idea, and tax policies to encourage new investment became part of the administration's portfolio of policies for raising the rate of economic growth.

this question was stunningly large. Even if one believed that technological change was the most important component in the collection of unknown or unmeasured growth enhancers that Domar (1961) would soon dub “the Residual”, the sense of ignorance was little assuaged, as there was nothing approaching a consensus among economists or any other body of social scientists concerning what policy levers to pull in order to reliably stimulate technical progress. The residual was a puzzle, and given the high priority that political and media elites had assigned to the issue of economic growth, a puzzle that demanded the attention of economists. It was also the catalyst for Theodore Schultz’s human capital research program.

### **Theodore Schultz, the Human Capital Idea, and Economic Growth**

Economists today understand “human capital theory” as an integrated set of models of human behavior and social processes, with a well understood set of implications and an associated research program. And it is true that by the early 1960s, pioneering human capital researchers, including Schultz, Becker, and Mincer, had come to share, at least in broad outlines, a conception of the research agenda that arose from adoption of the human capital idea. Each of them, however, concentrated their early research on a different set of questions drawn from this agenda. Mincer’s dissertation, which had first brought him to Schultz’s attention in 1956, was an attempt to explain the personal distribution of income as a result of deliberate investments in human capital.<sup>19</sup> Becker’s first project related to the human capital idea was intended as an empirical project estimating the rate of return to higher education, but he quickly decided that it was essential to embed this task in a “general theory of investment in the human agent,” built on

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<sup>19</sup> The heart of this dissertation, modified by his year at Chicago, appeared as Mincer (1958); see also Teixeira (2006).

a model of individual optimization.<sup>20</sup> What first intrigued Schultz about the human capital idea, however, was that he saw it as a key to understanding the process of economic growth. In particular, he believed that unmeasured accumulation in human capital over time was probably the major explanation for the puzzle of the “residual” that was being revealed by the research of Abramovitz, Solow, and others. He was most interested in human capital as an aggregate phenomenon, with implications for economic efficiency and growth at the broad sectoral or macroeconomic level. Accordingly, his first serious research related to the human capital idea used the analytical methods of national income accounting to develop an aggregate time series index of human capital formation in the US.<sup>21</sup> He had a keen interest in producing reliable estimates of the rate of return to education, but mainly as a means of determining whether the social rate of return to human capital investment exceeded the rate of return on physical capital, thus indicating a possible role for government in eliminating an aggregate-level misallocation of resources. Schultz had by far the highest public and professional profile of the pioneering human capital researchers, with the most opportunities to describe his research and share his ideas at conferences and professional meetings, through public addresses, and in private conversations and correspondence with elites of the profession, the funding agencies, and the policy community. So, the version of the human capital idea initially presented to economists and economic policy makers in the late 1950s and early 1960s was Schultz’s version, with its emphasis on the link between human capital and growth, and on the possibility of an aggregate underinvestment in human capital formation.

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<sup>20</sup> Becker in Fabricant (1959), p. 38.

<sup>21</sup> Schultz (1961), p. 1 is one place where he argues that human capital formation is probably the main component of the residual.

That Schultz would initially view the importance of the human capital idea in this way makes sense in light of the research interests and strategies he had developed over the first 25 years of his career. He received his Ph.D. in Agricultural Economics in 1930 from the University of Wisconsin, where teachers in the institutionalist tradition emphasized the influence on economic outcomes of social institutions that could be altered through thoughtfully designed policy measures. When he took his first academic job at Iowa State College, Schultz was joining a department of Agricultural Economics known as a hotbed of statistical research in a field of economics that was already empirically oriented, and it was not long before he had mastered R.A. Fisher's methods of experimental design and statistical inference.

Early in his career, Schultz also adopted the neoclassical theory of the firm and the industry as a key analytical framework for his research. Although the neoclassical approach was not yet dominant in the profession, Schultz's move in this direction is not surprising. By the 1930s agricultural economists had created a role for themselves in the field of "farm management", as experts who could teach farmers how to operate a successful business enterprise. Their claim to this role was based on their possession of a general analytical framework for thinking about the business decisions faced by a farmer: the neoclassical theory of the firm. To a greater extent than the average economist of the time these economists were well versed in and convinced of the usefulness of neoclassical theory, although, as Banzhaf (2006) points out, it was a commitment to neoclassical economics as a normative tool to guide resource allocation, not as a positive description of economic activity or the functioning of markets. Indeed, they viewed the agricultural sector as being rife with inefficiency and misallocation, thus justifying the need for farm management research. The agricultural economists at Iowa State developed a reputation for taking this way of thinking beyond the micro-level concerns of farm

management to questions of national agricultural policy, applying neoclassical analyses of efficiency to the evaluation of agricultural policies and the development of policy proposals (Burnett 2006).

Schultz became chair of the Iowa State department within four years of being hired, serving in that position until he resigned from the college in 1943 over a dispute about academic freedom. He joined the University of Chicago's economics department as a full professor in 1943, and served as department chair from 1946 to 1961. Administrative duties (which by all accounts Schultz performed masterfully) did not prevent him from pursuing an active research program, and by the mid 1950s when he began to seriously pursue the idea of human capital, he was already well-established as one of the nation's leading agricultural economists and an expert on agricultural policy.

By this time some dominant themes had emerged in Schultz's research. A first was that misallocation of resources within the agricultural sector and between the agricultural sector and the rest of the economy was the fundamental source of the persistent "farm problem" of low incomes in agriculture. In particular, there was too much labor in the agricultural sector and not enough capital. Schultz assumed that economizing behavior was the norm -- people consistently and intelligently sought to improve their situations, doing the best they could given their knowledge and circumstances (Schultz 1940, p. 318). However, lack of information, Knightian uncertainty, and the fact that adjustment to constantly changing circumstances took time, all meant that individual farmers were often out of equilibrium in the neoclassical sense that returns to their various efforts and expenditures were not equalized. Further, many existing agricultural policies and institutions created incentives such that actions that were efficient from the point of

view of the individual farmer led to resource allocations that were socially inefficient. Economic analysis could be used to identify and correct such misallocations.<sup>22</sup>

The idea that the “productivity of the human agent” was both malleable and an important factor in the productivity of the agricultural sector was also a theme that came up repeatedly in Schultz’s work between 1930 and 1950, although over those two decades he did not make the idea an object of analysis. For example, in an early published article examining the empirical validity of Alfred Marshall’s hypothesis of a secular decline in the marginal productivity of land, he mentioned increases in the knowledge and ability of farmers as a reason that the statistical evidence from Iowa showed an upward trend in the productivity of agricultural land. (Schultz 1932). In 1941 he argued that government payments to supplement farm income would be more efficacious if they were designed to encourage what he would later call human capital accumulation (e.g., more education, better nutrition, and better medical care), asserting that such “investments to improve the human agent” had very high rates of return, and pointing out that farmers were often prevented from seeking these high returns because of their inability to borrow against future increases in their productivity. (Schultz 1941; see also Schultz 1944)

Around 1950, Schultz began to plot out a new research program, one that would help to explain the long run process of development in the agricultural sector, and, in particular, the historical emergence of large and persistent differences in average incomes across different agricultural areas of the US. One source of these differences, Schultz asserted, was that “the

