The effect of parental wealth on children's outcomes in early adulthood

Eleni Karagiannaki*

Contents

CASE/164
August 2012

Centre for Analysis of Social Exclusion
London School of Economics
Houghton Street
London WC2A 2AE
CASE enquiries – tel: 020 7955 6679

Centre for Analysis of Social Exclusion

The Centre for the Analysis of Social Exclusion (CASE) is a multi-disciplinary research centre based at the London School of Economics and Political Science (LSE), within the Suntory and Toyota International Centres for Economics and Related Disciplines (STICERD). Our focus is on exploration of different dimensions of social disadvantage, particularly from longitudinal and neighbourhood perspectives, and examination of the impact of public policy.

In addition to our discussion paper series (CASEpapers), we produce occasional summaries of our research in CASEbriefs, and reports from various conferences and activities in CASEreports. All these publications are available to download free from our website. Limited printed copies are available on request.

For further information on the work of the Centre, please contact the Centre Manager, Jane Dickson, on:

Telephone: UK+20 7955 6679
Fax: UK+20 7955 6951
Email: j.dickson@lse.ac.uk
Web site: http://sticerd.lse.ac.uk/case

Editorial Note and Acknowledgements

Eleni Karagiannaki is a Research Officer in CASE, at the London School of Economics (email e.karagiannaki@lse.ac.uk). Data were made available by the UK Data Archive. Financial support from the Nuffield Foundation and the Growing Inequalities' Impacts (GINI) research project funded under the EU Socio-Economic Sciences and Humanities theme 7th Framework Programme is gratefully acknowledged. The author is also grateful to Tom Sefton for the calculation of housing wealth data in the British Household Panel Survey. Also the author would like to thank John Hills, Frank Cowell, Howard Glennerster, Abigail McKnight, Tom Sefton, Tania Burchardt and Francesca Bastagli for useful comments and suggestions. All errors and ambiguities are the author's responsibility.

Abstract

This paper presents the first UK estimates of the association between parental wealth during adolescence and a range of children's outcomes in early adulthood. Parental wealth is positively associated with all outcomes examined (which include educational attainment, employment, earnings and homeownership). The estimated associations are found to operate over and above parental education and income and in many cases are stronger than them. For labour market outcomes a small share of the association reflects the indirect effect of parental wealth on children's education whereas for homeownership the estimated association appear to mainly reflect the effect of parental wealth transfers. Further analysis by wealth component shows that degree attainment is more strongly associated with housing wealth than financial wealth. However, important effects are also estimated for financial wealth indicating the existence of financial constraints for low wealth-financial indebted households. For homeownership and earnings the estimated association are stronger for financial wealth.

JEL: D1, D3, I21, J62, J31
Keywords: wealth, intergenerational transmission, educational attainment

1. Introduction

Wealth is one of the most critical components of well-being and can be considered as a more accurate indicator of the longer term economic resources of the family and family's access to opportunities and advantages (Oliver and Shapiro, 1995). Despite its potential implications for the intergenerational transmission of inequality there is little empirical evidence on the role that parental wealth plays in determining children's outcomes. Most of the existing research that examines this issue has been conducted using US data and mainly focused in understanding the linkages between parental wealth and children's education. In the UK – as in most countries other than the US – data limitations have hindered the analysis of the relationship between parental wealth and children's outcomes. This paper exploits the panel dimension of the British Household Panel Survey to provide the first UK estimates of the relationship between parental wealth during adolescence years and a range of children's outcomes in early adulthood. Outcomes in three main areas are examined: education (higher education attainment); employment (employment probability and earnings); and wealth accumulation (homeownership). Parental wealth can have strong effects on each of these outcomes through a variety of channels.

First, consider educational attainment. Parental wealth can have important effects both on early schooling achievement and later on school leaving qualifications over and above income by allowing parents to live in more expensive areas with high performing schools or to fund private education (either in the form of private schooling or in the form of top up tuition for children educated in the state sector) and other education-enhancing activities and goods (e.g. music lessons, sporting and cultural activities, computers, books, trips etc.).[1] Beyond compulsory schooling parental wealth may help families to fund further or higher education (funding for example fees, subsistence expenses, housing) or allow the student to devote their time to study rather than take on term-time employment. Clearly the importance of parental wealth for higher education attainment depends on the existence of credit constraints.[2] However even in the absence of credit constraints children from low wealth families may be less willing to borrow than children from high wealth families. Beyond these purely financial considerations parental wealth may affect the academic achievement of a child through its impact on parents' and children's aspirations and expectations and by extension on academic achievement of the children.

Since education is one of the most important determinants of labour market outcomes any positive effects that parental wealth may have on children's education may translate into labour market advantage. Beyond these indirect effects there may be additional labour market advantage from parental wealth. For example, wealth can

1 See Gibbons and Machin (2003) and (2006) for evidence on the relationship between school and neighbourhood quality and house prices.

2 There is a large debate in the literature on the importance of credit constraints on higher education participation. Several studies argue that credit constraints are relatively unimportant (Cameron and Heckman, 1998; Carneiro and Heckman, 2002; Cameron and Taber, 2004)) while others argue for the opposite (Krueger, 2004).

allow people to sustain longer and more costly job search strategies which could result in better job matches, ensuring both more secure employment and higher wages. Alternatively wealth may allow access to better jobs through connections and social networks or may provide the necessary capital for business start-up influencing children's self-employment prospects. Moreover parental wealth can be used to fund training or other employment enhancing activities or may allow people to pursue riskier career paths which can lead to higher earnings. More secure employment and better jobs may in turn translate to higher wages.

Children's wealth accumulation may also exhibit a strong correlation with parental wealth (Charles and Hurst, 2003). This correlation may arise either indirectly through its impact on human capital investments and earnings or directly through parental wealth transfers (either in the form of inheritance or inter vivos transfers). The intergenerational correlation in saving propensities and in the propensity of owning particular types of assets (i.e. house, financial assets with varying degree of riskiness and their relative weight in their wealth portfolio) may also have important effects on the relationship between parental wealth and their children's wealth accumulation.

In this paper we examine the association between parental wealth when children were teenagers and various children's outcomes within the three main areas outlined above. We first focus on the relationship between parental wealth and educational attainment looking in particular at the association between parental wealth and the probability of achieving degree (or higher) qualifications. Our analysis is intended to provide estimates of the strength of the association (netting out the effects of parental education and income) and to compare it to those derived in terms of parental income and education. Then we move to examine the association between parental wealth and employment outcomes (labour force participation and earnings). In addition to estimating the overall association between parental wealth and labour force participation and earnings (net of the effect of parental income and education) we also seek to uncover the channels through which the effects operate. We do so by decomposing the overall effect of parental wealth into its direct effects and indirect effects (i.e. those are mediated through parental educational investments). In the final section of the analysis, we consider the association between parental wealth and children's early homeownership status. Again we decompose the overall association into its indirect and direct components. The former would capture the contribution of parental investments in their children's human capital and subsequent returns to labour force participation while the latter would capture the effect of direct parental transfers for house purchase. In common with other descriptive studies of this type a caveat with our analysis is that the influence attributed to parental wealth may at least in part reflect the effect of unmeasured variables that are correlated with parental wealth and children's outcomes. In investigating the relationship between parental wealth and homeownership status we are able to give a causal interpretation in the estimated effects by looking directly at the association between parental wealth and an estimate of parental wealth transfers. For all the outcomes, in addition to documenting the effect of total net worth, we address whether different types of wealth (housing vs. financial wealth) affect different outcomes in different ways. In doing so we attempt to provide evidence on the relative importance of different mechanisms linking parental wealth and children's outcomes (although we are unable give a definite causal interpretation on the estimated effects). Our working assumption is that the

effect of housing wealth, which is more illiquid, would reflect more closely the long term effect of family background while the effect of financial wealth, which is more liquid, would capture the financial aspects of the associations and their impact on the immediate well-being of the family and its members.

