Wealth: its use, level, inheritance and change—in relation to human capital.

Jonathan Gershuny

ISER Working Papers
Number 2002-16

Institute for Social and Economic Research

The Institute for Social and Economic Research (ISER) specialises in the production and analysis of longitudinal data. ISER incorporates the following centres:

- ESRC Research Centre on Micro-social Change. Established in 1989 to identify, explain, model and forecast social change in Britain at the individual and household level, the Centre specialises in research using longitudinal data.

- ESRC UK Longitudinal Centre. This national resource centre was established in October 1999 to promote the use of longitudinal data and to develop a strategy for the future of large-scale longitudinal surveys. It was responsible for the British Household Panel Survey (BHPS) and for the ESRC's interest in the National Child Development Study and the 1980 British Cohort Study

- European Centre for Analysis in the Social Sciences. ECASS is an interdisciplinary research centre which hosts major research programmes and helps researchers from the EU gain access to longitudinal data and cross-national datasets from all over Europe.

The British Household Panel Survey is one of the main instruments for measuring social change in Britain. The BHPS comprises a nationally representative sample of around 5,500 households and over 10,000 individuals who are reinterviewed each year. The questionnaire includes a constant core of items accompanied by a variable component in order to provide for the collection of initial conditions data and to allow for the subsequent inclusion of emerging research and policy concerns.

Among the main projects in ISER's research programme are: the labour market and the division of domestic responsibilities; changes in families and households; modelling households' labour force behaviour; wealth, well-being and socio-economic structure; resource distribution in the household; and modelling techniques and survey methodology.

BHPS data provide the academic community, policymakers and private sector with a unique national resource and allow for comparative research with similar studies in Europe, the United States and Canada.

BHPS data are available from the Data Archive at the University of Essex
http://www.data-archive.ac.uk

Further information about the BHPS and other longitudinal surveys can be obtained by telephoning +44 (0) 1206 873543.

The support of both the Economic and Social Research Council (ESRC) and the University of Essex is gratefully acknowledged. The work reported in this paper is part of the scientific programme of the Institute for Social and Economic Research.

Acknowledgement:

This paper forms part of the work of the ESRC Research Centre on Micro-social Change.

Readers wishing to cite this document are asked to use the following form of words:

Gershuny, Jonathan (October 2002) 'Wealth: its use, level, inheritance and change—in relation to human capital'***, Working Papers of the Institute for Social and Economic Research***, paper 2002-16. Colchester: University of Essex.

For an on-line version of this working paper and others in the series, please visit the Institute's website at: http://www.iser.essex.ac.uk/pubs/workpaps/

Institute for Social and Economic Research
University of Essex
Wivenhoe Park
Colchester
Essex
CO4 3SQ UK
Telephone: +44 (0) 1206 872957
Fax: +44 (0) 1206 873151
E-mail: iser@essex.ac.uk
Website: http://www.iser.essex.ac.uk

ABSTRACT

This paper investigates a number of conjectures about the relative importance of the two components of social class, wealth and human capital, through the life course. It sets out grounds for the expectation that human capital will be of more importance to social position during the earlier part of adult life, while wealth should be increasingly important during the later. The empirical part of the discussion develops a predominantly indirect estimation of wealth (by multiplying up from observed income from investments and pension funds from the British Household Panel Study), also using BHPS direct measures of housing wealth. The distribution of these two measures over the life-course (estimated cross-sectionally) conforms to the expected life-course pattern. Regression models are used to show the importance of human capital growth for the accumulation of capital through the life-course.

This paper is part of a larger project, "Social Position and Life Chances" (SPLC), which aims to formulate and estimate new measures of social class appropriate for understanding life chances in modern Britain. An initial outline of the project is set out in ISER **Working Paper 2001—21**; the human capital measure used here is discussed in ISER **Working Paper 2002—2**. Regression modelling approaches to the intergenerational mobility of human capital are discussed in ISER **Working Paper 2002—17,** and ISER **Working Paper 2002—18** develops a Gini-type index of intergenerational mobility. The SPLC project is part of the Research Programme of the ESRC Research Centre on Micro-social Change.

NON-TECHNICAL SUMMARY

At the core of social class is command over two distinct classes of resources: wealth (investments and the like, pensions and associated entitlements, house ownership), and human capital (economically salient skills and qualifications). This paper provides a range of discussions of the degree of independence of wealth from human capital. It sets out a new measure of wealth based on the BHPS (to be compared with the human capital measure describes in Gershuny 2002a). And it investigates the changing relationship between these two measures through the life course.

The theoretical discussions about relationship between the two sorts of resource include:

- An initial and general background consideration of the macro issue of the "knowledge society". They advance the conjecture of a "weak" historical process in which knowledge tends (though with exceptions) to become relatively more important than capital as a source of social power with economic development.
- The conjecture that wealth and human capital have different implications for consumption, because of their different time-requirements for income generation)
- The transformation of each into the other: wealth to human capital, mostly (though not entirely) through the operation of the educational system); human capital to wealth by saving from income (those with most increase in human capital saving most hence increasing their wealth fastest).
- These processes in turn imply the staging of the accumulation process at a micro level: There are intergenerational differences; the use of educational system as capital transfer mechanism implies the likelihood of differences in the pattern of embodied capitals (economically salient capital vs cultural capital) between successive generations ("Buddenbrooks dynamics")
- More important, are the implications for intra-generational change in relative importance of human capital and wealth. Human capital is formed early in the adult life, grows to a maximum in early-middle age, declines thereafter; by contrast, wealth is gradually accumulated through the life-course, accelerating through middle-age with inheritance of wealth from parents, and at the onset of old age through the maturing of pensions and similar investments.

The empirical estimation of wealth here is mainly an indirect one through the measured streams of income in the BHPS, multiplying-up from investment and similar earnings on an *a priori* basis to estimate the capital sum (and also use the BHPS annual measures of housing wealth directly). Two particular empirical findings emerge:

- Financial wealth and human capital are indeed differentially distributed through the life course, as the theoretical considerations would lead us to expect.
- Regression modelling identifies human capital levels, and particularly change in levels of human capital as major contributors to change in wealth through the life course.

Wealth: its use, level, inheritance and change—in relation to human capital.

1 Introduction

This third paper in the Social Position and Life Chances (SPLC) project series broadens the focus, to consider together the two constituent elements that determine an individual's social class: on one hand, possession of "**embodied capital**"—discussion of which, as in the previous paper in this series (Gershuny 2002a), will be mostly limited to potentially income-earning skills or capacities ("human capital)—and on the other, financial and other **wealth** (investments, real estate, pensions).

Embodied capital and wealth are at once similar and different. Each may, over some period, and with various different sorts of difficulty, be converted into the other. Each produces income, which in turn gives access to consumption experiences, and hence to circumstances and perceptions of well- or ill-being—though the manner in which they produce income is quite different in the two cases, and hence the sorts of consumption they permit differ to some degree. They each have long-term implications for future life-chances; but they accumulate in different ways and at different stages in the life-course, and are transmitted across generations through different mechanisms.

Emerging from the SPLC project are two particular propositions:

(1) Human capital and wealth must be considered as distinct and separate dimensions of classification in any view of social class which adequately captures processes of determination of life chances and of inter- and intra-generational mobility.

(2) Human capital may be considered as the primary means through which wealth is re-distributed, in modern societies.

This paper is devoted to the implementation of a first version of a new indicator of wealth derived from the British Household Panel Study to go alongside the measure of human capital described in the previous paper. The first of the propositions is demonstrated by the very different age distributions of the two indicators across the British population. The second proposition is investigated through regression modeling of the process of change in individuals' holding of wealth, as exhibited in the BHPS data.

As in the case of the human capital measure, the primary motivation for constructing the wealth indicator is to identify a personal characteristic that may be considered as a source of social differentiation in the medium to long term. The research interest here is not, for the moment, in arriving at a precise measure of wealth for its own sake (though there would be some advantages if eventually the results should converge with those whose primary purpose is the estimation of wealth). Rather, the objective is the construction of a straightforward index, that can be estimated on an annual basis, and used to explain differences in living conditions that are left unexplained by the human capital measure. The two indices together should establish the class or social position of individuals and households. This limited objective for the wealth indicator has various implications for the design of the measure, which will emerge in the course of this paper.

Human capital and the knowledge society

Before going further it may be helpful to amplify a little the final phrase ("…in modern societies") of the second proposition. The essentially micro-sociological version of the hypothesis of the primacy of human capital discussed in this paper, is strongly related to a common line of macro-sociological argument concerning the emergence of a "knowledge society". I do not subscribe to any very strong notion of sequences or stages of technological dependence of economic development. It is certainly reasonable to suspect that many early and remote societies depended very heavily on the special knowledge (engineering, agronomy or cosmology) of particular individuals or social groups. It is likely that these societies were just as, or even more, subject to risks of comprehensive disaster as a consequence of the failure of such knowledge as are the "risk societies" described by some modern social theorists (Beck 1992, Giddens1999). Nor is it the case that knowledge is strictly cumulative. Craft skills are lost between generations. Grand engineering technologies (eg Roman building techniques) have been forgotten for millennia, and then only imperfectly recovered.