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<sup>22</sup> The concepts of efficiency, equilibrium, and misallocation employed by Schultz were the conventional neoclassical ones. As he wrote in summarizing the argument of his 1947 book *Agriculture in an Unstable Economy*, “In this book, equilibrium is defined in terms of the allocation of resources in the long run (factor equilibrium). This conception of equilibrium requires that comparable resources (in unit inputs) be employed, taking the economy as a whole, so that each input produces an equal return in the value of outputs. The main task of political economy (policy) in this context is to attain and maintain not only product but also factor equilibrium; to achieve this goal it is necessary to obtain a proper allocation of resources. This goal is achieved whenever comparable resources throughout the economy produce equal returns. The criterion is therefore *returns*. (Schultz 1947, p. 92, emphasis in original)



amount invested per human agent is extremely unequal from one community to another”. This made it important to “investigate the process by which capital is ‘invested’ in human agents”, develop ways of measuring that investment, and explore the relationship between such investments and “the productivity of a population.” (Schultz 1950, pp. 11-12, Schultz 1951).<sup>23</sup>

Schultz was aware of the statistical puzzle later called “the residual”, at least as it appeared in agricultural statistics, by the early 1950s.<sup>24</sup> His colleague D. Gale Johnson had published a paper in 1950 showing that in recent decades the growth of agricultural output in the US had far outstripped the growth in conventionally measured inputs, and Schultz had noticed a similar phenomenon in the agricultural statistics of several Latin American nations. As Fabricant’s (1954) summary of NBER productivity research was making it known that something similar could be found in the capital, labor, and output statistics for the economy as a whole, Schultz wrote a paper reflecting on the significance of the puzzle, presenting it as something of an embarrassment to the profession:

We have cited Fabricant and Abramovitz who found *four fifths* of the remarkable economic growth of the last eight decades unexplained by additional inputs. Fabricant explained it by an appeal to “improvements in national efficiency.” But what is that?

The question remains: Where does all this unexplained increase in output come from? Is the four fifths beyond economics? If that is the case, in view of the importance that countries and individuals attach to more output, it is high time students in other fields took over. If economic analysis, however, can explain a substantial part of this growth, why has it failed to do so?

Clearly some taking stock is called for. (Schultz 1956, pp. 756-757, emphasis in original)

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<sup>23</sup> A central hypothesis of this research program was that the rate of development of an agricultural area depended importantly on its geographic location relative to sites of other forms of economic and social activity; this would in turn influence the processes of human capital formation and the productivity of human capital investments. (Schultz 1951) Although this hypothesis would fade in importance for Schultz in the 1960s as his research came to be increasingly focused on the human capital concept, it did generate discussion and empirical case studies from other researchers in the 1950s.

<sup>24</sup> Zvi Griliches, discussing his time as a graduate student at Chicago 1954-1956 (Schultz was his supervisor), commented that “The residual in the productivity problem is quite up front in Schultz, before Solow is published. In some sense, Solow (was) not news for us.” (in Krueger and Taylor 2000, p. 181)

Schultz's response was to lay out a program for establishing a "strong and satisfactory linkage" between changes in measured inputs and changes in measured output, one that would be useful both for explanation and prediction (Schultz 1956). At the center of the program would be analysis of two important "inputs" that were being neglected in the empirical studies of growth: new production techniques, and improvements in the labor force. The activities that led to the development of new techniques and improvements in the labor force could be analyzed as production activities, involving the use of capital and labor. Many of these activities were readily recognizable: with respect to improvement the quality of labor Schultz cited "education, training to impart skills some of which may be acquired on the job, and facilities related to health and so on". Schultz also mentioned the desirability of comparing the rate of return on resources invested in these activities to "those realized on capital and effort used to produce conventional inputs", noting that divergences in these rates of return would represent opportunities to "increase the national product by appropriate reallocation of the available resources." (Schultz 1956, p. 759). Admittedly, there were problems in measuring the value of the product of activities intended to produce new techniques and better labor quality, but Schultz had some ideas along those lines as well -- in the case of activities that improved the quality of labor, he suggested analysis of earnings differentials.

Schultz spent the 1956-1957 academic year as a fellow at the Center for Advanced Study in the Behavioral Sciences in Palo Alto, in a class of fellows that included some of the most prominent social scientists of the 20<sup>th</sup> century. His project for the year was estimating the growth since 1900 in the value of capital and labor invested in education in the US. He came away from his fellowship year thoroughly convinced of the fruitfulness of adopting the point of view that activities that increased the productivity of workers should be regarded as "investments" in

“human capital.” As mentioned above, he encouraged and helped to support the research of young economists working with the human capital idea. He talked about human capital in public lectures (Schultz 1959, Schultz 1961), and in his comments on the research of others.<sup>25</sup> And in these early statements, a central point of emphasis was the ability of the new idea to throw light on pressing questions related to economic growth and development. One person who heard Schultz’s message early on, and embraced it enthusiastically, was Walter Heller.

### **Federal Educational Policy Prior to Human Capital Theory**

When Walter Heller was called to Washington to serve as Chairman of Kennedy’s CEA, he brought with him human capital theory, and used it as a framework for thinking about education policy as an element of the administration’s economic policy. This was a watershed moment in the history of educational policy in the US. In order to understand why, one must understand something of the prevailing ideas and realities related to Federal Government policy towards education in the US in the 1950s. To that end, before giving a detailed account of Walter Heller’s involvement with human capital theory and education policy, we offer a brief sketch of the nature of federal involvement in education, and the philosophies behind it, in the first half of the 20<sup>th</sup> century.

During the great rise of public education in the United States, beginning with the common school movement and progressing to nearly universal secondary school attendance, the federal government supported and endorsed a view of the multifarious nature of educational

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<sup>25</sup> E.g., Solow’s enormously influential paper on the measurement of technical change includes this footnote: “I owe to Prof. T. W. Schultz a heightened awareness that a lot of what appears as shifts in the production function must represent improvement in the quality of the labor input, and therefore a result of capital formation of an important kind.” (Solow 1957, fn. 8)

purpose. At the same time, it explicitly refrained from attempts to acquire authority over the administration of education.

For over a century, the federal government complied with the idea of state-controlled education. This practice was the result of the widespread agreement that education was one of the “unspecified powers” referred to in the Tenth Amendment of the Constitution. In 1896, though the United States Bureau of Education published the *Digest of Public School Laws*, the document consisted entirely of the laws of each state. Each state passed their own laws concerning the organization of the school system, teachers, schools, and finances. These laws, in addition to showing state policies, also revealed differences between states in terms of values and perceptions of educational purpose. For example, in Maine, “All professors and instructors...are enjoined to impress upon their pupils the principles of morality and justice, the love of truth, country, humanity, industry, and frugality, as tending to preserve republican institutions and social and individual happiness, and public school teachers are required to consume not less than ten minutes each week in teaching their pupils kindness to birds and other animals” (p.1065).

While the strict limitation on federal control and the decentralized nature of public education kept educational decision-making and governance at the local level, the federal government did provide several means of support. Through the production and dissemination of educational research and data as well as the occasional provision of funding, the federal government expressed its broad interest in education and made recommendations regarding improvement, while also acknowledging a clear boundary between support and control.