2. Data and methodology

The sample used in this paper is drawn from the British Household Panel Survey (BHPS) an annual survey consisting of a nationally representative sample of approximately 5,500 households containing a total of over 10,000 individuals who were first interviewed in autumn 1991.[3] The BHPS follows all adults from the original sample in successive waves even when they split-off from original households to form new ones. In the latter case all adult members of new households are also interviewed. Children in sample households become full sample members as they reach age 16. In addition to rich data on a range of socio-economic characteristics of each household member the BHPS collects annual information on the value of housing assets owned by the respondents and the value of any outstanding mortgages on these assets (both for primary residence and investment real estate). In addition in waves 5, 10 and 15 the BHPS collected detailed information on respondents' financial assets and liabilities. Using information on financial assets and liabilities from these three waves along with information on housing assets and debt we can construct a measure of total household net worth for 1995, 2000 and 2005 (defined as the sum of net financial and net housing wealth).[4] The measure of parental wealth that we use is total parental net worth in 1995 (excluding assets and liabilities held by other household members except from the parents).

Our estimation sample is restricted to children aged 12-18 with non-missing parental wealth in 1995 who were observed when they were 25 years old. Overall among the 1,149 children aged between 12 and 18 years old in 1995 (i.e. when asset-holding data were first recorded by the BHPS), 1,091 were living with their parents (natural, adoptive or step-parents), 936 had non-missing data on parental wealth and 492 gave full interviews when they were 25 years old. This is our main estimation sample.[5] The severe reduction of the sample raises the issues of small sample size and the potential lack of representativeness of the data. However, comparisons of parental characteristics suggest that non-random attrition does not seem to be a major problem – at least in terms of representativeness of parental characteristics.[6]

---

3 Note that since 1997, there have been a number of non-representative *booster samples* added to the *BHPS* sample. These samples are not used in our analysis.

4 Karagiannaki (2011) provides details about the construction of financial and housing wealth variables in BHPS.

5 Sample size is reduced slightly in the various specifications due to missing data on various outcomes or covariates.

6 Parental wealth appears to be slightly higher for our sample than that of total sample of children aged 12-18 in 1995 with non-missing parental wealth in 1995. Also our sample has slightly more educated parents than the total sample.

For this sample we estimated a series of different models which relate socio-economic outcomes (as measured by educational attainment, labour force participation, earnings and homeownership status) to parental wealth in 1995. The general formulation of our models relates outcome Yi for a child who grew in a family i to parental wealth Wi (measured as the total net worth of the parents in wave 5 adjusted to 2005 prices using the retail price index):

$$Y_i = X_i\beta + \alpha W_i + \varepsilon_i \quad (1)$$

In equation (1) X_i is a vector which controls for child's and parent's characteristics and ε_i is an error term that includes omitted determinants of *Y*. We estimate four different models, one for each outcome variable (educational attainment, employment status, earnings and homeownership status). As mentioned above all outcomes of interest are measured at age 25. Our central interest in all models is in the estimate of α i.e. the coefficient on parental wealth. For each outcome we consider various functional forms for the parental wealth variable. The results presented in the paper are based on the preferred specification for each of the outcomes (based on various tests of goodness of fit, including R^2, the Akaike and Bayesian Information Criterion). Other parental characteristics we condition upon include the logarithm of parental income (averaged over three waves when our sample members were aged 13-15 years old for as many waves available), separate controls for maternal and paternal education as well as a dummy variable indicating whether parental household was a single parent household in 1995. We also include a dummy variable for missing information on paternal education (to avoid dropping those observations and hence introducing potential non-randomness in the analysis). Children whose mother was not observed in the panel (17 observations) or with missing information on mother's education (8 observations) were excluded from all regression analyses due to small sample sizes. In all our models we include a variable indicating respondents' gender to control for average differences between men and women as sample size is too small for a disaggregated gendered analysis. Other individual characteristics we condition on include marital status and in certain outcomes and specifications education and income (in logarithm form). More detailed account of the methodology and the specifications we employ for each specific outcome are discussed in turn in each of the subsequent sections.

In addition to exploring the overall effect of parental wealth on children's outcomes we also address the question of whether different types of wealth influence children's outcomes in different ways. Since different types of assets have a varying degree of liquidity we hypothesize that their contribution to observed outcomes may be different. Assets that are more liquid (such as saving accounts, stocks, bonds etc.) can more easily be used for a family's immediate well-being compared to more illiquid types of assets (such as housing). Housing assets on the other hand, may reflect more closely the longer term effects of family background and in the particular case of educational attainment the effect of parental housing choices (through their association with neighbourhood and school quality) on the early educational attainment of their children. In our analysis we examine the relative effects of net financial and net housing wealth to determine whether they have any differential effect. In investigating the association between wealth and degree attainment we hypothesize that financial wealth would capture more closely the effects of short-run financial constraints on post-secondary educational choices while housing wealth

would reflect the longer term cumulative effect of family background on the educational attainment of their children including the effect of parental housing choices. We have no a priori expectations as to whether financial or housing wealth would have a differential impact on labour force and earnings. For housing wealth accumulation (in the form of early home-ownership) we hypothesize that if the association between parental wealth and children's homeownership status is driven by parental wealth transfers (such as help with deposits) then financial wealth would have a stronger association with homeownership probability than housing wealth. Conversely if longer term family characteristics and unobserved factors are driving this correlation (such as similarities in saving patterns and in the preferences of holding particular types of assets) we would expect housing wealth to have a stronger impact.[7]

3. Results

Table 1 provides descriptive statistics for all the variables used in our analysis. As can be seen from this table at age 25 about 26 per cent of the sample report first or higher degrees as their highest educational qualifications, around 43 per cent report one or more A-levels or further qualifications and a further 20 per cent report GCSEs or lower qualifications. Around 80 per cent are in work (76 per cent employed and 3 per cent self-employed), slightly below 7 per cent are unemployed and another 8 per cent caring for family. A further 3 per cent are long term sick and 3 per cent in full time education. Given the young age of our sample, their homeownership rate stands at only 27 per cent. Regarding parental characteristics, the statistics in Table 1 show that around 25 per cent of the mothers of our sample members have no qualifications, slightly over 30 per cent have A-level or further educational qualifications and a further 8 per cent degree qualifications. A lower proportion of fathers have no qualifications and a higher proportion held A-levels or higher qualifications. The mean value of parental wealth in 1995 was about £77,000 and the median around £46,000. The average gross annual parental income when the child was aged 13-15 was about £33,000 and the median £29,000 (all values expressed in 2005 prices).