Nevertheless, it does seem plain that the economic development of the last millennium has been dependent on the increase and cumulation of technical knowledge required for the satisfaction of various human wants. This growth in the "technicity" of consumption does not necessarily translate into a transfer of power to the possessors of knowledge. A technically advanced society could, in principle, be based on a social structure in which a military elite dominates a class of slave scientists (several examples come to mind, of varying durations, over the last two millennia). But under particular conditions of economic organisation, a "knowledge elite" can also become a dominant social class.

And we can set out quite straightforwardly one particular set of conditions that might be expected to work in this way. Its core requirement is that set out by John Rawls (and described in Gershuny 2001), the provision of a system of equal liberty for all members of the society together with some form of equality of access to positions of advantage.

Add to this two further conditions, that (1) physical capital (plant and machinery), becomes over an historical period, more plentiful so that the cost of acquiring it falls; and that (2) the proportion of all the society's labour (time) that is required from those with technical, professional or organisational skills increases; then those who possess these skills will be in a position to bargain successfully with the owners of the physical capital, so as to increase their share of the profits of the enterprise[1]. Some version of the Rawls requirements are found throughout the OECD countries. And these, according to my conjecture, together with the two further conditions, lead to the growing importance of human capital as a source of social power.

All of what follows in this paper is essentially micro-sociological in its approach. I shall be arguing, on the basis of some very simple theoretical propositions, followed by some straightforward data manipulation, that the human capital element in individuals' social position has a sort of priority over the wealth. I propose this primacy of human capital as a determinant of social position, and particularly of *change* in social position, however, without denying the importance of wealth as a determinant of life-conditions. The micro-conditions I describe in what follows would on their own imply a considerable, and growing, importance for human capital relative to material or financial. The macro-sociological context provides an additional reason for the growing importance of "embodied" capital as a source of power. Both lines of argument point to an increasingly knowledge-dominated society.

2 Consumption and the contrasting uses of human and financial capital

Consumption is in a sense the *end* or purpose of individuals' economic activity. The two sorts of capital have quite dramatically contrasted relations to consumption. The earliest

[1] This sort of negotiation between owners of human and physical capital is discussed briefly in Section 1.3 of Gershuny 2002a. It may indeed be, though I do not propose to argue this point further here, that the rights to undertake such negotiations with a degree of success are directly implied by Rawls' notion of "equal liberty".

sociological discussion of the implications of this difference between them is to be found in that unwisely neglected sociological classic, Veblen's **Theory of the Leisure Class**, specifically in relation to the concept of "conspicuous consumption". The dominant class (at the end of the 19th century) was a *leisure* class which possessed land or financial capital, and lived off profit, interest and rents. Its members did not need to deploy their own labour to acquire income, so its eponymously defining characteristic was, indeed …. leisure. The members of this class were able to symbolise their dominant social position in a dramatic fashion, by adopting the pursuits and pass-times of a *previous* dominant class, the feudal elite—hence the horse-riding, the hunting of large animals, the distinctively upper-class emphasis of the development of expertise in militaristically organised team sports and so on.

However, Veblen identified one fraction of the then-ruling elite as unable to join in the games. This group—of evidently expanding importance even when Veblen was writing—consisted of those who had recently gained entry to the class not through inheritance, but through their own endeavours: the upwardly socially mobile. The members of this group were, just about, members of the ruling elite, but they still lacked the identifying leisure characteristic of the class—precisely *as a result of their means of entry to it*. They still had to work, in the bourses and counting houses and fashionable consulting rooms, to finance their social positions. It is the subsequent continuous expansion of this group that has, in effect, led to the obsolescence of the "leisure class" term except for an effete minority of moneyed inheritors. But at the turn of the 20th century, "conspicuous consumption" of material goods (as well as supporting financially the time of family members and acquaintances as Drones Club hangers-on or as underemployed flunkeys to arrange their social affairs) was an important way for the successful upwardly mobile to identify themselves with the dominant class.

Those members of the upper class who arrived at that position as a result of their own special skills and aptitudes, had still to deploy these in their own professional activity in order to generate their large incomes. So, Bertie Wooster's formidable uncles, the

knighted fashionable surgeons, the top lawyers, the bankers, the industrialists, were chronically absent from their country houses, where Wooster himself (having by this time inherited just that part of his father's expertise that could be converted into financial capital) had time to be idle, make mischief and bother his irritating aunts (Wodehouse 1934).

Embodied capital and financial wealth are transformed into consumption opportunities in quite different ways. Wealth produces income on its own, while human capital must be combined with work time, which in turn reduces available leisure and recreation time. Thus the two elements of class have very different implications for consumption, and hence for their possessors' sources of welfare and wellbeing.

Implicit in this discussion is the view of consumption that emerges from Gary Becker's (1965) "A Theory of the Use of Time". Becker starts with the two resources out of which income is derived. There is the shadow wage rate (ie what the individual could earn from an hour of labour—which is as good an indicator of human capital as any). And there is the individual's wealth or endowment of financial capital. The financial capital generates a fixed income; the human capital generates an additional income which varies according to the number of hours worked. The two together provide a budget. Becker's key insight is that the mere spending of money does not give rise to real consumption (which we might for these purposes define as the passage of some commodity or experience across the boundary of the self) unless it is combined with some consumption *time*. But time spent working means (since the length of the day is a constant) less time available for consumption. The possessor of a vast financial capital might (though nowadays, for reasons which are discussed briefly in the next section of this paper, is less likely to) spend all her or his time in consumption. The otherwise penniless possessor of scarce and valuable human capital might by contrast, or at least by Becker's argument, be expected to spend very long hours at work, and then spend her or his scarce leisure time in very expensive (and by standard economists' assumptions therefore very "productive", and time-intensive) leisure pursuits. Thus, the wealthy man

spends days in his racing (ie slow) yacht, while the power in the City or the Courts devotes only hours to her powerboat (which has been defined as standing in a cold shower tearing up ten pound notes: plainly *very* productive leisure).

The implications of differences in capital endowments go beyond mere contrasts in consumption styles, however. At any point in the lifecycle, among those similarly placed in terms of individual career attainment, those with more personal wealth have more consumption opportunities—which in turn mean better life chances and more opportunities to transmit advantages to their children. And at later stages in the life-course, human capital inevitably decays and opportunities for paid work diminish, but wealth (as we shall see in a moment) largely continues, and with it the wider range of consumption choices of the wealthy.

There are some further twists to this argument, the most important of which are due to Pierre Bourdieu. While Becker considers his individuals as facing a utility function, which is an externally defined *given*, and essentially similar for all individuals, Bourdieu in **Distinction** implies that the effectiveness or value (and hence the desirability) of consumption activities depends crucially on consumption skills. "Cultural capital"—constituted by the special knowledge necessary for effective participation in arts and sports—also forms part of an individual's capital endowment. At any given level of human capital and hours of work (and hence leisure time), an individual with higher cultural capital derives more benefit from a given consumption expenditure.

What we do need to draw from these arguments is what should anyway be obvious. The rich *are* different from others, insofar as wealth has different implications to human capital for consumption and hence life-chances (Fitzgerald 2000). This amounts to a prediction, to be investigated in a later stage of the SPLC project, that human capital and wealth will prove to have distinct and separable impacts on welfare/well-being.

3 Conversion and reconversion between embodied capital and wealth

Wealth into human capital

The two sorts of personal capitals are certainly not independent of each other. Individuals with more human capital are likely, *ceteris paribus*, to have more wealth, and *vice versa*. So the hypothesis of the primacy of human capital requires that we consider asymmetries in the processes that lead to the associations between them.

On one hand, wealth may be transformed into embodied capital through several distinct mechanisms. The first and most obvious method is through the operation of the educational system, success in which is the prime route to human capital accumulation. The most important facet of this conversion activity in Britain is the use of financial wealth to pay for private schooling. Private schools ("Public" schools in the archaic British usage) possess extra equipment and facilities, offer salary premiums to attract best teachers, have small class sizes. Their pupils share, or come to share, common language codes and aspirations (both with each other, and with previous members of the same school communities who are disproportionately present in dominant social positions).

Or as an alternative, and in societies (or within Britain, in those geographical regions) in which private schooling is less prevalent, schools may be segregated by residence requirements, with better-performing schools located in more expensive residential areas. Parents in this case buy educational advantage indirectly by paying premiums on property prices (which may themselves be quite direct reflections of the local educational provision). Evidence of the continuing positive impact of parents expenditure on their children's education in Britain has been set out in Section 3.2 (see particularly Table 6) of Gershuny (2002a).