In 1867, a Department of Education was created and its primary purpose was to support the local administration of education by producing and disseminating educational research on a wide variety of educational issues and purposes. In 1910, the United States Bureau of Education

published five types of information: Annual Statements of the Commissioner, Annual Reports, official and informative circulars, bulletins, and miscellaneous items; by 1938 there were thirty-five categories of publications produced by the federal government, including a garden manual, a kindergarten circular, and a teacher's leaflet (United States, 1940). These materials promoted multiple purposes for education and did not attempt to provide or name a singular reason for why the Bureau supported the states in their attempts to expand and improve education. Local administrators and teachers were given access to information on a wide-range of topics and from a variety of perspectives that could be used in the development of locally designed policies and practices; there was no requirement that such information be implemented.

There was information distributed by the Bureau of Education pointing out the economic benefits to education, though this was infrequent. In 1917, the office issued a bulletin entitled "The Money Value of Education," written by Dr. Caswell Ellis, a philosopher of education. From the outset, he acknowledged the non-monetary benefits of education and stressed that his intention was not to deny or to diminish them, but only to inform the general public of the relationship between education and earnings—in other words, to point out a relationship that was already there. In full agreement with the ideals of a liberal arts education, including its condescension toward education for monetary gain, he stated, "The most valuable result of right education is the broadening, deepening, and refining of human life. This result can no more be measured by dollars and cents than truth, self-sacrifice, and love can be made out of pork and potatoes," (Ellis 1917, p. 5). His argument was that when the pursuit of "the higher things of the soul," occurred, there were monetary benefits.

In addition to providing research and information believed to be helpful in meeting the needs of local school districts, Congress periodically passed legislation to provide funds for

education. In 1917 the Smith-Hughes Vocational Act was passed, which granted federal funds to agricultural education and helped to establish acceptance for vocational education at the secondary level. The vocational education movement was not led by economists or businessmen, but by education reformers who believed that education needed to be made more practical for students. Students, rather than an abstraction such as “economic growth,” were the justification for federal support for vocational education.

Federal funds were also provided to local districts affected by federal programs related to the military. The Lanham Act of 1941 and the Impact Laws of 1950 provided aid to school districts whose student populations increased due to nearby military establishments and war factories, which were housed on tax-exempt federal property. Since almost all school funds were derived from local property taxes, assistance was needed to provide for students whose parents were exempt from paying property tax.

Federal funding for education, then, was only for very specific and often short-term purposes, and was provided with the assumption and expectation that state and local administrations knew how best to use the funds. The right to make decisions reflecting regional differences and values was understood to be an inherent right in state-controlled education. Information and data were *provided* by the federal government but were only used if and when administrators at the local level found them to be relevant and useful.

Until the late 1950s, there was little indication that federal politicians or economists believed education to be a means of achieving national goals. Franklin Roosevelt resisted federal funding for education and did not see education as a means to ending poverty. Instead, his statements revealed that he saw education as an economic *effect*, rather than an economic *cause*. In 1940, he told the public:

But I suggest to you that the Federal treasury has a bottom to it, and that mere grants-in-aid constitute no permanent solution of the problem of our health, our education, or our children, but that we should address ourselves to two definite policies: first to increase the average of incomes in the poorer communities, in the poorer groups, and in the poorer areas of the nation; and second, to insist that every community should pay taxes in accordance with ability to pay (quoted in Grassmuck, 1984; p. 190).

He believed that higher incomes and a more equitable distribution of wealth would naturally lead to improvements in education in formerly poor areas.

This was also the view of the majority of economists at the time. Advocates for federal funding for education were primarily educators themselves, not economic policy advisers; most economists didn't spend much time thinking about education at all. In 1945, Merwin Hart, president of the National Economic Council, testified against a proposed increase in federal funding for education in Senate hearings, "I oppose this bill, because I believe it would result in undesirable Federal control over education; because it would add by just so much to the bureaucratic burdens already borne by the people..." (p. 418). Hart's testimony gives no indication that he believed there was any compelling reason for federal involvement at all in education.

Even as late as 1954, federal actors failed to use economic justifications for their decisions regarding education. Justice Warren's description of educational purpose in his reasoning on the *Brown v. Board* decision in 1954 was primarily non-economic and referred to citizenship and psychological well-being. He stated: "It [education] is required in the performance of our most basic public responsibilities, even service in the armed forces. It is the very foundation of good citizenship. Today it is a principal instrument in awakening the child to cultural values, in preparing him for later professional training, and in helping him to adjust normally to his environment." (*Brown v. Board of Education*, 1954)

In discussions of educational purpose in the first half of the twentieth century, it was educational reformers who competed for influence with state and local administrators and educators. The history of educational leadership during the first half of the twentieth century is first and foremost a history of *ideas* and *practices*, not law or policy. Those who advocated social efficiency and Progressive education attacked the views of the traditionalists, who advocated a liberal arts education, but these camps worked through means of persuasion, not by seeking overt authority.

The presidential term of Dwight Eisenhower is significant in that the federal government began to realize its own purposes for education. In 1958, after Sputnik suggested an important connection between military security and education, Eisenhower proposed and Congress passed the National Defense of Education Act. NDEA went beyond the prior involvement of the federal government, on the strength of an argument linking education to national defense. Even though NDEA contained provisions restricting federal control over education, for the first time Federal interest in a singular educational purpose for a federal goal could be defended by an appeal to the Constitution.

It was at this moment that Walter Heller made his debut before Congress as an advocate for increased spending on education, asserting that financial support of education was, by logic and by law, a responsibility of the Federal Government. Schultz's human capital theory, with its proposed link between spending on education and economic growth, allowed Heller to strengthen his argument. While state and local educational administrators had always seen educational purpose in terms of local goals, Heller urged the Federal Government to view education as a tool for meeting important national priorities: national defense and economic growth.



## **Walter Heller, the Human Capital Idea, and Education as Federal Responsibility**

Walter Heller earned his graduate degrees in economics from the University of Wisconsin. He spent most of his career as a professor of economics at Minnesota, and eventually became chairman of that university's department of economics, but he also had an active and successful career as an economic policy advisor. Trained as a specialist in public finance, he held several positions within the U.S. Treasury Department, was involved in the development of the Marshall Plan of 1947, and was a consultant on currency issues in post-war Germany. However, it was during his time spent as Chairman of the U.S. Council of Economic Advisors, a position he held from 1961 to 1964 under both Presidents Kennedy and Johnson, that he achieved his greatest successes.

Heller, who called himself an "educator of presidents," was particularly successful politically because of his impressive ability to translate the concepts of academic economists into policy-relevant arguments understandable to politicians as well as the public (Heller 1966; Kilborn, 1987). Heller appeared on the cover of Time Magazine in 1962, and was described as "the Pragmatic Professor Heller," an epithet that emphasized Heller's skill in applying economic research to political goals (The Pragmatic Professor, 1962). Alan Greenspan called him a "major contributor if not the father of modern economic policy-making," (Kilborn, 1987).

He is probably best known for his work in shaping and helping to promote President Kennedy's plan to stimulate the economy by cutting income tax rates. What is less well known is that Walter Heller was the key actor in bringing the recently developed theory of human capital to the federal government and in identifying educational policy as form of economic policy. While the federal government had long acknowledged the abstract moral and social benefits to public education, Heller encouraged politicians and policymakers to view education through the

lens of human capital theory, in which education was a means to achieve national economic goals. He did not argue explicitly for a change in educational purpose, although the change was implicit in the new paradigm, but focused instead on the issue of federal funding for education using two economic concepts: human capital and externalities.