Table 2 shows the distribution of various outcomes by parental wealth quartiles. For educational attainment the statistics of the table show a threefold rise in the probability of degree level attainment between the bottom and second lowest parental quartile group and a further threefold increase in the same probability between the second lowest and the top wealth group. Comparing the top and the bottom wealth groups there is a gap in average earnings of around 20 per cent and a difference in employment probability (either in employment or self-employment) of around 22 percentage points (with the employment disadvantage concentrated in the lowest wealth group). As it becomes clear looking at the distribution of the remaining labour market status categories the difference in employment rates between the lower and the other wealth groups arises mainly from the relatively high proportion of people in the

[7] It is noteworthy that if housing asset rich parents can re-mortgage and transfer funds to their children in order to help them enter homeownership the effects of the two variable might not be distinguishable.

bottom wealth group who are long term sick or in family care. The homeownership probability also increases with parental wealth but again in a non-linear way, increasing steadily between the bottom and second higher quartile group and then falling slightly for the top wealth group.

Given that there are many factors that intervene in the processes that determine the relationship between parental wealth and subsequent children's outcomes, and in order to compare the effects with those of parental income and education, we next estimate a series of multivariate models in order to estimate the association between parental wealth and children's outcomes netting out the impact of other intervening factors. The models we estimate are based on variants of the model which is specified in equation (1). The results for each of the outcomes and the specifications used to estimate the effects of parental wealth on each outcome of interest are discussed in turn.

3.1 The effect of parental income on educational attainment

Parental investments in their children's human capital constitute one of the most important channels for the intergenerational transmission of economic status. An extensive body of research has examined the impact of parental resources such as income, education and social class on children's educational attainment and has shown that each of these are important determinants of children's educational attainment (even controlling for differences in cognitive abilities measured early in childhood and intergenerational correlation in ability), with the effect of parental education (and especially maternal education) identified as more important than the effect of parental income and the effect of permanent parental income more important than the effect of current income (see for example Carneiro and Heckman, 2003; Cameron and Heckman, 1998).[8] Despite its fundamental role in models of parental investments in children's human capital (Becker and Tomes, 1986), research on the role of parental wealth on children education is in relatively early stages. The few studies that looked into this issue have used predominantly US data (Conley, 2001; Loke and Sacco, 2010; Zhan and Sherraden, 2003; Orr, 2003; Williams Shanks, 2007; Yeung and Conley, 2008; Zhan, 2006; Lovenheim, 2011).[9] All these studies document strong associations between parental wealth and children's educational attainment and stress its importance as an additional mechanism in the process of the intergenerational transmission.

Using longitudinal data drawn from the BHPS in this section we provide estimates of the relationship between parental wealth during children's adolescence to their educational attainment in early adulthood. More specifically, our focus is on the association between parental wealth and the probability of achieving first or higher

---

8 Other studies examining the relationship between parental income and education and children's education include among others Ermisch and Francesconni (2001), Chevalier et al., (2005), Chevalier and Lanot (2002) and Chevalier (2004).

9 Exceptions of studies which provides evidence for countries other than the US include Pfeffer (2011) who conducted a comparative study of parental wealth association in Germany and the US and Torche and Spilerman (2006, 2009) who examined the association in Chile and Mexico respectively.

degree qualifications by age 25. To examine this association we estimate a series of probit models predicting the probability of gaining a first or higher degree by age 25 including sequential controls for parental wealth, parental education and parental income. In this way we aim to establish any potential overlap between the effects of each of these variables and parental wealth and to assess how the magnitude of the effects of parental wealth compare to the effects of standard determinants of attainment status such as parental education and income. Model I, which includes parental wealth along with controls for respondents' age and gender, is our base model. Models II and III add in turn controls for parental education (represented by two dummy variables for maternal and paternal education) and the logarithm of parental income respectively. In all models the parental wealth variable is entered as a linear spline function (to allow for its effects to vary below and above median wealth levels).[10] Marginal effects from these three models are presented in Table 3. In all models the implied marginal effects on parental wealth variables (scaled in £10,000) suggest that there is a strong positive association between parental wealth and the probability of achieving degree qualification. The estimated impacts are stronger for below the median than above the median wealth levels indicating diminishing returns for incremental increases in wealth for high wealth families. The effect of parental education falls by less than 10 per cent for below the median wealth levels, and by 50 per cent, and turning insignificant, for above the median wealth levels after controls have been added for parental education (Model II). This suggests that parental education above the median explains more of the predicted probability of degree attainment than below the median which is likely to be because higher educated parents also have above the median level of wealth. The effect of parental wealth falls by further 8 per cent below the median and by 50 per cent above the median when controls are added for parental income (Model III). In order to obtain a sense of the magnitude of the effects in the bottom of Table 3 we present probabilities of degree attainment at various wealth levels as predicted by each of the models. These predicted probabilities are calculated setting parental wealth at different wealth values (corresponding to different wealth percentiles) while keeping all other characteristics at their sample values and then averaging the predicted probabilities across all observations. In model I an increase in parental wealth from the 25th to the 50th percentile of the parental wealth distribution (from £4,000 to £46,000) would increase the probability of achieving degree qualifications (first and higher degree) by 32 percentage points (from 7 to 39 per cent) while an increase to 75th percentile (£106,000) would increase the same probability by further 3 percentage points (to 42 per cent). At the 95th percentile (£301,000) the predicted probability increases by further 10 percentage points (to 52 per cent). Equivalent increases in parental wealth according to model III would increase the probability of degree level attainment by 27 percentage points for wealth changes between the 25th and the 50th percentile, by further 1 percentage points for wealth changes between the 50th and 75th percentile and by additional 3 percentage points for wealth changes between the 75th and 95th percentile. These effects are more than four times as large as those predicted for income at similar percentiles of the parental income distribution. For example, according to the estimates from Model III, an increase in parental income from the

[10] This is the preferred specification according to a number of goodness of fit measures among the three different functional forms of parental wealth variable we tested (linear, linear spline function and log linear).

25th to the 75th percentile of parental income distribution increases the probability of achieving degree qualifications by just 9 percentage points (from 24 to 33 per cent) – compared to the 28 percentage points increase associated with an increase from the 25th to the 75th percentile of the parental wealth distribution. By comparison the estimates on maternal education from the same model suggest that children whose mother has A-level or above qualifications have on average about 20 percentage points higher probability of achieving degree qualifications compared to children whose mother has less than O-level qualifications.

Table 4 presents marginal effects from a series of models which include separate controls for net financial and housing wealth. As discussed in the introduction, by separating the effects of these two wealth components we intend to examine more closely the extent to which the estimated wealth relationships reflect the impact of resource constraints – which we hypothesise are more closely captured by the coefficient on the financial wealth variable – or the longer term effect of family background factors possibly related (among others) to parental housing choices and their impact on the cognitive and non-cognitive development of their children. As shown in Table 4 there is a positive but non-linear relationship between both parental financial wealth and parental housing wealth and the probability of degree level attainment. The estimated associations are much stronger in terms of housing than in terms of financial wealth and for both variables stronger for below the median than above the median wealth levels. According to the predicted effects from Model III an increase in housing wealth from the 25th to the 50th percentile of the housing wealth distribution (from £0 to £42,000) is associated with an increase in the probability of achieving degree qualifications of about 25 percentage points (from 11 to 36 per cent) while a further increase to the 75th percentile (£86,000) increases the probability of obtaining degree qualifications by just 1 percentage point (to about 37 per cent). By comparison an increase in financial wealth from the 25th to 50th percentile of its distribution (from -£600 to £1,000) increases the probability of achieving degree qualifications by around 3 percentage points (from 28 to 31 per cent) while a further increase to the 75th percentile (£13,500) leaves the probability unaffected. For financial wealth the greatest difference occurs further down the distribution. For example, at the 10th percentile of the parental financial wealth distribution (£-4,000) the predicted probability falls to 23 per cent. This finding points to the potential importance of financial constraints for low wealth-financial indebted households.