And in parallel to both these activities, wealth can buy additional and complementary educational services. Parents can employ special tutors to remedy weaknesses that emerge in aspects of their children's response to the regular school teaching. Or they may use expensive "crammers" (institutions devoted explicitly and exclusively to the transmission of the skills necessary to successfully pass tests) in order to reverse their children's past failures in the public examination system.

The use of (particularly parental) financial wealth to promote human capital accumulation is not necessarily limited to the formal educational system. In the past, when training in professional skills (including the provision of both medical and legal services) could be acquired on a more empirical, apprenticeship-type basis, untrained young people could gain access to this sort of work-experience by purchase: typically parents would pay a substantial fee directly to employers to compensate them for their children's training costs. Such practices have largely disappeared—but their direct descendents are still actively practiced in those occupations to which access may be gained in part through evidence of prior experience of largely or wholly unpaid participation. Barristers' "pupilage" is the most notable example in Britain, but the practice is apparently still quite widespread in various arts and social care occupations (the USA unpaid "residencies" or "internships" with cadet status in political organisations, undertaken in part with a view to improve subsequent employability, have the same meaning). In these cases, parental financial support buys access to training that is inaccessible to children of parents without sufficient financial resources to support adult offspring, who instead have to "earn their own living" immediately on leaving the formal educational system.

Other sorts of embodied capital are also involved. What is gained, in these financial transactions, may not be wholly concerned with human capital but also with social. Private schooling contribute to the formation of connections with others in wealthy elites, and to the establishment of networks of personal connections which may be of mutual advantage throughout the working life. Financial expenditures also have a direct effect on formation of cultural capital, insofar as this is accumulated mainly through

consumption experiences; access to these are rationed by ability to pay for participation, and thus provide an opportunity convert wealth into consumption skills.

Human capital into wealth

In turn embodied capital may be transformed into financial and other wealth. Straightforwardly, the larger the earnings capacity, the more likely that there is some sort of a surplus above the expenses of daily life that is available to be put aside as financial investment, as straightforward savings, for house purchase, or as part of a pension fund.

The accumulation and deployment of human capital must be the main *source* of mobility in wealth, and is really the only part of this process that is effectively under an individual's own voluntary control. Consider the various means through which an individual's wealth might increase. She might inherit wealth from a parent. But from an intergenerational mobility perspective this is merely the transmission of a constant class position. She might gain extra wealth as a windfall from gambling or speculation. But this is statistical noise, and (taking account of the fees charged by the relevant institutions) she is likely to lose over any extended period—unless she is particularly skillful, in which case the real source of the gain is a form of embodied capital). Any wealth she already has may of course increase through the operation of compound interest—but only if she can earn enough to cover the expenses of daily living, so that she can reinvest the income. Yet again in this case the advance in wealth depends on human capital (except for those rich enough to live on part of the interest on the interest). She may use her financial capital within a successful enterprise which increases in value—but, once more, it is her skill in making the enterprise successful that leads to the increase in wealth, not the wealth itself.

In short, advancement in wealth of the sort envisaged by mobility theorists is *only*—or at least mostly—possible through the deployment of human capital in paid work, and the subsequent saving of some of the resulting income.

Of course, we can only arrive at this sort of conclusion by making the appropriate definitions. Human capital has been drawn broadly so as to include any human skill that brings regular and reliable economic advantage. But this is, surely, the *appropriate* definition.

The alternation of financial wealth and human capital

My propositions concern the independent significance of wealth and of human capital for life outcomes, and the prime importance of human capital in determining change in these. It is clear, as the later sections of this chapter will demonstrate, that financial wealth and human capital to some extent go together in a statistical sense; those with the most of one also probably have the most of the other. But this does not necessarily mean that there is a single underlying dimension of social class. We would expect to see, underlying the correlation, a dynamic, staged process, with changing relations between the two sorts of capital at different points in time.

We have introduced the int*er*-generational version of this dynamic in the person of the previously mentioned fictional *rentier* Wooster. Perhaps a less flippant literary exemplar of the same process—the English North-country description of which is "clogs to clogs in three generations"—might be drawn from Thomas Mann's family saga Buddenbrooks (Mann 1960). In this ideal-typical case, there is in the first generation a phase of capital accumulation and conversion, in which economically salient skills are "worked up", and an increasing proportion of the growing income from employment goes into savings, and a substantial financial endowment is established. The second generation inherits, places more emphasis on the accumulation of cultural than economically salient human capital, and passes a diminished financial endowment to the third, which dissipates it entirely.

There is nothing at all necessary in this three-stage process, as far as I know. But plainly, the different material conditions at successive points in a family history, provide different

motivations for work-attachment, risk-taking and leisure preference, which in turn are likely to produce intergenerational differences in career trajectories and occupational attainments, and hence in the composition of the individuals' capital endowments. (The BHPS at present covers too short a time span to investigate these sorts of processes—but the 30+ years covered by the US Panel Study of Income Dynamics makes it appropriate for an empirical investigation of multigenerational issues of this sort issue.)

We can, however, use the BHPS to look at a connected int*ra*-generational process, in which the balance between the different sorts of capitals varies systematically across the life-course. In this case we can adduce a number of reasons to expect one particular cyclical pattern: through the lifecycle the composition of individuals' capital changes so as to increased the reliance on wealth in old age. **First** there is the passing of financial capital to successor generations, which takes place mostly but not entirely at the death of the last surviving parent. Parents die at various stages in their children's lives, so, on a statistical basis we would expect wealth from this source to increase progressively through the first part of the adult life course. As life expectancy increases over historical time, the length of this "first part" will be progressively extended. (However public regulation or taxation of intergenerational gifts and transfers might have a partially countervailing effect, leading to earlier partial transmission of wealth.)

Second is the effect of the ageing process itself. Human capital at first increases, through the lifecourse, but subsequently (from around the mid-40s) declines, so, *ceteris paribus*, with this decline we would expect that the proportional importance of fixed wealth would increase. And the **third** follows directly from this: the knowledge of the inevitability of the decline in earning power, together with the increased life expectancy, must add powerfully to the motivation to build up fixed wealth through the first part of the adult life-course, so as to provide for the second.

We might note that the growth in the relative size of older, retired part of the population may mean that, despite the previously argued historical growth in the importance of

human capital in the first part of the life-course, the overall volume of fixed capital may still in some sense be growing faster than embodied capital in modern societies.

But by far the most important impact of demographic change is that the longer life expectancy, are its implications for the balance between the inter- and the intra-generational processes. The increased probability of survival (and indeed survival as an active consumer) beyond the effective vanishing point of human capital, which increases the motivation for wealth accumulation (in broad sense including pension wealth)—also increases the likelihood of dissipation of wealth in the later part of life; either (in the case of investment and housing wealth) through physically and intellectually active older people "living on capital", or because the pension wealth returns completely to the central pension fund on the death of the pensioner.

Thus the growth in life expectancy implies later inheritance, and hence more pressure for human capital formation among the children of the wealthy. And it implies also a diminished certainty about inheritance of parents' wealth (because of the increased likelihood of its dissipation during extended retirement)—which has the same effect.

4 The composition of income and wealth through the lifecourse

Davis and Shorrocks (2000) identify four main sources of information on the distribution of wealth: (1) direct questions about the ownership of assets (and about debt) in a random sample househol;d survey; (2) analysis of Wealth Tax data; (3) multiplying up from Estate duty returns; and (4) making inferences from sample survey evidence of investment (and similar) income. Of these four, the first method is in principle the most effective and reliable. Waves 5 and 10 of the BHPS do indeed contain batteries of questions which establish individuals' and households' holdings of a wide range of financial resources and balances; these will provide the most accuate estimates of wealth. However the needs of this present project are for consistent annual measures of wealth from Wave 1 of the panel study. BHPS provides adequately detailed information about income streams to allow for the alternative method 4. (The correct approach will without doubt eventually involve the use of the direct evidence in waves 5 and 10 to test and calibrate the annual method 4-type inferences.)