Heller's public advocacy for an increased federal role in educational funding can be found as early as November of 1957, when he appeared before a subcommittee of the Joint Economic Committee. Heller was one of a large number of public finance specialists invited to speak and submit papers on matters related to determining the appropriate scope and form of federal fiscal activity. The paper Heller submitted was a lucid summary of then-current mainstream economic thinking on principles for "dividing resources between public and private use."<sup>26</sup> The hearings themselves, however, took place a few weeks after the launch of Sputnik II, and this led Heller to use his remarks to expand on a point from his paper regarding the need for government action in cases "where there are important third-party benefits (also known as extra-buyer benefits or beneficial neighborhood effects) which accrue to others than the direct beneficiary of the service as in the case of education . . ." (Heller 1957, p. 94) The Federal Government, he argued, should provide funds for education because the quantity of "brainpower" needed to compete with the Soviet Union would not otherwise be forthcoming. In essence, Heller was arguing that education generated a positive externality, and one sees in this passage from his testimony his ability to present this little understood economic idea clearly and persuasively:

How do we translate the Soviet scientific challenge into economic guideposts for government budgetmakers? First, under the impacts of Sputniks I and II, we have become dramatically aware of our position--the position of all of us--as indirect or third-party beneficiaries of scientific training and basic research (and their broad underpinnings of general education). Russian

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<sup>26</sup> Heller (1957). The paper was largely devoted to elucidation and elaboration of Richard Musgrave's framework for thinking about identifying and financing the appropriate functions of government (see Musgrave 1959).

scientific and military advances have greatly magnified the size--as well as our awareness--of these indirect benefits that do not show up as economic advantage to particular individuals and therefore do not show up in the market prices which the private buyers of scientific brains and basic research are willing to pay. The only economic instrumentality (apart from philanthropic foundations and the like) that is able to fully assess and pay for these indirect benefits on behalf of all of us is the government. It and it alone can take the full benefits into account and balance them against the costs to arrive at the correct decision as to where our maximum advantage lies in the economic use of our national resources (US Congress, Joint Economic Committee, 1957, pg. 40-41).

According to Heller, federal aid would ensure that the United States would be in a position to compete with the Soviet Union in terms of scientific and technological knowledge. In addition, Heller stressed that the federal government, rather than states or local school districts, should provide these funds since “the indirect benefits to be weighed transcend all State and local lines.” (US Congress, Joint Economic Committee, p. 41)

The analysis of what are today called “externalities” as market failures justifying government action has a long history in economics, and dates in its modern form to Pigou’s work in the early 20<sup>th</sup> century (Pigou 1920). However, Heller did not use the word *externalities*, as this word was not widely used in this sense before 1957, when Francis M. Bator used Mandeville’s pastoral example of an apiarist’s investment in honey-bees benefiting the productivity of the neighboring apple farmer to illustrate the concept. The fact that Bator sensed a need to provide readers with a definition of what he was also calling *external economies*, as well as his conclusion that their occurrence was “probably rare” indicates that this was not a well-known concept among economists at the time.<sup>27</sup> Indeed, Heller’s 1957 testimony that the indirect

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<sup>27</sup> Bator (1958) which more fully analyzed the concept and described its history, also contributed to the more general adoption of the “externality” label.

benefits of education created a need for additional federal spending on education should be seen as an early introduction of the externality concept into an actual policy-making setting.<sup>28</sup>

We have found no concrete evidence regarding how Heller was first exposed to the human capital metaphor of education as an investment, or the hypothetical link between such investment and economic growth. Though Schultz did not introduce his ideas on human capital publicly until 1959, he had naturally talked about them with other economists before that. Schultz and Heller were both chairs of leading economics departments in the late fifties, and both were sought out by organizations desiring the advice or judgment of prominent economists (for example, both were associated at various times with the Committee for Economic Development). In 1958 and 1959, both served on the board of directors of the NBER. The NBER board met on an annual basis, and it seems plausible that during those meetings there were discussions of the NBER's grant from the Carnegie Foundation for "a new study on investment in education" (Fabricant 1959, p. 10).<sup>29</sup> Such discussions, and Schultz's likely enthusiastic participation therein, would have familiarized Heller with Schultz's ideas about human capital. However Heller acquired the knowledge of human capital theory, by 1958 he had apparently learned a great deal about the idea. Within five months of his testimony regarding federal expenditure policy, he appeared again before Congress to talk about education, this time identified as "the National Education Association's economist." (US Congress, House, 1959, p. 69)

The National Education Association (NEA), a powerful and aggressively political organization, had a long record of lobbying for legislation providing federal funding for

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<sup>28</sup> Interestingly, Milton Friedman, who typically opposed government intervention in markets, had argued in 1955 that education generated positive externalities (he referred to them as "neighborhood effects") that warranted government funding, although not government provision, of education.

<sup>29</sup> This study eventuated in G. Becker's "Human Capital."

education through legislation, albeit with little success, and during 1958 and 1959 Heller introduced the human capital idea to Congress on the NEA's behalf. In an interview years later, Heller described the enthusiasm the NEA showed for human capital theory: "It was a new concept to them, they just loved it - the idea that one could think of education as an investment." (Crichton 1987) It is not difficult to see why the organization would embrace Heller's approach. He not only gave them hope that they could finally achieve their goals for federal funding of education, but by associating education with the most important political issues of the day, national defense and economic growth, his human capital metaphor gave education new prestige and importance at the federal level. Education was now seen as cutting-edge weaponry against the threat of the Soviet Union, and it held the key to tremendous potential for wealth creation.

The 1958 hearings (before the House subcommittee on General Education of the Committee on Education and Labor) were associated with an early version of what would later come to be called the Murray-Metcalf bill, which proposed a program of Federal grants to be used by the states in support of education.<sup>30</sup> Heller testified along with, and in support of, NEA president Lyman Ginger. While Heller had only vaguely described the economic relationship between economic growth and education in his 1957 testimony, Lyman Ginger's remarks to Congress in 1958 indicate that Heller had by then both absorbed and conveyed to the NEA president both the fundamental tenants of Schultz's human capital theory and its potential as a basis for advocating greater federal involvement in education.

Ginger told Congress that his and Heller's testimony would demonstrate "that we as a nation are underinvesting in the education of our children, and thereby retarding our economic

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<sup>30</sup> This was the period during which the National Defense Education Act was being debated, and so was certainly on the minds of the participants.

growth and limiting our defense potential, ” and that the Federal government, given its “assigned responsibilities for national defense, foreign policy, economic growth, and general welfare” should correct this problem. (US Congress, House, 1958, p. 70) He made the comparison between investment in physical capital and investment human capital, noting that the latter’s importance had only recently come to be appreciated. He asserted that education was “the most fundamental of all sources of economic growth,” and that increased spending on education was “one of the best ways of insuring that our economy will grow at an annual rate of 4 or 5 percent instead of dropping back to the 3 percent growth rate.” In a chart entitled “Education as an Investment” he showed the sort of evidence relating educational attainment to earnings levels that Schultz would later cite in his early public addresses on human capital. There were several references to Soviet technological accomplishments, and their recognition of the “strategic role of education in the development of military and economic power.” Ginger also repeated Heller’s externality argument of 1957. Education was traditionally a government rather than a private function, he pointed out, because of the recognition of the benefits it conferred on persons other than the direct recipients of the education. It was commonly believed that that those benefits accrued mainly to the citizens of the localities and states that funded the education. But when one realized that education was “an investment from which we expect to reap positive gains in the form of higher productivity, more rapid advances in technology, a stronger foreign policy, and greater military potential”, one realized that “the indirect benefits of education transcend all State and local lines”. To bolster his point about the diffuse nature of the external benefits of locally provided public education, Ginger also offered statistics on the migration of the labor force across state lines (US Congress, House, 1958, pp. 71-78).