Overall, the results of this section depict a strong association between the probability of achieving degree qualifications and parental wealth. To its largest extent the estimated effects reflect the longer term cumulative effect of parental characteristics (including the effect of parental housing choices) which we hypothesise are captured by the housing wealth variable. The effect of financial wealth – which we hypothesise is capturing more closely the role of financial constraints on post-secondary educational choices – is smaller and more important at the lower tail of the distribution especially for children from financially constrained highly indebted households.

3.2 Parental wealth, labour force participation and earnings

The analysis above shows that higher educational attainment is associated with higher parental wealth. Higher levels of education will give these children an advantage in

terms of their employment prospects. In this section we explore the relationship between parental wealth and employment outcomes as measured by labour force participation and earnings at age 25 and we assess whether there is any additional labour market advantage associated with parental wealth over and above the indirect effect that arise from its effects on children's education. For the labour force participation analysis we estimate a series of probit models predicting the probability that the respondent is working at age 25 while for the earnings analysis a series of OLS models predicting respondents' hourly gross pay (in logarithm).[11] In both analyses we exclude respondents who are long term sick and disabled (14 observations) – to avoid the potential negative effect of children's health on parental wealth – and those in full-time education while for the earnings analysis the sample is further restricted to employees with non-missing data on either usual pay or working hours. Due to small sample size both analyses are undertaken on the pooled male and female samples with a gender dummy. In a first stage we estimate each of these models as a function of parental wealth and controls for respondent's gender and marital status (model I). Then sequentially we add controls for parental education and income (model II) and respondents' education (model III). Model II is intended to assess the extent to which parental wealth has an independent effect on children's labour market attainment after controlling for parental income and parental education while the addition of education in model III aims to assess the indirect effect of parental wealth on labour force participation via its effects on educational attainment.[12]

Table 5 presents results for the association between parental wealth (entered in logarithm[13]) and employment status at age 25 (again to ease interpretation we present marginal effects instead of coefficient estimates). In addition to the controls listed above in all models we include a variable indicating whether respondents have any children. In the base model the estimated effects suggest that there is a small but statistically significant association between parental wealth and children's probability of being in work at age 25. Predicted effects show that an increase in parental wealth from the 25th to the 75th percentile of the parental wealth distribution is associated with 2 percentage points increase in employment probability (from 87 to 89 per cent) while a further increase to the 95th percentile increases the probability by just 1 percentage point. The greatest difference for this outcome occurs further down the wealth distribution with the model predicting only 77 per cent of 25 years olds working where parental wealth had been at the 10th percentile (-£400) when they were teenagers. The concentration of the wealth effects at the lower tail of the distribution is indicative of long term effects of disadvantage and asset poverty. The effect does

11 The gross hourly wage is derived from respondents' usual gross pay per month, their normal weekly working hours and their usual paid overtime working hours. Wages are indexed at constant 2005 prices using the RPI.

12 It is worth noting that the education categories included in our analysis are very broad and previous studies that finer distinction in educational attainment can lead to clear difference in employment advantage (Smith, McKnight and Naylor, 2000). It could be that wealth increases the probability of being at the top end of our broad education categories and this missing information would lead to an upward bias in the estimate of the direct wealth effect.

13 Three different functional forms for parental wealth were tested. The preferred specification according to all goodness of fit measures we examined uses the logarithm of parental wealth.

not change once controls have been added for parental income and education (model II). Neither parental income nor education is found to have any significant relationship with children's employment probabilities. Unsurprisingly, children's own educational attainment appears to be the most important determinant of their employment status, with model III predicting a 6 percentage points higher probability of working for those with degrees than for those with GCSE or below, and 10 percentage points higher for those with A-levels or further qualifications. Its inclusion in Model III reduces the effect of parental wealth by around a fifth and its effect is now only significant at 10 per cent significance level. Despite this decrease, strong wealth effects are still detected at low wealth levels. The predicted employment rate differential between the 10^{th} and the 25^{th} percentile of the parental wealth distribution is still around 8 percentage points, which is very similar to the employment differential between married and unmarried people (7 percentage points). Having children has the largest negative influence on employment probabilities. Employment probabilities for men and women are not significantly different when controlling for the presence of children women. Overall the results are suggestive of a clear link between parental wealth and children's labour force participation especially at the lower tail of the distribution. This link can only partly be explained by children from wealthier backgrounds gaining higher educational attainment. Even taking into account differences in educational attainment we find that low levels of parental wealth and especially asset poverty (parental debt) has a significant negative association with employment at age 25.

We now turn to examine the association between parental wealth and children's earnings at age 25. Before discussing the effects for this outcome it is noteworthy that by evaluating the effect of parental wealth on earnings at age 25 we may be missing some important wealth effects which cannot be identified until a later age. Part of the reason for this is that at age 25 higher educated individuals would have accrued 3-4 years of experience while lower educated would have accumulated far more years of wealth experience (up to 9). Table 6 presents results from a series of OLS regression models which relate the logarithm of hourly wages to parental wealth (in linear spline form). In addition to the standard controls in these models we include a dummy variable indicating whether the respondent works full-time or part-time, a variable indicating job tenure in present employment, a set of year dummies as well as a dummy variable indicating whether the respondent lives in London. The latter variable is intended to capture any correlation between parental wealth and children's earnings associated with the fact that children whose parents live in London (and therefore have London housing equity levels) have a higher probability living in London as well (and therefore face London wages). The estimates for parental wealth from the base model suggest a positive and statistically significant association between parental wealth and children's wages but with much stronger estimated impacts for the wealth increments at lower wealth levels. So according to the model's predictions an increase in parental wealth from the 10^{th} to the 50^{th} percentile of the parental wealth distribution is associated with 12 per cent higher wages while a further increase to the 75^{th} percentile with an additional 3 per cent. At the 95^{th} percentile predicted wages increase by further 9 per cent even though increments in wealth above the median are marginally significant. This is likely to be the due to the skewed distribution of parental wealth which means that differences between the 75^{th} and 95^{th} percentile represent large absolute differences in wealth and could be highly significant. The

inclusion of parental income and education in model II reduces the magnitude of the parental wealth estimates by around a fifth and turns the estimates for above the median wealth levels statistically insignificant (although neither parental income nor parental education has any significant association with children's earnings). In this model predicted effects suggest that an increase in parental wealth from the 10th to the 50th percentile of the parental wealth distribution is associated with 10 per cent higher wages while a further increase to the 75th percentile with an additional 2 per cent increase. At the 95th percentile predicted wages increase by further 7 per cent. By comparison predicted effects for parental income suggest an average wage differential between those in the 10th and the 75th percentile of the parental income distribution of just around 4 per cent which is around a third the respective wage differentials associated with parental wealth at similar percentiles of its distribution. The inclusion of respondent's education in model III (which unsurprisingly has a very strong association with children's earnings) reduces the parental wealth marginal effects for below the median wealth levels by around a quarter and by less than a tenth for above the median wealth levels (the larger change implied by the estimates in the table is due to rounding). Incremental increases in parental wealth below the median remains statistically significant but only marginally at 10 per cent significance level. Overall, around a quarter of the association between wealth and earnings at lower wealth levels as identified by Model II appears to operate indirectly through its effect on children's education.