Table 1. Individual gross income composition by age cohort, UK 1991 (BHPS)

£'000s per year

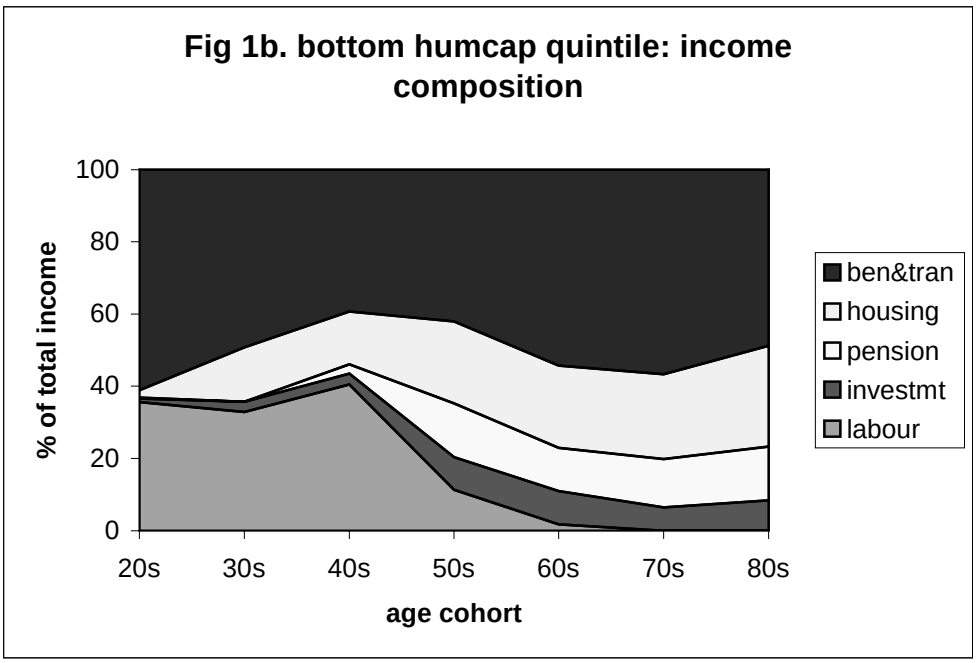
	labour	investmt	pension	housing	ben&tran	total
For Entire Population						
all	5.83	0.37	0.51	1.05	1.33	9.09
20s	7.25	0.15	0.00	0.15	0.76	8.32
30s	9.92	0.24	0.00	0.80	0.84	11.82
40s	10.19	0.39	0.06	1.42	0.72	12.79
50s	7.72	0.53	0.51	1.55	0.78	11.09
60s	1.94	0.56	1.39	1.53	2.16	7.59
70s	0.17	0.52	1.43	1.47	2.93	6.52
80s	0.00	0.38	0.85	1.20	2.92	5.35
bottom human capital quintile						
all	0.80	0.22	0.31	0.73	2.09	4.14
20s	1.21	0.03	0.01	0.07	2.08	3.41
30s	1.50	0.13	0.00	0.68	2.24	4.55
40s	1.64	0.12	0.11	0.60	1.59	4.06
50s	0.48	0.37	0.62	0.95	1.76	4.18
60s	0.08	0.42	0.54	1.04	2.47	4.55
70s	0.00	0.34	0.71	1.25	3.01	5.31
80s	0.00	0.49	0.87	1.62	2.84	5.82
top human capital quintile						
all	12.31	0.63	0.88	1.62	0.80	16.23
20s	13.88	0.37	0.00	0.26	0.17	14.68
30s	18.92	0.43	0.00	1.12	0.25	20.72
40s	20.13	0.71	0.05	2.37	0.30	23.56
50s	16.47	0.93	0.67	2.64	0.16	20.88
60s	8.14	0.76	1.80	2.06	0.98	13.74
70s	0.85	0.96	3.35	2.36	2.87	10.38
80s	0.00	0.46	1.65	1.47	2.91	6.49

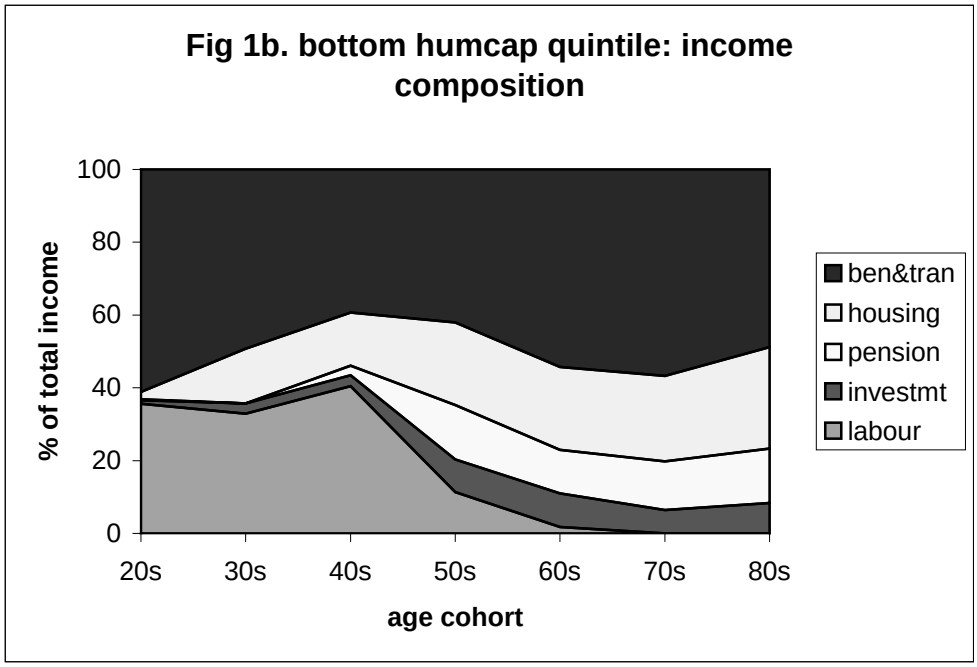
The possibility of making reasonably reliable inferences about the levels of wealth from the specific components of income was apparently proposed first by Giffen (1908), and has been used effectively in, for example, Atkinson and Harrison (1978) for Britain, Dilnot (1990) for Australia. Baekgaard (1997) showed, also for Australia, that the inclusion of private pensions (as in what follows here) radically reduces the apparent concentration of wealth.

The components of income

We might think of income as having four elements: income from paid labour, income from wealth (eg returns from investments), payments of state benefits conditional on some status or income characteristics, and transfer payments from family members or others; the transfer payments are small in total and without specific analytic significance for what follows, so these are grouped together with state benefit payments. Note that population-wide state pension provisions will not be included as a category of wealth in what follows. These are clearly personal entitlements that give access to consumption, and in this they corresponds closely to other categories that are treated as wealth. But for our current purposes, the fact that these are generally available across the population, means that they cannot be used to explain social differentiation, which is the primary purpose of the measure. So, within the income- from-wealth category, we can distinguish just three distinct categories: income on investments in stock and shares, and similar financial holdings; income (or future income) in the form of private, occupational, or similar pensions (or pension entitlements); and income-in-kind received as a result of house ownership.

The first panel of Table 1 sets out the distribution of these various categories across the life-course, for the adult population as a whole.





For the total of all income categories we see a roughly symmetrical inverted-U shape over the lifecourse for income as a whole, reaching its highest level for the 40s age cohort. Each of the component categories has a somewhat different profile over time. Labour income peaks for the 40s cohort, investment and housing income for the 50s and 60s, pension incomes for the 70s cohort, while benefit and transfer income rises continuously throughout the lifecourse. These contrasting patterns in turn disguise yet more variation when we break down further by sex and particularly by earnings capacity.

We can group individuals, within each of the age-cohorts separately, into successive quintiles in terms of their earnings capacity (using the human capital estimation procedure as described in Gershuny (2002a), extended to include new estimates for post retirement age-groups). The second two panels of the table look, respectively, at the

lowest and the highest of these groups. Unsurprisingly, for the "working-age" cohorts we find a striking contrast, not just in the level, but also the source of the income. The great majority of the income of those with the highest levels of human capital comes from employment, with virtually no contribution from the benefits and transfers category, while for those in the bottom human capital quintile, the benefits and transfers category exceeds the labour income for each of the age-groups except those in their 40s. Figures 1a and 1b set out the contrasting proportions in the sources of income for the two groups graphically.

What may be less unsurprising, however, is the convergence in the patterns of the two groups in the later part of life. There are still some residual differences, but the contribution to total income from benefits and transfers for those in their 70s and 80s are really quite similar in level for those in the lowest and the highest quintiles of earnings capacity. The reason for this is, of course, not an increase in equality through the latter part of the life-course, but simply that, with the decay in earnings capacity in old age, the human capital measure loses its power to discriminate between the better- and the worse-off. This, at bottom, is the chief reason that we need a measure of wealth to complement human capital as an indicator of social position.

Wealth from income

Of the various categories of income discussed so far, three—income from investments, from pensions, and benefits-in-kind from house ownership—will be considered as deriving from wealth for the purposes of the SPLC project. Of these, the house ownership income has in fact been estimated from annual BHPS evidence on individuals' net housing equity. So there remain two categories for which we must draw inferences.