Heller's main role at the hearings was to provide statistical material and expert opinion in support of Ginger's assertion that many states were not funding education at adequate levels, and that the Federal Government had sufficient excess fiscal capacity to provide states with the levels of financial support stipulated in the Metcalf proposal. He did, however, take an opportunity to reiterate a key point of Ginger's testimony: that the Federal government had a constitutional responsibility for national defense, and a statutory responsibility (under the Employment Act of 1946) for promoting economic growth, both of which gave it a "direct responsibility for improved education for our school children." (US Congress, House, p. 84)

In February of 1959, the Subcommittee on General Education held hearings on a revised version of the Murray-Metcalf Bill, now known officially as the School Support Act of 1959. This time, Heller was the lead witness for the NEA. He repeated Ginger's message about the link between education, economic growth, and military superiority. He lamented the traditional bias in federal spending towards investment in bricks and mortar as opposed to investment in human beings. An exchange with Congressman Frank Thompson of New Jersey, which seems likely to have been planned in advance, allowed Heller to make the sort of rate of return comparison that Schultz would recommend to assess the advisability of public investments in human capital.<sup>31</sup> Thompson asked if there were data available that related a person's education to how much he earned over his lifetime, and how much he paid in taxes. "I suggest this line", Thompson explained, "because in public works projects, for instance, in which the Federal Government has a great interest, one sells projects on the basis of the return ratio. Why cannot the same standard be used in this case?" Heller's assistant handed him the same data on education and earnings that Ginger had presented in 1958, and, after noting some shortcomings of the data for the purposes

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<sup>31</sup> These hearings occurred in the same month as Schultz's first public presentation of his ideas about human capital (Schultz 1959).

of addressing Thompson's question, Heller proceeded to read the list of education levels and corresponding median incomes to the committee. "It would occur to me", Thompson then exclaimed "that the return ratio in terms of investment and return would be pretty healthy." Heller concluded the scene by observing that "It looks like a very good return on investment compared with, say, common stocks or bonds or a lot of other things that one could list." (US Congress, House, 1959, p. 61)

Although Heller again presented evidence that many states lacked the fiscal capacity to fund education at adequate levels, he emphasized that he was not arguing for federal funds merely to help such states meet their obligations. The funding of education was most certainly an obligation of the Federal Government:

First and foremost, education is an essential instrument for carrying out functions which are a direct Federal responsibility. Education is an investment in human resources from which we expect to reap positive gains in the form of higher productivity, more rapid advancement in technology . . . and a stronger Military Establishment and greater military potential. Here, the benefits of education transcend all State and local lines. . .

It is worth noting that this point is quite independent of the adequacy or inadequacy of State-local fiscal capacity and taxing efforts to support education. This point says simply that there is a strong national interest in better schooling to serve objectives that the Federal Government has been charged with both by the Constitution and the Employment Act of 1946." (US Congress, House, 1959, p. 57)

Based on his Murray-Metcalf testimonies, it seems that Heller believed that the most effective argument against the federal funding he advocated was that it would lead to Federal control of education. In Congresswoman Catherine May's argument against the bill, she quoted a ranking member of the Education Committee's views on this: "If this bill is enacted, Federal control of education no longer will be a threat—it will be a reality—for programs of this kind have a tendency to snowball far beyond the expectations of well-meaning sponsors, and in order to qualify for grants, states would have to conform to the law". Heller's response, in addition to calling it an illogical concern, was to claim that he believed the Murray-Metcalf Bill to be a



brilliant example of Federalism, as enacted through what would come to be known as *revenue sharing* in economics (May, 1959, p. 14). He stated,

The Murray-Metcalf bill is an expression of the genius of our federalism in its ability to achieve national objectives in a tightly interdependent economy through constructive cooperation among different levels of government. Under this approach, the Federal government does what it can do best; namely, mobilize financial resources through taxation, and State and local governments do what they can do best; namely, make grassroots decisions and carry out functions under the direct control and close scrutiny of the local electorate. (US Congress, Senate, 1959, p. 97).

Heller was certain that the states were capable of using federal funds wisely and that the grantees of these funds would in no way attempt to control their decisions or compromise their ability to be self-determined. In the same hearing, however, it became apparent that Heller's confidence belied the legitimacy of the opposition's concerns. When the seemingly contradictory nature of incentives was brought up, he became much less assured of his position. The question was raised of how the Federal government could expect the states and local governments to comply with its goals without providing incentives, and didn't incentives interfere with self-determination.

Heller acknowledged that to support incentives too strongly would be to contradict his previous statements regarding state/local rights and admitted that it was "an extremely difficult and delicate area." He went on to say "If some formula could be worked out—and I must confess I don't have this easy answer—by which these incentives could be stated in such a way that they would not be an interference with local responsibility, I should certainly feel that there is a great deal to be said for it." (US Congress, Senate, 1959, p. 100)

Ultimately, the Murray-Metcalf Bill failed in Congress, and the NEA was destined to wait for several more years before finally seeing the first broad-based federal program for funding education. In the mean time, Heller went to work for a more powerful and influential client.

## **Heller and the Kennedy CEA: Education as Growth Policy**

In late 1960, President-elect John F. Kennedy named Walter Heller as chair of his Council of Economic Advisors. As described earlier, Kennedy was looking to Heller for advice on how to make good on Kennedy's oft-repeated campaign promise to boost US economic growth. Unfortunately, as also noted earlier, there was at this time little confidence among economists that they understood the process of economic growth well enough to design policies to accelerate it. Heller, however, brought to the CEA his conviction that Schultz, in directing attention to the historic growth in the nation's aggregate investment in education, had hit upon one of the most important explanations for the "residual", and that the link between education and economic growth was not only a well established empirical fact, but clear proof that the Federal Government had both a statutory and a constitutional responsibility for education. Human capital theory would be at the center of CEA thinking on policies to promote long-term economic growth. As *Time* magazine reported in an article published within weeks of Kennedy's inauguration,

Next to dropping the tight money policy, Heller's most important prescription for faster economic growth is increased Government investment in "our most valuable resource, the human mind." . . .

Bubbling with excitement over the opening of a new frontier in economics, Heller points to a new concept, with "vast implications for public policy," that came into economic within the past two years: the idea that "human capital" (knowledge, skills, invention) contributes more to economic growth than "tangible capital" (factories, machinery). (The Pragmatic Professor, 1961, p. 22).<sup>32</sup>

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<sup>32</sup> Time noted that those who might view this "human capital" idea as just another liberal rationalization for more federal spending should be reminded that "the pioneering statistical studies on the economic value of human capital were carried out at conservative Arthur Burn's National Bureau of Economic Research", and that the importance to growth of investment in human capital had also been acknowledged by "brilliant conservative economist" Milton Friedman.