Results from extended models which include separate controls for parental financial and housing wealth (Table 7) show that financial wealth has a stronger relationship with children's earnings than housing wealth after controls for children's education have been added in the model. However, differences in the predicted effects of the two variables are rather small and unlikely to be statistically significant.

3.3 Homeownership status and parental wealth

In this section we examine the association between parental wealth and children's home ownership status at age 25. Similar to the methodology adopted in the previous section in a first stage we estimate a simple probit model as a function of parental wealth and controls for respondent's gender and marital status (model I). Then sequentially we include controls for parents' and children's education and income (model II and III respectively). Model II is intended to capture the extent to which parental wealth has any independent association with homeownership status over and above of the effect of parental income and education and Model III to disentangle its direct from its indirect effects. Based on various tests of model fit the preferred functional form for parental wealth and the one included in all models is the logarithm of parental wealth (implying diminishing marginal effects). The results from model I (Table 8) show a significant positive association between parental wealth and children's homeownership status at age 25. According to this model's predictions an increase in parental wealth from the 10th to the 25th percentile of its distribution rises the homeownership probability by about 7 percentage points (from just above 19 per cent to 26 for those at the 25th percentile) while a further increase to the 50th percentile leads to a further 4 percentage points increase (to 30 per cent) in the same probability. At the 95th percentile the probability rises by just further 2 percentage point (to 32 per cent). The inclusion of parental income and education in model II increases the parental wealth marginal effect estimates and the difference in predicted probabilities

between the different parental wealth levels. When respondents' education is added to the model the estimate on parental wealth as identified in Model II falls by about 15 per cent, implying that 15 per cent of the association between parental wealth and homeownership status operates through its effect on children's education and income. The remaining 85 per cent of the association which remains unexplained could either reflect the effect of direct wealth transfers or could capture any unobserved intergenerational correlation in saving behaviour which we could not control for with the available data. Results from extended models which include separate controls for financial and housing wealth, show a stronger association between homeownership and parental financial wealth than parental housing wealth. Differences in the predicted effects across the two distributions are rather small and unlikely to be statistically significant (especially given our sample size). However, due to small sample size we cannot safely conclude that parental wealth transfers are not driving the estimated associations (which we hypothesize are captured more closely by financial wealth). Moreover there is a possibility that parents with high housing equity can re-mortgage and transfer funds to their children to help them enter homeownership in which case the effects of housing and financial wealth would not be distinguishable.

To explore further the importance of direct wealth transfers and the extent to which the implied wealth relationships operate through easing financial constraints or derives from an unobserved correlation in saving behaviour between parents and children in the rest of this section we investigate the extent to which children may have received assistance with the purchase of their house. Although BHPS does not contain any direct information on the incidence or the scale of assistance with house purchase we can estimate the magnitude of this type of transfer using available information on the purchase price of the house, the size of the mortgage and the year of house purchase (available in all BHPS waves). Our methodology involves estimating the value of deposit used to fund the house purchase (calculated as the difference between the price of house purchase and the size of the mortgage) and to compare the value of this deposit with an estimate of respondents' savings by the year of house purchase. Effectively the difference between the deposit and the savings enable us to estimate the size of assistance with house purchase. Given that information on financial wealth is recorded in BHPS only for three waves we calculate an estimate of the savings that the individual would have accumulated by the date of purchase of the house based on his and his/her partner's average incomes by the age of house purchase and a fixed age specific saving rate.[14] Subtracting the estimated level of potential savings that the

[14] To calculate total savings by the year of house purchase we first estimate the average annual savings for each individual in our sample based on average annual age specific savings rates and his/her average individual gross annual income by the age of house purchase. Then we calculate the present value of savings by the time of house purchase assuming 3 per cent interest rates on savings. Similarly to Tatch (2006) we proxy the age specific annual saving rates as follows: At a first stage we use statistics from the NS&I Savings Survey (Spring 2005) on the age specific savings rates to calculate the deviation of each age group's savings ratio relative to the national savings rate. At a second stage we apply these estimates to the longer time series of national savings rates produced by the Office for National Statistics. Since the ONS saving rates are defined as savings as a per cent of disposable income while we use gross income we assume that the saving rate as a per cent of gross income is 75 per cent of the saving rate out of disposable income (based on own calculations from the National Accounts).

respondent (and his/her spouse in case of married couples with joint ownership) could have saved (at average rates) by the year of house purchase from the value of the deposit we derive a proxy of the size of assistance with house purchase. Using this difference we categorise our sample into assisted and unassisted homeowners. The former group includes respondents whose deposit was higher than the estimated value of their potential savings while the latter includes those whose savings were greater than the value of their deposit (to minimize error, if the difference is lower than £1,000 respondents are categorised as unassisted). We can further break up the group of assisted homeowners into those who have apparently received assistance of more than £5,000 and £10,000. The percentages of homeowners falling in each of these categories are 36, 28 and 27 per cent respectively.

Using this grouping we then estimate three probit models predicting respectively the incidence of financial assistance with house purchase exceeding these three thresholds (£1,000, £5,000 and £10,000). All models include three dummy variables indicating parental wealth quartile as well as additional controls for parental and individual characteristics (see note in Table 10 for a full list of all included variables). Nearly all coefficients on parental wealth dummies from these models are positive and the implied marginal effects show a particularly strong positive association between parental wealth and the probability of receiving financial transfers for house purchase, particularly for larger transfers. For example, the estimates from Model I, imply that children from the top parental wealth quartile group have a 28 percentage points higher probability of receiving financial transfers than children from the bottom parental wealth group and around a 38 percentage points higher probability of receiving financial transfers exceeding £5,000 and £10,000. Despite the large magnitude of the estimated effects given concerns about sample size and measurement error it is difficult to draw strong conclusions from these results. They are however indicative of the importance of financial transfers in driving the estimated associations between parental wealth and homeownership.

Another way to determine the extent to which the association between parental wealth and homeownership status reflects the effect of parental wealth transfers is to estimate models similar to those reported in Table 9 but restricting the sample of homeowners to those who have not received financial transfers for house purchase. Results from this analysis are presented in Table 11. The implied marginal effect on parental wealth from this model is reduced by about a half compared to the models estimated for the full sample of homeowners and becomes statistically insignificant, indicating that a significant share of the estimated associations in Table 9 reflect the effect of parental wealth transfers.