Investment wealth can be dealt with quite straightforwardly. Different sorts of investments have different yields, and yields vary over time. So, if our object were to arrive at a true estimate of individuals' absolute net investment worth, we would have a

complex task. But the objective within the SPLC project is no more than to arrive at a classifier which will serve to distinguish between people who are differently placed in wealth terms. Thus, for example, it makes no real difference for our purposes whether, at a particular point in time, the prevailing rate of return on investments is 5% or 7%; this would merely alter the size of the coefficient we would apply to infer the size of the capital from our evidence of the financial return on it, and the relative positions of the various individuals would be unchanged. Of course varying the rate of return on financial capital will change the importance of financial capital relative to human capital—but the results of that will emerge at a later point in this research when we compare the effects of the two sorts of capital on outcomes and conditions at different historical points. Different sorts of financial assets will have different current yields, but without further information we cannot distinguish among these, which therefor constitute a source of potential error in the estimates. For the moment and for our present purposes we can nevertheless arrive at a reasonably satisfactory estimate of investment wealth simply by multiplying investment income by an appropriate constant (in what follows, 20, to represent a 5% return). In fact the results of this procedure correspond well to what emerges from the direct wealth estimates from wave 5: they produce an estimate of mean net household financial assets of £14K, reassuringly within the £12K-17K range for 1995 arrived at by Banks, Blundell and Smith (2001) using the direct measures.

Estimating pension wealth presents some additional problems. One concerns the younger part of the population: future pension rights do not show up as part of the current income of those still in employment. However, future pension rights do not directly provide any current access to consumption (though they may have an indirect impact via savings decisions). And we can expect them to be strongly and positively associated with levels of human capital, so their affects on future life-chances are to a degree already captured in the other major indicator of social position. On this basis *future* pension rights are ignored in the estimates that follow (the BHPS does have some information on pensions entitlements, so this approach could, if desired, be varied in the future).

A second concerns the net present value of the pension: a given pension payment to a person of 70 has a different net present value to an identical pension paid to an eighty-year-old, because of the difference in life expectancy. It has therefor been argued (eg Mitchell et al 1999)that the appropriate wealth inference from a current pension payment might be based on the current cost of an annuity yielding the equivalent to the pension payment. But this approach is not entirely appropriate for the present purpose. Consider two eighty-year-old people, one with only a pension income and one with an identical investment income: applying the annuity-based inference procedure might lead to the wealth of the pensioner being assessed as a small fraction of that of the other. Yet their styles of life, and future life outcomes consequent on their wealth, are likely to be rather similar even though the sizes of their residual estates are very different; in this case an annuity-based wealth estimate would be less appropriate than the capital-equivalent inference as a predictor of social differentiation. There are indeed important subjective differences between these two people, insofar as the owner of the investment wealth enjoys the knowledge that part of her or his wealth may be passed on to others. But to set against this positive effect, are the complications of the mechanics of actually passing on the wealth—which might well include pressures, resulting from inheritance tax regulations, to forego current income by making lifetime gifts to those who would otherwise be the post mortem inheritors. Certainly the investor can spend capital (and hence reduce future income) while all the pensioner can do is build up debt; but the current command over resources resulting from investments and pensions is more similar than would be implied by the annuity-based valuation of the pension. (Nevertheless there may be arguments for something like the annuity-based evaluation at the later end of old age, and effects of this might be tested using wealth as a predictor of patterns of consumption and subjective well-being).

On balance, and given that the purpose of these present wealth estimates is to consider its impact on individuals' own life chances, it seems appropriate for the moment to assess pension wealth on a similar inferential basis as that applied to investment wealth. Admittedly this makes for a somewhat special meaning of "wealth"—but nevertheless,

one better adapted to our present purposes than emerges from the actuarial approach. (We can, furthermore, apply statistical tests to evaluate the consequences of this assumption, by attaching additional "dummy variables" representing the pensions-vs-investments composition of the wealth, to regression equations linking "wealth", so defined, to life outcomes.)

Table 2, therefore, sets out the mean levels of wealth, estimated on this basis, by age cohorts; the mean for that part of the sample aged above 60, of around £65,000 corresponds reasonably well with, eg Mark Stewart's estimate (2001, table 3: using BHPS data but with different assumptions) of mean pensioner wealth of £74,000 in 1994/5. Mean human capital estimates for the same age-groups are provided for comparative purposes. It shows, just as we would expect from the income patterns to which these are so closely connected, two distinct temporal trajectories. While both are generally inverted-U shaped, the human capital measures plateau at age 40, while the wealth measures rise continuously to a maximum for 70s age group.

Table 2 Estimated mean human capital and wealth by age cohort UK 1991

	teens	20s	30s	40s	50s	60s	70s	80s
Wealth (£'000s)	1.5	6.2	21.0	37.6	51.8	69.7	68.5	48.6
Human capital index	4.10	6.66	8.62	8.82	7.16	3.91	2.40	1.82

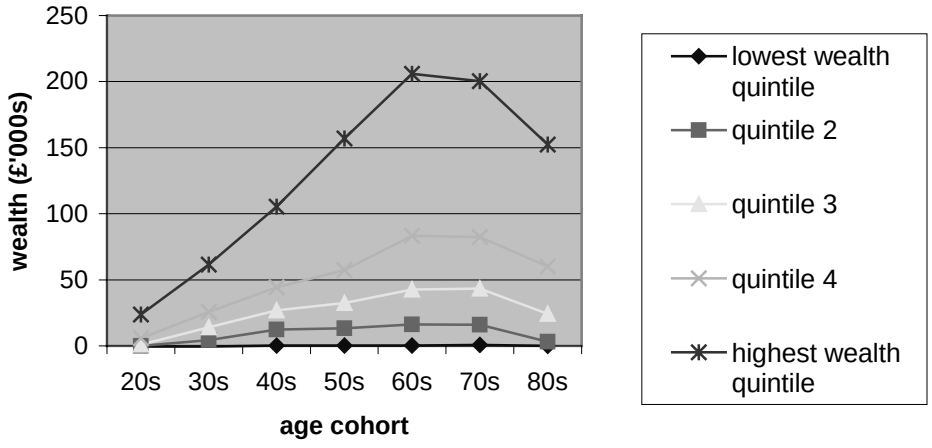
Figures 2 and 3 give an impression of the dispersion of these trajectories by plotting the means for each age group, for each quintile of the wealth and human capital distributions (as previously, calculating the quintiles separately for each age group). Note three points from the comparison of these two sets of plots:

1. The contrast between the age distribution of the two dispersions: wealth levels are quite low among those aged in their twenties, and the quintile means reach their maximum *dispersion* for the 60s and 70s age groups; human capital reaches a maximum dispersion for the 40s age group, while the dispersion of these estimates diminishes dramatically for those in their 70s and 80s. We can conclude from this

that the two indicators may indeed be appropriate to differentiate the life-chances of people at opposite ends of the age spectrum.

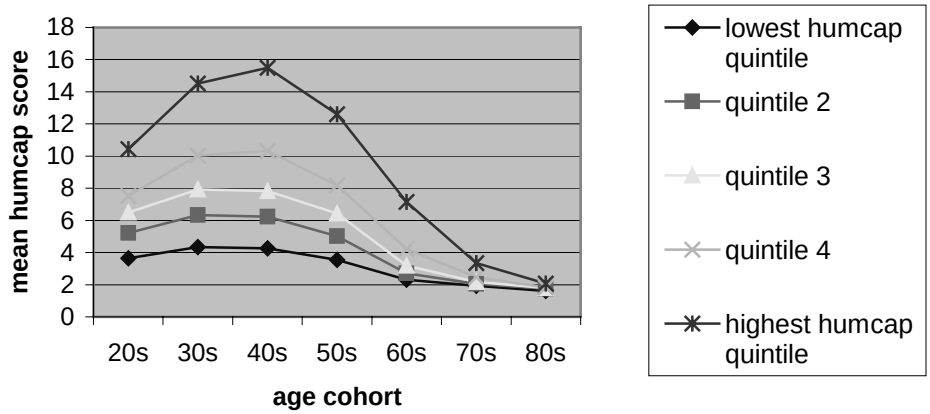
2. The particularly high levels of wealth of the highest wealth quintile (more than 4 time the median at ages 60 and 70) relative to that of the human capital distribution (just over twice the median for the 40s age group): this has implications for how we model wealth in the following section.
3. These are cross-sectional estimates, and we cannot make secure inferences about life-course processes from them. Wealth levels do differ, for example, between people in their 70s and their 80s. And some part of this difference may relate to processes of wealth dissipation, "living off capital". But these two groups differ also in their own life experiences (eg more women may have worked for more of their lives in the younger group), and also in the historical circumstances they lived through (for example, the younger group had easier access to occupational pensions). This means that, to get a better picture wealth accumulation processes, we must turn to the genuinely longitudinal analysis that emerges by comparing successive "waves" of observations on the same group of respondents. An example of this is found in the next-but-one section.