It is thus not surprising that one sees repeatedly in the Annual Reports of Heller's CEA and in his Congressional testimonies a coherent set of arguments, derived from human capital theory and supported by evidence from the nascent human capital research program, being used to justify proposals for increased federal spending on education.

First and foremost was the argument that education was a form of investment in human capital, and that human capital formation was demonstrably linked to economic growth. The 1962 Annual Report of the CEA, the first written by the Kennedy Council, explained that:

Americans have long spoken of foregoing consumption today in order to invest in their children's education and thus in a better tomorrow. For an economy, just as for an individual, the use of the word *invest* in this connection is clearly justified, since it is precisely the sacrifice of consumption in the present to make possible a more abundant future that constitutes the common characteristic of all forms of investment. That devoting resources to education and health is, in part, an investment in human capital explains why program in the area of education and health are economic growth programs (*Economic Report*, 1962, p. 117).

And in 1963, testifying in support of Kennedy's National Education Improvement Act, Heller submitted a CEA research report showing that "a rising level of education has been a key generator of long-term economic advance." In addition, he pointed out, "Recent private studies have convincingly shown that education's contributions to our nation's economic progress to date have been far higher than we had previously understood", with one of them showing that over the period 1929-1957, "two fifths of the sharp increase in real product per worker -- an increase of 56% -- for that period is attributable to improvements in the quality of the labor force resulting from increases in formal education."<sup>33</sup> (US Congress, Senate, 1963, p. 408)

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<sup>33</sup> Heller was probably referring to Denison's (1962) influential estimate that attributed 42% of the growth rate in product per person employed to increased education.

A second argument was that the link between education and growth made education a federal responsibility. Naturally, in CEA reports this argument was made on the basis of the Employment Act of 1946. As Heller reminded Congress in 1963, “we dare not view the Federal Government’s responsibility under the Employment Act of 1946 in unduly narrow terms . . . .Maximum employment and production do not depend only on capital equipment, agriculture and natural resources, and manhours – the traditional interests of economists – but also on the education and total skills of the labor force. Programs and policies that maximize human resources in our nation are a major concern of National policy for economic growth”. (US Congress, Senate, 1963, p. 410) National Defense and foreign policy were beyond the purview of the CEA, but the President’s Special Message to the Congress on Education in January, 1963 included a statement that increasing the quality and quantity of education was “vital” to national security, i.e., a federal responsibility. (Kennedy 1963)

A third argument was that education had been shown to lead to higher earnings, which was a benefit to the individual, but also evidence that education increased productivity and thus economic growth. The 1962 Annual Report of the CEA pointed out that “Education’s contribution to output is reflected by the well-documented fact that income – the measure of each individual’s contribution to production – tends to rise with educational attainment.” (*Economic Report* 1962, p. 118) The 1965 Annual Report (largely compiled before Heller’s resignation from the Council), after citing the studies showing that over the last fifty years “the rising level of education appears to account for between one quarter and one half of the otherwise unexplained growth of output,” invited the inference that this relationship would hold in the future as well by pointing to the 1963 data on differences in median earnings by education level. (*Economic Report* 1965, p. 157)

A fourth argument was that education as an investment had a rate of return, that its rate of return was as high or higher than the rate of return on conventional investments, and that this indicated the desirability of further investment in education. The Annual Report of the CEA for 1965 explained that “Even when viewed from the narrow perspective of economic benefit alone, expenditures on education yield high rates of return. The rate of return to society on its total expenditure for the public and private education of males is estimated at more than 10 percent at both the high school and college levels; this rate compares favorably with the return on other investments in the economy.”(*Economic Report 1965*, p. 158.) While testifying in support of Kennedy’s education bill in 1963, Heller again used a didactic exchange with a sympathetic questioner to make the point:

Senator Morse: . . . If we can get the public to see that education is a good investment, whose return will far exceed the cost, and we can get our citizens to understand what I think is the answer you will give to the question that I now put to you, we will succeed in passing this bill. I am looking for weapons of persuasion in these hearings . . .

Do you think it would be intellectually honest . . ., based on such data as you are providing us, to say to the American people that this is really a self liquidating program? That this expenditure is just a loan that we are making to the present generation of young people to be repaid over and over again during their lives, because the college degree will mean a minimum of an extra \$100,000 of earnings on their part?

Dr. Heller: Mr. Chairman, I think it is an eminently sound statement to make. I think it is intellectually entirely honest. And what I am gratified about is that the economic profession is coming up with an increasingly persuasive amount of data, not based on conjecture but based on before and after studies, so to speak, based on very careful examination of the contributions of education as an investment to the growth of the American economy, very persuasive evidence that support the conclusion, that the investment in education yields at least as much as, and probably a good deal more than, even the investment in plant and equipment. . .

Senator Morse: I shall continue to take advantage of every opportunity to present this argument of yours, because I think it is unanswerable . . . If we take a cold, materialistic attitude towards the problem, we cannot justify the bad business judgment of not going ahead with the program. We have an obligation, as legislators, to build up the bank account of the Nation. This is a national investment. (US Congress, Senate, pp. 411-412)

Finally, a correct accounting of the returns to education should include external benefits of education, those accruing to people other than those receiving the education and/or those whose State and local taxes paid for the education. Here Heller's externality argument of 1957 was subsumed into the human capital framework. The external benefits of education were now presented as part of its social rate of return, which was to be distinguished from its private rate of return as reflected in earnings differentials, and which was the proper rate of return to consider in making government spending decisions. One sees little more than hints of this argument in CEA reports and testimony from the Heller years,<sup>34</sup> but interest in developing a sound theoretical and empirical basis for the argument was one motivation for Heller's invitation to Burton Weisbrod serve as a Senior Staff Economist at the CEA in 1963.<sup>35</sup>

In 1961, Weisbrod, then a young assistant professor at Washington University, was invited to participate in Schultz's NBER conference on "Investment in Human Beings", on the basis of his research on concepts and strategies to be employed in valuing spending on health care as human capital investment. (Weisbrod 1961) Weisbrod's paper for the conference dealt with "Education and Investment in Human Capital." (Weisbrod 1962) The motivating argument of the paper was that in order to apply cost-benefit analysis to educational expenditures within the framework of Pareto optimality, one must consider all the benefits of education, both those received by the individual being educated and the "external" benefits received by others as a result of the individual's education. There followed a taxonomy of the various internal and external benefits to education, with suggestions and some examples of how external and nonmonetary benefits might be measured. Over the next two years, Weisbrod expanded his

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<sup>34</sup> The most explicit statement is in the 1965 Annual report of the CEA (Economic Report of the President (1965) pp. 157-58)

<sup>35</sup> E-mail from Weisbrod to Biddle, Dec. 18<sup>th</sup>, 2013.

analysis of the external benefits of education into a book, developing a number of additional strategies for estimating those benefits, and applying them in a case study of a local community (Weisbrod 1964).<sup>36</sup> It seems plausible that Heller planned for Weisbrod, while at the CEA, to generate credible figures on the value of education's external benefits that could be used to bolster the case for federal support.