All in all the results of this section suggest that there is a positive association between parental wealth and children's homeownership status at age 25 with bigger estimated impacts for wealth increments at the lower half of the distribution. Less than 15 per cent of the estimated associations reflect the indirect effect of parental wealth on children's earnings and education while the remaining 85 per cent which remain unexplained may reflect either the effect of parental wealth transfers for house purchase or other unobserved factors. While it is difficult to draw strong conclusions due to the small sample sizes the results from the models predicting the probability of receiving financial assistance for house purchase suggest that as much as 50 per cent

of the associations may reflect the direct effect of parental wealth transfers. The importance of wealth transfers was further supported by the somewhat stronger estimated effects on financial wealth than housing wealth (although the effects are unlikely to be statistically different).

4. Discussion and conclusions

This paper has provided the first UK estimates for the associations between parental wealth during adolescence and various children's outcomes in early adulthood (at age 25).

Based on data from the BHPS we document strong positive associations between parental wealth and each of the four outcomes considered (higher educational attainment, employment, earnings and homeownership status). Education exhibits the strongest association with parental wealth. This association is found to operate over and above the influence of parental income and education. Further analysis by wealth components shows that housing wealth plays a more important role in this relationship than financial wealth. Our working assumption, for the disaggregation between financial and housing wealth is that these two components would capture different dimensions of the influence of parental wealth on educational attainment. Housing wealth which is more illiquid would capture more closely the long-term effect of family background including the effect of parental housing choices on the cognitive and non-cognitive development of their children (such as location near favoured schools). On the other hand, controlling for housing wealth, any effect identified for financial wealth would capture more closely the effect of financial constraints on post-secondary educational choices. Under this assumption housing wealth would have a larger association with children's educational attainment than financial wealth (since it would reflect the cumulative effect of parental wealth on earlier educational attainment) while the magnitude of the financial wealth effect would depend on the extent to which financial constraints determine educational choices. Our results appear to confirm this hypothesis showing a stronger association between degree qualifications and housing wealth than financial wealth. However the statistically significant – and by no means negligible – effect which is estimated for financial wealth at the lower end of the financial wealth distribution is an indirect indication that financial constraints may play an important role in higher education choices for some low wealth financially indebted households.

For labour force participation the association was weaker and mainly concentrated at the lower tail of the distribution. Around a fifth of the association is found to operate through the relationship between parental wealth and children's education. For those in employment at age 25 there is also evidence of a strong association between parental wealth and children's adult earnings with evidence of diminishing returns for higher wealth families. Only a small share of this association appears to operate through the association between parental wealth and children's education.

The fact that parents' wealth is linked to educational attainment and earnings implies that children from wealthier backgrounds will also tend to be wealthier (to the extent to which earnings and educational differences translate into wealth differences). The

indirect effect of parental educational investments on wealth accumulation can be reinforced by the direct effect of parental wealth transfers. Both transmission channels would increase wealth accumulation and the transmission of wealth inequality across generations. In this paper we showed that parental wealth has indeed a significant association with homeownership status at age 25. This association, which appears to operate over and above the mediating impact of parental wealth on children's education, was stronger at the lower half of the parental wealth distribution. Direct tests of the possible importance of gifts for house purchase indicated that parental transfers for house purchase may account for a significant share of this association. Further analysis, evaluating the effects using a bigger sample and at a later age would provide a more robust picture of the magnitude of the potential intergenerational wealth effects (especially for homeownership and earnings). The expansion of BHPS panel dimension (through the integration of BHPS sample into the Understanding Society survey) could enable this type of analysis (although analysis may be hindered by small sample size and attrition issues).

References:

Becker, G.S. and N. Tomes (1986), 'Human Capital and the Rise and Fall of Families', *Journal of Labor Economics*, 4:S1–S39

Cameron J. and J. Heckman (1998), 'Life cycle schooling and dynamic selection bias: Models and evidence for five cohorts of American males', *Journal of Political Economy*, 106:262-333

Cameron, S. and C. Taber (2004), 'Estimation of Educational Borrowing Constraints Using Returns to Schooling', *Journal of Political Economy*, 112:132–182.

Carneiro, P. and J.J. Heckman, (2002), 'The Evidence on Credit Constraints in Post-Secondary Schooling', *The Economic Journal*, 112: 989-1018.

Carneiro P. and J.J. Heckman (2003), 'Human capital policy', National Bureau of Economic Research, Working Paper 9495

Charles, K.K. and E. Hurst (2003) 'The correlation of wealth across generations', *Journal of Political Economy*, 111(6)

Chevalier, A. (2004), 'Parental Education and Child's Education: A Natural Experiment', IZA Discussion Paper no. 1153.

Chevalier A. and G. Lanot (2002), 'The relative effect of family characteristics and financial situation on educational achievement', *Education Economics*, 10, 165-182

Chevalier A., C. Harmon, V. O'Sullivan, I. Walker (2005), 'The impact of parental income and education on the schooling of their children', IFS WP 05/05

Conley, D. (2001), 'Capital for college: parental assets and postsecondary schooling', *Sociology of Education*, 74: 59–72.

Ermisch, J. and M. Francesconi (2001), 'Family matters: impacts of family Background on educational attainment', *Economica*, 68: 137-156

Gibbons, S. and S. Machin (2003), 'Valuing English primary schools', *Journal of Urban Economics*, 53 (2): 197-219

Gibbons, S. and S. Machin (2006), 'Paying for primary schools: Admission constraints, school popularity or congestion', *Economic Journal*, 116 (510): C77-C92

Karagiannaki, E. (2011), 'The impact of inheritances on the distribution of wealth: Evidence from the UK', CASE Discussion Paper no.148, London School of Economics

Krueger, A.B. (2004), 'Inequality, too much of a good thing', in J.J. Heckman and A.B. Krueger (eds), *Inequality in America*, MIT Press

Loke V. and P. Sacco (2010), 'Changes in Parental Assets and Children's Educational Outcomes', *Journal of Social Policy*, 40(2):1-18

Lovenheim, F.M (2011), 'The Effect of Liquid Housing Wealth on College Enrollment', *Journal of Labor Economics*, 29:4 (October 2011):741-771

Oliver, M. and T. Shapiro (1995), *Black Wealth/White Wealth*, New York, New York: Routledge.

Orr, A.J. (2003), 'Black–white differences in achievement: the importance of wealth', *Sociology of Education*, 76: 281–304

Pfeffer F.T. (2011), 'Status Attainment and Wealth in the United States and Germany' Forthcoming in: Erikson, R., M. Jännti and T.M. Smeeding (eds.), *The Comparative Study of Intergenerational Mobility*. New York: Russell Sage Foundation

Smith, J., A. McKnight and R. Naylor (2000), 'Graduate employability: Policy and performance in higher education in the UK', *The Economic Journal*, 110 (464): F382-411

Tatch, J. (2006), 'Will the real first-time buyers please stand up?, CML Housing Finance

Torche, F. and S. Spilerman (2006), 'Parental wealth effects on living standard and asset holdings. Results from Chile.' In E.N. Wolff (ed.), *International Perspectives on Household Wealth*. Cheltenham: Edward Elgar.

Torche, F. and S. Spilerman (2009), 'Intergenerational Influences of Wealth in Mexico', *Latin American Research Review*, 44:75–101.

Williams Shanks, T.R. (2007), 'The impacts of household wealth on child development', *Journal of Poverty*, 11:93–116

Yeung, W.J. and Conley, D. (2008), 'Black–white achievement gap and family wealth', *Child Development*, 79: 303–24.