Figure 2. Distribution of wealth by age cohort 1991



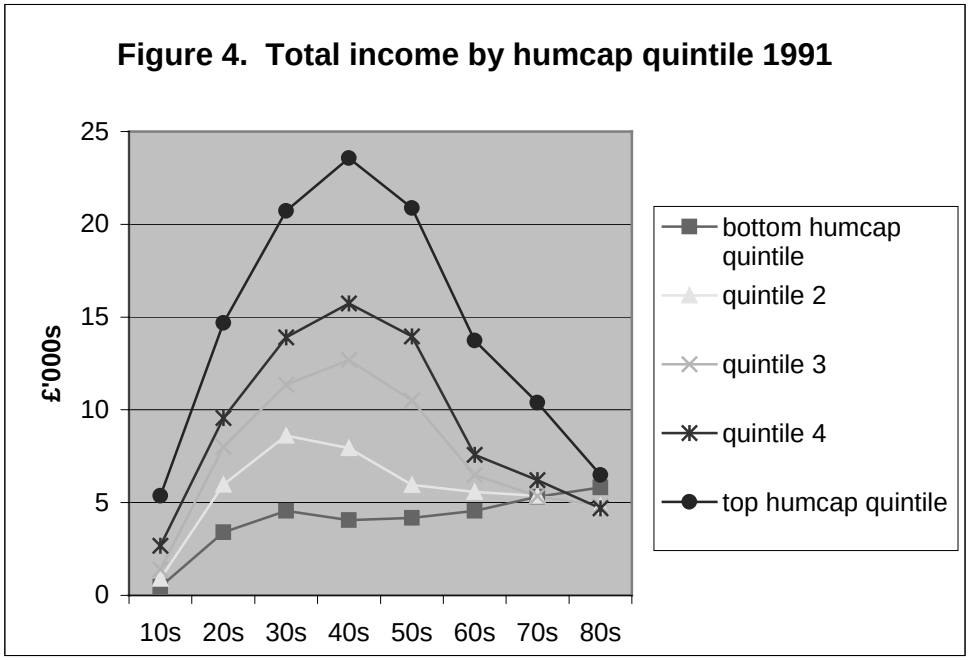
To further illustrate the implications of the first of these points, we might consider the

Figure 3. Distribution of human capital by age cohort 1991

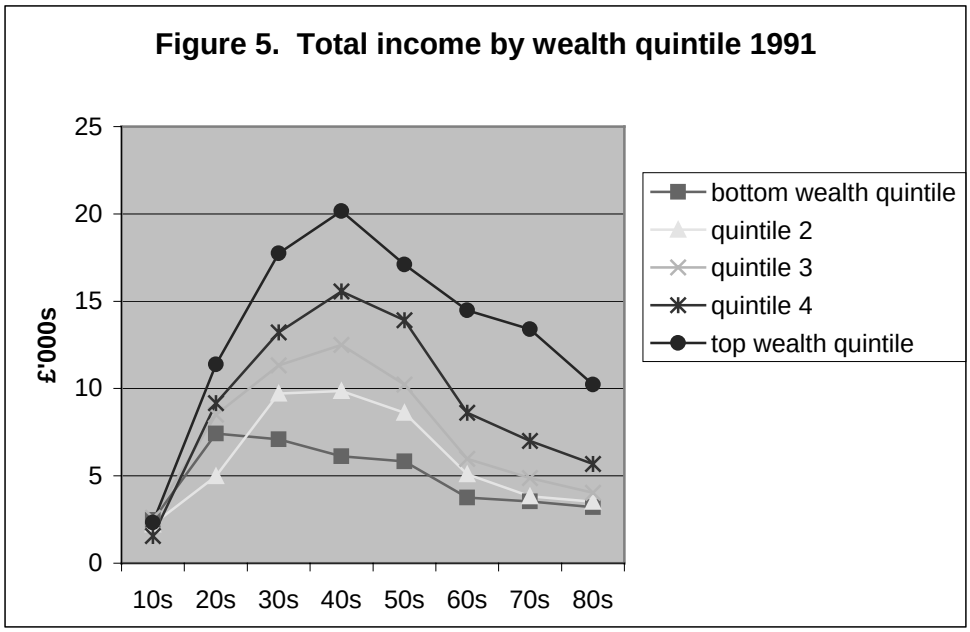


contrasting pictures of the distribution of income that we get from the two prospective indicators of social position. These in fact follow directly from the evidence in the previous section on the distribution of income sources at different life stages Figure 4 plots the mean of total income from all sources against the human capital quintiles for each age group. Exactly as we would expect, dispersion in income according to earning capacity increases to a maximum in the middle of the working life, and then diminishes effectively to zero towards the end of the life—exactly as does the earning capacity. By contrast, we see in Figure 5 that the wealth quintiles are considerably less useful for distinguishing income levels for the first half of the life-course, but, beyond the 50s age group, provide a clearly better basis for distinguishing income levels. As we saw in Figure 3, the poorest 40% of the population aged 70+ in 1991 had effectively no wealth whatsoever; for this group, wealth must necessarily fail as a predictor of income just as human capital did.

An important observation to draw from this pair of plots, is that for a substantial part of the lifecourse, *both* indicators have some predictive purchase—over income of course (this is circular), but also (demonstrated in SPLC papers currently under preparation) over



other indicators of well-being such as subjected poverty, psychological wellbeing and overall life-satisfaction. We will return to consider the joint distribution of wealth and human capital in the final section of the paper.



5 Modelling wealth

There are two distinct ways that we might expect to be able to explain levels of wealth.

The first sees financial assets as accumulating as a result of lifetime savings patterns. The accepted framework for thinking about this process involves lifecycle models of the sort associated with Franco Modigliani in which people attempt to smooth consumption, to some degree, throughout the lifecourse. Different versions of such models might involve maintaining constant consumption utility through the lifecourse, which implies a very high rate of saving in the middle of the working life, followed by a decline in savings rates through the second part of the working life (coinciding with the decline in earnings capacity). Alternatively individuals might adopt a constant or habitual rate of saving through the work life, implying in effect an arbitrary and varying degree of lag in consumption. Or, reflecting strongly diminishing marginal utility of consumption combined with a low time discount rate, they might adopt a rate of saving which increases more than proportionally with income. Or, having a high marginal utility of current consumption combined with a high time discount rate, their savings might rise less than proportionally with increasing income levels. Any of these are possible and indeed logically consistent, and presumably all, and many others between, are to be found somewhere within the population, but it is certainly not our current concern here to seek to distinguish between these. All we need to observe for the moment is that all of these will imply some form of positive functional association between lifetime earnings and wealth.

A second line of argument concerns the inheritance of wealth. Parents are of course the main source of inherited wealth. But unfortunately we have only very limited information about parents' wealth available to us, either in the panel survey data or anywhere else. However, the arguments set out in the previous section suggest current human capital may reflect parental wealth to some degree (through its affect on educational outcomes and the formation of economically salient social capital). So, to the extent that wealth accumulates from mechanisms other than saving-from-income, we would expect to see some positive

association of human capital with current wealth over-and-above the effect of lifetime earnings-to-date. There is also a somewhat less indirect approach: we know a little about parents' occupational attainment, from which we can infer a degree of somewhat more direct information about their human capital, which will in turn be associated with their wealth. So we also expect to find some impact of parents' human capital over and above the earnings record and current human capital.

Table 3 sets out some alternative empirical models explaining wealth in wave 1 of the BHPS. (In these models, the dependent variable is a logged wealth estimate – an attempt to transform the very high levels of wealth of the richest part of the sample, noted in the previous section, to something more like a normal distribution.) Model 1 establishes the basic inverted-U life-stage pattern of income, with a positive age terms establishing the initial upwards gradient, and the negative age-squared term producing the subsequent small decline of wealth in old age. Model 2 illustrates the very simplest sort of lifetime earnings hypothesis, simply that there is a substantial and positive association between lifetime earnings and wealth (Stewart 2001 provides a much more sophisticated model also using BHPS data). Of course the BHPS does not itself contain lifetime earnings data. But it does contain good information on individuals' lifetime employment record, including both employment status (fte/pt/unemp/nonemp) as well as quite detailed occupational classifications, both recorded in detail to a monthly level through the working life. Stewart combines these records with New Earnings Survey data to simulate lifecourse earnings totals. In an analogous analysis I have combined the employment status, and BHPS wave 1 working hours data with human capital estimates for each year of the working life, to produce not-dissimilar results. Model 2 shows that the variables for lifetime earnings and number of years in the labour force do on their own explain some 30% of all the variation in log wealth, and model 3 it makes plain that some of this explained variation is independent of the lifecycle pattern (compare the 28% of the variation associated with the life-stage and gender variables alone, to the 33% of the variance explained when lifetime earnings variables are added to the equation).