Heller considered Kennedy a "quick study" when it came to learning economic ideas, and other observers have confirmed that Heller had a significant influence on Kennedy's thinking about economic policy. In any case, Kennedy's arguments for federal funding of education were clearly influenced by Heller. On February 20, 1961, Kennedy outlined his goals for education in a "Special Message to Congress on Education" in which he proposed a \$2.3 billion dollar aid to education program, the *School Assistance Act*. He stated:

"Our progress as a nation cannot be swifter than our progress in education. Our requirements for world leadership, our hopes for economic growth, and the demands of citizenship itself in an era such as this all require the maximum development of every young American's capacity. The human mind is our fundamental resource. A balanced Federal program must go well beyond incentives for investment in plant and equipment. It must include equally determined measures to invest in human beings-both in their basic education and training and in their more advanced preparation for professional work. Without such measures, the Federal Government will not be carrying out its responsibilities for expanding the base of our economic and military strength" (American Education, Message from the President; 1961).

This bill did not pass, but in his State of the Union message of 1962, Kennedy again pressed Congress to pass his bill. In December of that year, Heller wrote an administratively confidential report to the president on economic growth. He explained that there were four areas the CEA was focusing on: taxation, civilian technology, and education and training. Heller's description of the importance of human capital theory was unequivocal, but what stands out is

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<sup>36</sup> The bulk of Weisbrod's analysis in the 1964 book was circulating as early as August of 1963 as a report of the Cooperative Research Program of the US Office of Education (Weisbrod 1963). Weisbrod had also acknowledged the support of this agency in Weisbrod (1962), another piece of evidence that federal education policy makers had quickly taken an interest in the human capital concept.

how prescient Heller was in terms of pointing out that it was improving educational quality that would become significant for policy makers in the future, rather than just boosting educational attainment measured in years:

“the growing body of evidence (shows) that development of human capital--particularly investment in education--has actually been more important to economic growth than has the accumulation of physical capital...If education is to continue to make its high contribution to economic growth, its quantity must continue to increase at the rapid percentage rate that has characterized it in the past. Previously, this increase took the form of more years in school for more persons. But a good part of this source of expansion of educational input is no longer open to us. In the future we shall have to concentrate on increasing the amount or quality of learning in a given year, on expanding the higher levels of education to accommodate the rapid increase in the number of young people who will be completing school, on specific fields closely related to manpower needs in a changing economy, on marginal groups whose educational input can still be greatly increased, and on productivity and quality increases in education itself. It is in these areas where the educational program can expand with a consequent substantial and specific impact on growth” (p.17-19).

Kennedy’s last attempt to pass legislation for federal funding for education was the *National Education Improvement Act*. On January 29, 1963, President Kennedy submitted to Congress a special message on education in which he proposed “a comprehensive, balanced program to enlarge the federal government’s investment in the education of its citizens,” (Tiedt 1966, p.148). The CEA talking points on education and growth were clear in the message, e.g., This nation is committed to greater investment in economic growth; and recent research has shown that one of the most beneficial of all such investments is education, accounting for some 40 percent of the nation's growth and productivity in recent years. It is an investment which yields a substantial return in the higher wages and purchasing power of trained workers, in the new products and techniques which come from skilled minds and in the constant expansion of this nation's storehouse of useful knowledge (Kennedy 1963).

The bill itself reflected the goals and priorities Heller had recently outlined in his letter, including “Expansion of Opportunities for Individuals in Higher Education,” “Improvement of Educational Quality,” and “Strengthening Public Elementary and Secondary Education.” Although this bill was also unsuccessful, Kennedy, albeit unknowingly, did play a role in the successful legislation



of federal funding for education by initiating economic research in the area of poverty. Though he would be assassinated before events played out, poverty, rather than economic growth, was the political issue that finally overcame the resistance to the permanent provision of federal funding for education.

### **The Human Capital Idea and the War on Poverty**

In December of 1962, Kennedy asked Walter Heller to look into the issue of poverty in the United States. After Kennedy's assassination in late 1963, President Johnson immediately met with Heller, who briefed him on Kennedy's request and the work on poverty that the CEA had done so far. Johnson was "enthusiastic and unequivocal" in his support of Kennedy's plans for developing anti-poverty initiatives. Johnson's decision to commit to a War on Poverty has been represented, and accurately so, as a shift in the emphasis of federal economic policy from economic growth to poverty reduction. We would argue, however, that Heller did not see it quite that way. Given his commitment to human capital theory as the framework within which to think about economic policy affecting the nation's human resources, Heller would have seen Kennedy's anti-poverty initiative as complementing, rather than distracting from, Heller's existing plans for promoting economic growth. It also provided another reason for giving education a central role in Federal economic policy. Human capital formation through education spending was demonstrably linked to future growth. Education was also a powerful tool for fighting poverty, through its obvious impact on earnings – America's poor were poor in part because they lagged behind the rest of the population in terms of educational attainment. Thus, programs that funded and facilitated education for America's poor killed two birds with one stone, raising the incomes of the poor, and augmenting the nation's stock of human capital.

This way of thinking can be seen in a column Heller wrote for *The New Republic* in 1962 on the relationship between policies directed at full employment and those directed at growth. There were, of course, several references to investment in human capital. But Heller also developed the idea that “if full use is not made of present economic potential, growth of potential itself slows down.” (Heller 1962, p. 41) And lest anyone think he was only talking about waste due to cyclical unemployment, Heller offered the example of “discriminatory practices in employment and education” citing a CEA report that had concluded that “if discrimination in education against non-whites had not existed in the past”, the GNP today would be 3% higher. (Heller 1962, p. 40) Non-white victims of discrimination, of course, became a population of special interest in the War on Poverty. We have already mentioned Heller’s reference, in his 1962 memo to Kennedy on education, to “marginal groups whose educational input can still be greatly increased” as a target for educational programming that could have a “consequent substantial and specific impact on growth.” In 1964, when testifying in support of the Economic Opportunity Act, a centerpiece of War on Poverty Legislation, Heller conveyed the idea this way:

The Nation is more and more aware that in compassion lies strength – not only moral strength but economic strength. For a war on poverty is truly a war on waste – on waste of our most precious asset: the mental, physical, and spiritual power of human beings.

A program which gives life to the latent capacities of millions of our poverty-stricken citizens is a sound investment which will yield rich returns:

First, in human dignity, personal satisfactions, and a fuller sharing in the social and political life of the community;

Second, in the reduced costs – both human and financial, both private and public – of the delinquency, vice and crime which are so often woven into the fabric of poverty;

Third, in the higher output and income that will flow, to the benefit of all of us, from the minds of the newly educated, whose contributions would otherwise have been lost; hands newly trained, whose skills would otherwise have lain dormant; workers newly employed, whose productive potential would otherwise have run to waste in idleness.