Zhan, M. and M. Sherraden (2003), 'Assets, expectations, and children's educational achievement in female-headed households', *Social Service Review*, 77: 191–211.

Zhan, M. (2006), 'Assets, parental expectations and involvement, and children's educational performance', *Children and Youth Services Review*, 28: 961–75.

Table 1: Summary statistics

Individual characteristics	
Gender (%)	
Male	47.6
Female	52.4
Educational attainment (%)	
GCSE level or below	20.1
At least one A level	43.1
First or higher degree	26.4
Still at school	1.4
Missing	8.9
Labour market status (%)	
Self-employed	2.9
Employed	76.2
Unemployed	6.5
Maternity leave	0.6
Family care	7.7
In full-time education	2.9
Long term sick or disabled	2.6
Government training scheme	0.2
Other	0.2
Homeownership (%)	
Homeowners	27.0
Parental characteristics	
Father's education (% among with non-missing information on father's education)	
No qualifications	19.7
Below O-levels some qualifications	11.4
O-levels	15.0
At least one A level	42.7
First or higher degree	11.1
Father's education is missing	21.5
Mother's education (% among with non-missing information on mother's education)	
No qualifications	24.6
Below O-levels some qualifications	12.6
O-levels	24.6
At least one A level	30.6
First or higher degree	7.5
Mother's education is missing	5.1
Parental income (average gross household income at child age 13 to 16 in 2005 prices)	
Mean	33,000
Median	29,000
Parental wealth (in 1995, expressed in 2005 prices)	
Mean	77,000
Median	46,000
Parental financial wealth (in 1995, expressed in 2005 prices)	
Mean	19,000
Median	1,200
Parental housing wealth (in 1995, expressed in 2005 prices)	
Mean	58,000
Median	41,000
Father not in household	14.6
Mother not in household	3.5
Obs.	492

Notes: The sample used in the analysis includes all children aged 12-18 years old with non-missing parental wealth in 1995 who are observed at age 25. Parental wealth is defined as total household net worth of the parents as in 1995. Parental household income is the average of household income of the parent when the respondent was aged between 13-15 years old.

Table 2: The association between parental wealth on children's outcomes at age 25 (%)

	Parental wealth quartile group				Overall
	Bottom quartile	2nd quartile	3rd quartile	Top quartile	
Educational attainment (%)					
O level or below	38.2	23.6	12.2	6.5	20.1
At least one A level	44.7	49.6	42.3	35.8	43.1
Degree level or above	4.9	15.5	37.4	48.0	26.4
Still at school	4.1	0.8	0.0	0.8	1.4
Missing	8.1	10.6	8.1	8.9	8.9
Labour market status (%)					
Self-employed	0.8	3.3	2.4	4.9	2.9
Employed	61.8	81.3	80.5	81.3	76.2
Unemployed	12.2	3.3	4.9	5.7	6.5
Maternity leave	0.0	0.0	0.8	1.6	0.6
Family care	14.6	8.1	5.7	2.4	7.7
In full-time education	2.4	2.4	3.3	3.3	2.9
Long-term sick-disabled	8.1	0.8	2.4	0.0	2.9
Government training scheme	0.0	0.8	0.0	0.0	0.2
Other	0.0	0.0	0.0	0.8	0.2
Gross hourly pay					
Mean	8.0	8.0	9.6	10.0	9.0
Median	7.6	7.6	9.0	9.5	8.4
Homeownership (%)					
Homeowners	21.9	25.2	31.7	29.3	27.0
Obs.	123	123	123	123	492

Notes: The sample used in the analysis includes all children aged 12-18 years old with non-missing parental wealth in 1995 who are observed at age 25. Parental wealth is defined as total household net worth (the sum of net financial and net housing wealth) of the parents as in 1995. Parental household income is the average of household income of the parent when the respondent was aged between 13-15 years old. *Source*: Author's calculations based on BHPS waves 1-18.

Table 3: Marginal effects and predicted probabilities from probit regressions for the effect of parental net worth on degree attainment at age 25 and predicted probabilities by parental net worth

	Model I		Model II		Model III	
Parental characteristics						
Spline function of parental wealth						
Below median	0.091	***	0.084	***	0.077	***
	(0.000)		(0.000)		(0.000)	
Above median	0.004	**	0.002		0.001	
	(0.043)		(0.320)		(0.612)	
Mother's education (ref. less than O-level)						
O-level			0.078		0.064	
			(0.250)		(0.339)	
A-level or above			0.232	***	0.201	***
			(0.000)		(0.000)	
Father's education (ref. less than O-level)						
O-levels			0.181	*	0.182	*
			(0.071)		(0.074)	
A-level or above			0.087		0.057	
			(0.165)		(0.356)	
Father's education is missing			0.128		0.129	
			(0.270)		(0.253)	
Natural logarithm of parental income					0.13	***
					(0.008)	
Individual characteristics						
Female	0.086	**	0.076	*	0.080	*
	(0.040)		(0.070)		(0.058)	
Number of observations	419		419		419	
Log-likelihood	-213.9		-201.3		-197.6	
Pseudo R^2	0.15		0.20		0.21	
Predicted probabilities setting parental net worth at						
NW=10th percentile	0.05		0.07		0.08	
NW=25th percentile	0.07		0.08		0.10	
NW=50th percentile	0.39		0.38		0.37	
NW=75th percentile	0.42		0.40		0.38	
NW=95th percentile	0.52		0.45		0.41	

Note: Estimates obtained from probit models. All models exclude respondents (i) with missing information on mother's education (ii) still in full-time education and (iii) those with missing information on education. Additional variables included in all models are: a dummy variable indicating whether parental family was a single parent family in 1995, and a dummy variable for missing information on father's education. Parental household income is the average of household income of the parents when the respondent was aged 13-15 years old. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Corresponding p-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level. The 10th, 25th, 50th, 75th and 95th percentiles of the parental wealth distribution at which the predicted effect for this outcome are evaluated are: -£600, £4,000, £46,000, £106,000 and £301,000.

Table 4: Marginal effects and predicted probabilities from probit regressions for the effect of parental financial and housing wealth on degree attainment at age 25

	Model I	Model II	Model III
Financial wealth			
Below the median	0.119	0.144 *	0.152 *
	(0.146)	(0.077)	(0.055)
Above the median	0.004	0.001	0.001
	(0.240)	(0.635)	(0.699)
Housing wealth			
Below the median	0.088 ***	0.082 ***	0.073 ***
	(0.000)	(0.000)	(0.000)
Above the median	0.006	0.003	0.001
	(0.104)	(0.394)	(0.733)
Number of observations			
Log-likelihood	419	419	419
Pseudo R^2	-215.0	-201.0	-197.4
	0.15	0.20	0.22
Predicted probabilities setting net financial wealth at:			
NFA=10th percentile	0.24	0.24	0.23
NFA=25th percentile	0.28	0.28	0.28
NFA=50th percentile	0.30	0.30	0.31
NFA=75th percentile	0.30	0.31	0.31
NFA=95th percentile	0.33	0.32	0.32
Predicted probabilities setting net housing wealth at:			
THSE=10th percentile	0.07	0.09	0.11
THSE=25th percentile	0.07	0.09	0.11
THSE=50th percentile	0.37	0.37	0.36
THSE=75th percentile	0.41	0.39	0.37
THSE=95th percentile	0.49	0.43	0.39

Note: Estimates obtained from probit models. All models exclude respondents (i) with missing information on mother's education (ii) still in full-time education and (iii) those with missing information on education. All models include controls for respondent's gender and marital status as well as a dummy variable indicating whether parental family was a single parent family in 1995. Parental financial (housing) wealth is defined as financial (housing) assets minus financial (housing) debt of the parents as in 1995 and is scaled in £10,000. Parental household income is the average of household income when the respondent was aged between 13-15 years. Both income and wealth are adjusted to 2005 prices. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Corresponding p-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level. The 10th, 25th, 50th, 75th and 95th percentiles of the parental net financial wealth distribution at which the predicted effect for this outcome are evaluated are: -£4,500, -£600, £1,000, £13,000 and £102,000. The 10th, 25th, 50th, 75th and 95th percentiles of the parental net housing wealth distribution at which the predicted effect for this outcome are evaluated are: £0 , £0, £42,000, £86,000 and £193,000.