Table 3. Modeling log wealth 1991
(** P<.005 * P<.05)

	model 1	Model 2	model 3	model 4	Model 5
MultR	0.53	0.55	0.57	0.58	0.59
AdjuR Square	0.28	0.30	0.33	0.33	0.35
woman	-0.39 **		0.32 **	-0.17 **	0.29 **
Age in 1991	0.18 **		0.28 **	0.14 **	0.29 **
Age in 1991 squared	-0.14 **		-0.19 **	-0.10 **	-0.20 **
Total earnings/1000		3.13 **	2.85 **		2.01 **
earnings**2/1000000		-0.79 **	-0.03		-0.17
Years in labour force		-.37 **	-.90 **		-.71 **
Human capital in 1991				0.20 **	0.32 **
Age*human capital/100				-0.63 *	-1.11 **
Age*humcap**2/10000 0				9.88 **	11.64 **
Father's human capital				0.06 **	0.06 **
Mother's human capital				0.01	0.01
(Constant)	-2.02 **	0.81 **	-5.00 **	-2.89 **	-6.45 **

Model 4 includes parents' human capital as the only available direct proxy for their wealth, in addition to the respondents' own human capital, included on the previous argument that this will include some the effect of parents resources over and above what is captured in lifetime earnings. This produces a similar margin of explanation over the lifecycle variables to that of the lifetime earnings in model 2. And finally Model 5 adds both the lifetime earnings and the parents indicators, to produce a further small margin of explanation.

Human capital is however not a particularly *good* measure of the previous generation's wealth. And we do have a little more information about parents' wealth than is used in their human capital estimates; we know, for example, their status as proprietors of large or small business establishments—this data was collected to allow us to classify them into the Goldthorpe Social Class categories. And so the Goldthorpe classification itself is helpful here insofar as is it serves explicitly (and irrespective of its current theoretical justification) as an indicator of wealth status (particularly through its indication of ownership of business and farm assets). Adding-in a set of dummy variables indicating parents' Goldthorpe class to Model 5 (model not included in Table 3) increases the 35% of explained variation in log wealth to 37%; the contribution of the father's human capital to the model becomes, as a result, statistically insignificant, but the effect of the respondent's human capital remains significant at the .005 level.

6 Modeling change in wealth

So far, in the modelling of wealth, we have used the panel data only cross-sectionally. We have seen that there is some statistical association between current wealth, and both lifetime earnings and parents' resources (though we cannot know whether the effective element in the latter case is wealth or human capital transmission via one of the mechanisms outlined above). We can get perhaps a little closer to an answer by moving to a more dynamic form of analysis; we turn now to modeling change in wealth.

Table 4 Change in wealth 1991-1999 by human capital and wealth quintiles

(wealth change in £'000s)

Wealth change by 1991 wealth quintile

	teens	20s	30s	40s	50s	60s	70s	80s
Bottom wealth q'tile	5.2	11.9	8.2	12.7	10.7	8.2	5.0	2.0
2	2.6	8.8	8.7	12.3	30.1	12.8	2.1	2.2
3	4.9	11.1	10.9	12.1	48.9	14.3	3.7	10.8
4	3.1	9.7	7.9	22.5	53.0	20.2	-3.4	1.7
Top wealth q'tile	7.6	11.9	16.4	30.3	23.0	5.2	-3.6	-47.9

wealth change by 1991 human capital quintile

	teens	20s	30s	40s	50s	60s	70s	80s
Bottom humcap q'tile	2.2	4.5	4.0	3.1	-2.1	-4.2	-9.6	-12.1
2	2.3	8.1	2.3	8.0	29.4	8.3	-12.2	-3.1
3	4.5	10.7	6.6	14.5	25.4	3.5	2.8	-12.1
4	7.0	11.0	12.4	25.6	27.2	8.0	0.0	-0.2
Top humcap q'tile	5.7	19.4	26.6	38.4	82.7	40.7	15.8	-1.2

The first and simplest approach is simply to examine change in wealth, over the life of nhe BHPS, against the two indicators of personal resources, as in Table 4. It is quite clear from this table that, for the core years of capital accumulation (ages 20 to 69) and the top end of the wealth distribution at least, human capital levels are a much better basis for understanding the

dynamics of wealth formation, than are previous levels of wealth. For those people who were in their thirties in 1991, for example, people in the bottom wealth quintile on average increased their wealth by £8000 through the 1990s, while those in the top wealth quintile increased their wealth by £16000 over the period—a twofold difference between the poorest and the richest group. By contrast, for the same age group, those in the lowest human capital quintile increased their wealth by and average of £4000, while those in the highest quintile increased their wealth by £27000—a nearly sevenfold difference. Similarly for those in their 40s, the two extreme wealth quintile groups show a two-and-a-half-fold difference in wealth increase, while the extreme human capital groups show a more than seven-fold contrast. The advantage of human capital over prior wealth as an explanator of wealth change is even larger for those in their 50s in 1991. This last observation is largely to be explained by the treatment of pensions in the wealth estimates: those with high levels of human capital are disproportionately likely to have good occupational pensions that start at some point in their 50s or 60s—but given that the underlying pension *rights* will in fact have been building up continuously throughout the working life, this same effect would emerge in more conventional wealth estimates as a somewhat smoother build-up of wealth throughout the working life, in effect adding to the explanatory advantage of human capital over prior wealth in those years.

Table 5: Proportion of quintile groups showing increased wealth during the 1990s

	20s	30s	40s	50s	60s	70s	80s
by wealth quintile							
lowest	.58	.37	.35	.39	.22	.14	.12
2	.47	.60	.53	.58	.42	.29	.16
3	.64	.46	.57	.64	.41	.21	.09
4	.61	.51	.54	.56	.43	.20	.13
highest	.50	.51	.51	.48	.44	.39	.02
by human capital quintile							
lowest	.32	.35	.36	.32	.23	.14	.14
2	.51	.39	.45	.50	.35	.17	.10
3	.65	.49	.49	.57	.36	.20	.02
4	.63	.61	.54	.56	.34	.32	.18
highest	.70	.62	.65	.69	.64	.39	.12

Now, it would still be possible to interpret these results as indicating a process of inheritance, along the lines of the previous argument concerning the association of parents' wealth with their children's human capital. In this extension of the argument, it would be argued that

those with high levels of human capital would be more like to have rich parents, and hence to inherit financial (or housing) wealth; the differentials between the wealth and human capital effects in Table 4 might, in principle, be caused by people in the highest human capital quintiles inheriting substantial amounts of wealth. Table 5 however, which shows the proportion in each quintile who have any positive change in their wealth over the panel period, casts some considerable doubt on this proposition. The differential between the wealth and the human capital effects persists, and the highest human capital quintile shows large proportions of members of the highest human capital quintiles *in each of the age groups* increasing their wealth over the 1990s. Even without looking at the direct evidence on inheritance collected annually in the BHPS, we can say that it is hardly likely that 60-70% of those with the highest earning capacity inherited substantial sums from their parents in *every* decade of their ages from their 20s to their 60s. (This analysis could be usefully extended by looking at the direct evidence on inheritance from the BHPS.)

Table 6: Explaining wave 9 wealth (logged)

(** P<.005 * P<.05)

Models	1	2	3	4	5	6	7
MultR	0.581	0.632	0.638	0.652	.659	0.684	0.687
AdjuR Square	0.338	0.399	0.406	0.425	.434	0.466	0.471
Log wealth at wave 1	0.621 **	0.651 **	0.589 **	0.605 **	.608 **	0.577 **	0.543 **
WOMAN		0.038	0.043	0.208 **	.193 **	0.236 **	0.232 **
Age in 1991		0.084 **	0.069 **	0.117 **	.128 **	0.035 **	0.028 *
Age in 1991 squared/100		-0.104 **	-0.086 **	-0.138 **	-.143 **	-0.067 **	-0.055 **
Wealth*age/100000			29.282 **				25.087 **
Wealth*age squared/100000			-0.393 **				-0.354 **
Human capital at wave 1				0.555 **	.544 **	0.402 **	0.428 **
Human capital*age/100				-2.419 **	-2.255 **	-1.532 **	-1.632 **
Human capital*age squared/100000				29.932 **	25.152 **	15.594 **	16.141 **
Change in humcap 1991-9/100					-6.055 **	-5.339 **	-5.212 **
Change in humcap squared/100					1.407 **	1.334 **	1.301 **
Father's human capital score						2.175 **	2.224 **
Average lifecourse earnings/1000						0.145 **	0.158 **
Number of years in labour force						.408 **	.408 **
(Constant)	0.781 **	-0.558 **	-0.288 *	-2.034 **	-2.312 **	-0.819 **	-0.819 **

The formal modelling of change starts with the observation that, given all we know about the tendency of wealth to reproduce itself over time, altogether the best predictor of wealth is likely to be previous wealth. So Model 1 in Table 6 shows us that 34% of the variance in log

wealth in 1999, is explained by log wealth in 1991. (Since both the independent and the dependent variables are logged, the coefficient here, and in all the subsequent models of this sort are what economists think of as "elasticities".) Model 2 adds the additional demographics to provide the inverted-U life-course structure. We know from the first panel of Table 4 that, in addition to the influence of previous levels of wealth, there is also an interaction between previous wealth and age—previous wealth has a strongly positive effect on subsequent wealth change for people in their 40s, and a negative for people in their 80s. So model 3 adds the requisite interaction terms to account for this; so far, 41% of the variance in 1991 wealth is accounted for.