These returns on capital invested in human beings are fully as real and as great as those

we realize on the money we invest in machines and equipment. (US Congress, 1964, pp. 29).<sup>37</sup>

Two comprehensive educational acts were passed as part of the *War on Poverty* – the Elementary and Secondary Education Act (ESEA) and the Higher Education Act – and the majority of its initiatives had an educational component. For example, the Council of Economic Advisors described the Economic Opportunity Act, which created the Office of Economic Opportunity (OEO), as a number of programs to “provide a community-wide focus for anti-poverty efforts by offering education, training, and work experience to help young people escape from poverty” (Weisbrod, p. 89). In addition to this were Upward Bound, Head Start, the college Work-Study program, and a number of remedial education projects. Human capital theory significantly influenced the decision to make education such a prominent part in the *War on Poverty*. Educational and economic policy makers at the federal level accepted the basic assumption of human capital theory, which was that the central *purpose* of education was to increase the productivity, and thus the future earning power, of the student.<sup>38</sup>

During the early years of the War on Poverty, the human capital theory was not the only conceptual framework being employed by the rapidly increasing number of people and agencies working on the design and administration of new Federal education policies. After first speaking

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<sup>37</sup> The reduced costs of delinquency, vice, and crime were also prominent in Weisbrod’s (1964) list of the external benefits of education.

<sup>38</sup> Educational historians have largely missed the connection between human capital theory and War on Poverty educational policy. Neither Julie Roy Jeffrey’s *Education of the Children of the Poor* nor Maris Vinovski’s *The Birth of Head Start*, (both excellent histories) recognize the connection between the theory of human capital and the anti-poverty focus of the educational programs of the War on Poverty. Outside of educational history, Alice O’Connor points out the application of human capital theory to the issue of poverty in *Poverty Knowledge: Social Science, Social Policy, and the Poor in Twentieth-Century U.S. History*, but she fails to mention education at all. One exception is Brauer (1982), who identifies the link between human capital theory, poverty policy, and educational policy. He points out that Burton Weisbrod, a human capital “champion” was involved with early anti-poverty plans and that “Lampman’s preference for investing in youth as the best way to fight poverty reflected faith in education and human capital theory” (p.107). Brauer also writes that the economists involved in the War on Poverty “were in part guided by ideals of social justice, but their approach to poverty also reflected efficiency ideals, faith in human capital theory, and culture-of-poverty assumptions” (p.118-119).

with Kennedy about poverty policy in 1962, Heller had turned to Robert Lampman, an institutionalist from the University of Wisconsin-Madison who had recently become a Senior Economist for the CEA, to develop a poverty strategy. What Lampman outlined, and what would eventually be published in the 1964 Economic Report of the President, was a strategy for addressing poverty designed to “*prevent entry into poverty, promote exits from poverty by enlarging employment potential and opportunities, [and to] alleviate the difficulties of those for whom prevention of poverty and promotion of exits are not feasible.*”<sup>39</sup> In this report, he acknowledged that economic growth had lifted many out of poverty, but also admitted that there were groups for whom economic growth would not be enough. Lampman’s article “Approaches to the Reduction of Poverty,” written in 1965, revealed that he believed a combination of insights derived from human capital theory and cultural theories of poverty was necessary for an effective policy strategy. After first crediting economic growth with a recent reduction of poverty and stating his belief that this effect would continue well into the future, he made a decided turn towards sociological explanations involving culture, class, and motivation: “A poverty subculture develops which sustains attitudes and values that are hostile to escape from poverty” (p. 525). However, many of his recommendations were educational in nature and were highly compatible human capital theory, which he also embraced. (Brauer, 1982) Lampman became a key figure in the design of the *War on Poverty* and was even called its “intellectual architect” by economist James Tobin (Passell 1997).

After Johnson took over the Presidency and Kennedy’s proposed War on Poverty, he appointed Heller to lead a task force drawn from members of the Council of Economic Advisors, the Bureau of the Budget, and HEW. From November of 1963 to February of 1964, Heller led

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<sup>39</sup> The quote is from an internal CEA memo by Lampman, quoted in Vinovskis 2005, p. 33

this task force and he and the other members of the economic council primarily advocated educational programs and interventions as the best means of addressing poverty. However, a task force led by Sergeant Shriver was also planning for the War on Poverty starting in February of 1964. A number of members of the Shriver task force, many of whom later joined him in the Office of Economic Opportunity when he became its first director, viewed poverty through the lens provided by “empowerment theories” developed in the more radical precincts of political science and sociology (Forget 2011). Many of the ideas developed by the Heller task force were dropped in favor of proposals from the Shriver group during the development The Equal Opportunity Act of 1964, which is considered by some to be the centerpiece of War on Poverty legislation, and which included educational components such as Head Start and provisions for adult education. The ideas developed by the Heller CEA and task force, though, did significantly influence the Elementary and Secondary Education Act of 1965, a bill which authorized the use of unprecedentedly large amounts of Federal funds to fund educational programs designed to serve the needs of the children of low income families.

## **Conclusion**

Prior to 1958, there was no such thing as “human capital theory “ in economics, much less in the discussion of education policy at any level of government. Within five years, there was an active theoretical and empirical research program in economics organized around the idea that certain activities could best be understood as investments in human capital. Over the same short period, the new idea of public spending on education as a form of investment with a demonstrably high rate of return and the capacity to contribute to the achievement of important national goals, was enthusiastically communicated to the public by opinion leaders, policy

makers, and even a President. We have not tried to explain the rapid progress of “human capital” from a suggestive idea to a vigorous research program in economics, but we hope that we have shed some light on why the human capital idea so rapidly came to influence education policy: the human capital idea implied that policies promoting education could advance goals – first faster economic growth, then poverty reduction – that circumstances pushed to the top of the nation’s policy agenda during the period of human capital theory’s initial development; and an advocate of the theory who could persuasively explain the logic and the emerging empirical evidence linking education to those goals moved into a position of power and influence.

The War on Poverty marked the Federal government’s acceptance (or claim) of an ongoing responsibility for education. As we have noted, human capital theory was only one of several conceptual frameworks being employed by the designers and administrators of the new Federal education policies. We would say, however, that Heller’s work while chairman of the CEA had established a beachhead for human capital theory in the federal economic and education policy apparatus. This was in part due to his own skills in explaining and promoting the theory, but it also likely owes something to his decisions about whom to hire as staff researchers, and to the growing acceptance of the theory among economists in general. Pioneering human capital researcher W. Lee Hansen remarked that during his time as a CEA staff researcher in 1965, everybody at the CEA thought about education policies and programs from the perspective of human capital theory.<sup>40</sup>

We would also say that the beachhead proved to be permanent, and provided a base from which economists were able to expand their influence on US education policy.<sup>41</sup> In support of

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<sup>40</sup> Interview with J. Biddle, Oct. 2014

<sup>41</sup> It should be noted that economists employed by the Department of Health, Education, and Welfare were also working on education policy in the early War on Poverty period. Forget (2011) tells the fascinating story of how

this assertion, we reiterate a point made in the introduction: It is now widely agreed that the Federal government has a responsibility to provide funding for education, and increasingly, in practice if not in principle, a right to exercise control over education. A, if not the, central purpose to be promoted by federal education policy is economic; that is, education's capacity to increase the productivity and thus the earnings potential of the individuals who receive it, as well as the nation's economic power or "global competitiveness." And it is widely accepted that economists, and the modes of thought and methods of analysis employed by economists, have an important role to play in the shaping, evaluation, and administration of education policy. None of these things were true in 1960; but all of them have roots in Walter Heller's successful establishment of human capital theory as a framework for education policy.

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economists, aided by developments they neither planned or anticipated, were able to gained influence at the OEO at the expense of Shriver's "OEO radicals."

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