The next three models exclude the wealth/age interactions, and focus instead on the effects of human capital. Model 4 which adds human capital to the base of model 2, improves the variance explanation by 2.5% above the base; Model 5, which adds the change in human capital between 1991 and 1999 has a level of explanation 3.5% above the base; model 6 which includes lifetime earnings and parents' human capital has an extra 6.7%, and the final model gives a small further increment when we include again the wealth/age interaction, bringing the variance explanation to a total of 47%.

Now, it may not be immediately apparent that Table 5, which explicitly models the *level of wealth* in 1999, is also in effect a model of *change in wealth* between 1991 and 1999. Consider:

Eq. 1) $Wt_1 = a_0Wt_0 + a_1Y_1 + a_2Y_2$…..

Eq. 2) $Wt_1-Wt_0 = (a_0-1)Wt_0 + a_1Y_1 + a_2Y_2$…….

The two equations are closely equivalent. Equation 1 represents the various models of wealth in 1999 (Wt_1) in Table 5. Equation 2 simply subtracts wealth in 1991 (Wt_0) from both sides of the previous equation. The elasticity term with respect to change in wealth is 1 minus the elasticity term with respect to wealth. And all the other coefficients are unchanged—hence the similarity between the final model in Table 6, and its equivalent in Table 5. Here we see clearly the dominating importance of human capital (and change in human capital), as originally suggested by Table 3, in determining change in wealth. The basic picture of the elasticity of change in wealth to previous wealth is given in model 1, which explains 16% of

the variation in wealth change. The full model which includes the various human capital-related coefficients, explains 33% of the variance in change in wealth over the perioid.

Table 6 Change in wealth wave 1 - wave 9

(** P<.005 * P<.05)

	Wealth change 1991-9					**Note** level of wealth 1999
Models	1	2	3	4	5	
MultR	0.400	0.375	0.488	0.497	0.574	0.687
AdjuR Square	0.160	0.140	0.238	0.246	0.329	0.471
Log wealth at wave 1	-0.379 **		-0.349 **	-0.411 **	-0.457 **	0.543 **
WOMAN		0.172 **	0.038	0.043	0.232 **	0.232 **
Age in 1991		0.019 **	0.084 **	0.069 **	0.028 *	0.028 *
Age in 1991 squared/100		-0.053 **	-0.104 **	-0.086 **	-0.055 **	-0.055 **
Wealth*age/100000				29.282 **	25.087 **	25.087 **
Wealth*age squared/100000				-0.393 **	-0.354 **	-0.354 **
Human capital at wave 1					0.428 **	0.428 **
Human capital*age/100					-1.632 **	-1.632 **
Human capital*age squared/100000					16.141 **	16.141 **
Change in humcap 1991-9/100					-5.212 **	-5.212 **
Change in humcap squared/100					1.301 **	1.301 **
Father's human capital score					2.224 **	2.224 **
Average lifecourse earnings/1000					0.158 **	0.158 **
Number of years in labour force					.408 **	.408 **
(Constant)	0.781 **	.282 *	-0.558 **	-0.288 **	-0.819 **	-0.819 **

7 Conclusions and Implications

The first sections of the paper set out arguments that would lead us to expect human capital and wealth to be correlated, since:

(1) each may be, with various degrees of difficulty and delay, be transformed in to the other,

(2) while work-skills may be very useful for generating income during the first part of the adult life, its usefulness must diminish, and wealth (in the special sense the word is used here) is indispensable during the last part of the life, so that

(3) it is sensible to build up human capital at appropriate stages in the life course, and convert income that derives from it into wealth for the later part of life.

Section 3 of the paper also sets out reasons for thinking that the accumulation of human capital is the main means through which wealth may be increased.

The results of the subsequent empirical discussions, based on evidence from the BHPS, are consistent with these arguments:

(4) the distribution of human capital produces a maximum dispersion for people aged in their mid 40s, whereas the distribution of wealth produces a maximum dispersion for people in their 60s and 70s, and

(5) the largest part of the change in wealth is associated with high levels of, and increases in, human capital.

The next task, within the SPLC project, is to consider how human capital and wealth may combined to produce an appropriate indicator (or alternatively set of indicators) of social position.

Table 7: Joint distribution of wealth and human capital quintiles
UK 1991

	1991 wealth quintiles					
	lowest	**second**	**third**	**fourth**	**highest**	
1991 human capital quintiles						
lowest	7	5	3	3	2	*20*
second	5	4	4	4	3	*20*
third	4	4	5	4	3	*20*
fourth	3	4	4	4	4	*20*
highest	2	2	4	5	7	*20*
	20	*20*	*20*	*20*	*20*	*100*

Table 7 illustrates the joint distribution of wealth and work skills. These are, as we have seen, correlated, but not strongly so. Section 6 demonstrated that it is possible to construct sensible models that show the changing relationship between wealth and human capital through the life-course, and in particular that there is a substantial causal link from human capital accumulation to wealth accumulation. But does this give a *complete* priority to human capital as an indicator of social position? Is there an underlying single "class" variable related

to individual's economically salient skills that can be used as an unique "driver" to explain of life-outcomes (as was suggested in the previous paper in this series)? To answer these questions, we must move on examine the relationship between these personal resources, and life outcomes—income, consumption, life-satisfactions, and ultimately life-expectancy.

References

Atkinson AB and F Bourguignon **Handbook of Income Distribution**, Amsterdam: Elsevier 2000

Atkinson AB and AJ Harrison **The Distribution of Personal Wealth in Britain**, Cambridge: CUP 1978

Banks Blundell and Smith 2001

Baeckgaard A "The Distribution of Househ0old Wealth in Australia: New Estimates for 1986 and 1993" (mimeo) National Centre for Social and Economic Modeling, University of Canberra 1997

Beck U **The Risk society ; towards a new modernity** (tr.Mark Ritter) London : Sage Publications, 1992

Becker GS, "A Theory of the Allocation of Time" ***Economic Journal*** *75: 493-517, 1965*

Bourdieu P **Distinctio**n London: RKP 1986

Davis JB and AF Shorrocks "The Distribution of Wealth" Chapter 11, Atkinson and Bourguignon (2000)

Dilnot A "The Distribution of Personal Wealth in Australia" **Australian Economic Review** 1 pp 33-40, 1990

Fitzgerald FS **The Great Gatsby** London : Penguin, 2000.

Gershuny JI "Social Position from Narrative Data" in R Crompton, F Devine, M Savage and J Scott (eds) **Renewing Class Analysis** (Sociological Review Monograph)) Oxford: Blackwell 2000

Gershuny JI, 2001 "Social Structure and Life Chances" ISER **Working Paper 2001—21** Colchester: University of Essex.

Gershuny JI, 2002a “A New Measure of Social Position: Social Mobility and Human Capital in Britain” ISER **Working Paper 2002—2** Colchester: University of Essex

Gershuny JI, 2002b “Beating the odds (1): Intergenerational Social Mobility from a Human Capital Perspective." ISER **Working Paper 2002—17** Colchester: University of Essex

Gershuny JI, 2002c " Beating the odds (2): a new index of intergenerational social mobility.” ISER **Working Paper 2002—18** Colchester: University of Essex

Giddens A **Runaway world : how globalisation is reshaping our lives** London : Profile, 1999

Hamnett C “Home ownership and the Middle Classes” in T Butler and M Savage (eds) **Social Change and the Middle Classes** London: University College Press 1995

Mann T **Buddenbrooks : Verfall einer Familie** Frankfurt am Main : Fischer Bücherei, 1960

Mitchell OS, JM Poterba, M Warshawsky and JR Brown “New Evidence on the Money’s Worth of individual Annuities” **American Economic Review**, 89, pp 1299-1318, 1999

Stewart MB “Asset Accumulation and the Impact of Working Life Factors on Pensioner Poverty” (mimeo) University of Warwick 2001

Veblen T **The Theory of the Leisure Class** London: George Allen and Unwin Ld 1925

Wodehouse PG **Right Ho, Jeeves** London: H. Jenkins, 1934