Table 5: Marginal effects and predicted probabilities from probit regressions for effect of parental net worth on the probabilities of being in employment at age 25

	Model I	Model II	Model III
Parental characteristics			
Logarithm of parental wealth	0.009 ***	0.009 ***	0.007 **
	(0.009)	(0.009)	(0.019)
Mother's education (ref. below O-level)			
O-level		0.030	0.025
		(0.364)	(0.410)
A-level or above		0.040	0.035
		(0.205)	(0.270)
Father's education (ref. below O-level)			
O-level		-0.004	0.001
		(0.939)	(0.980)
A-level or above		-0.019	-0.014
		(0.633)	(0.709)
Natural logarithm of parental income		-0.002	-0.008
		(0.959)	(0.790)
Individual characteristics			
Educational attainment (ref. GCSE or below)			
At least one A-level			0.100 ***
			(0.001)
Degree or above			0.062 *
			(0.082)
Education is missing			0.033
			(0.338)
Married	0.080 **	0.074 **	0.074 **
	(0.012)	(0.019)	(0.014)
Female	-0.023	-0.028	-0.033
	(0.420)	(0.338)	(0.218)
Has children	-0.398 ***	-0.380 ***	-0.353 ***
	(0.000)	(0.000)	(0.000)
Number of observations	434	434	434
Log-likelihood	-133.4	-130.7	-125.6
Pseudo R^2	0.25	0.27	0.29
Predicted probabilities setting parental wealth at:			
NW=10th percentile	0.77	0.77	0.78
NW=25th percentile	0.87	0.87	0.86
NW=50th percentile	0.88	0.88	0.88
NW=75th percentile	0.89	0.89	0.89
NW=95th percentile	0.90	0.90	0.89

Note: Estimates obtained from probit models. All models exclude respondents (i) whose mother was not observed in the panel and those with missing information on mother's education (ii) still at school and iii) long-term sick and disabled. All models include a dummy variable indicating whether parental family was a single parent family. Parental wealth is defined as total net worth of the parents as in 1995 and is scaled in £10,000. Parental household income is the average of household income of the parent when the respondent was aged between 13-15 years old. Both income and wealth are adjusted to 2005 prices. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Corresponding p-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level. The 10th, 25th, 50th, 75th and 95th percentiles of the parental wealth distribution at which the predicted effects are evaluated are: -£400, £6,000, £47,000, £106,000 and £265,000.

Table 6: OLS estimates for the effect of parental net worth on hourly wages and predicted wages at age 25 by net worth

	Model I		Model II		Model III	
Parental characteristics						
Parental wealth						
Below median	0.025	***	0.021	**	0.016	*
	(0.004)		(0.025)		(0.089)	
Above median	0.005	*	0.004		0.003	
	(0.078)		(0.156)		(0.170)	
Mother's education						
O-level			0.039		0.037	
			(0.382)		(0.400)	
A-level or above			0.054		0.033	
			(0.144)		(0.381)	
Father's education						
O-level			0.027		0.014	
			(0.661)		(0.823)	
A-level or above			0.042		0.034	
			(0.387)		(0.478)	
Natural logarithm of parental income			0.036		0.024	
			(0.362)		(0.545)	
Individual characteristics						
Educational attainment						
At least one a-level					0.024	
					(0.587)	
Degree or above					0.132	**
					(0.023)	
Education is missing					0.036	
					(0.610)	
Married	0.063	*	0.060	*	0.058	*
	(0.056)		(0.071)		(0.078)	
Female	-0.031		-0.038		-0.048	
	(0.336)		(0.245)		(0.151)	
Part time	-0.150	**	-0.142	**	-0.136	**
	(0.026)		(0.028)		(0.030)	
Job tenure	0.007		0.008		0.012	
	(0.335)		(0.296)		(0.124)	
London	0.292	***	0.281	***	0.277	***
	(0.000)		(0.000)		(0.000)	
Constant	2.088	***	1.675	***	1.782	***
	(0.000)		(0.000)		(0.000)	
Number of observations	338		338		338	
R^2	0.18		0.18		0.20	
Predicted log hourly wages setting parental net worth at:						
NW=10th percentile	2.15		2.17		2.18	
NW=25th percentile	2.19		2.20		2.21	
NW=50th percentile	2.27		2.27		2.26	
NW=75th percentile	2.30		2.29		2.28	
NW=95th percentile	2.39		2.36		2.35	

Note: Excludes respondents whose mother was not observed in the panel and those with missing information on mother's education and those ii) still at school. Additional controls included in all models include time dummies and a dummy variable indicating that information on father's education is missing. Parental wealth is defined as total net worth of the parents as in 1995 and is scaled in £10,000. Parental household income is the average of household income when the respondent was aged between 13-15 years. Both income and wealth are expressed in 2005 prices. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Corresponding p-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level. The 10th, 25th, 50th, 75th and 95th percentiles of the parental wealth distribution at which the predicted effect for this outcome are evaluated are: -£200, £15,000, £51,000, £113,000 and £301,000.

Table 7: OLS estimates for the effect of parental net financial and net housing wealth on hourly wages and predicted wages at age 25 by net financial and net housing wealth

	Model I	Model II	Model III
Financial wealth			
Below median	0.112 ***	0.119 ***	0.104 **
	(0.005)	(0.006)	(0.018)
Above median	0.005	0.004	0.004
	(0.192)	(0.270)	(0.272)
Housing wealth			
Below median	0.027 ***	0.022 **	0.018
	(0.008)	(0.045)	(0.107)
Above median	0.002	0.001	0.000
	(0.482)	(0.835)	(0.899)
Number of observations	338	338	338
R^2	0.19	0.19	0.20
Predicted log hourly wages setting parental net financial wealth			
NFA=10th percentile	2.20	2.20	2.20
NFA=25th percentile	2.24	2.25	2.25
NFA=50th percentile	2.26	2.26	2.26
NFA=75th percentile	2.27	2.27	2.27
NFA=95th percentile	2.31	2.31	2.30
Predicted log hourly wages setting parental net housing wealth			
THSE=10th percentile	2.17	2.19	2.20
THSE=25th percentile	2.20	2.22	2.22
THSE=50th percentile	2.28	2.28	2.27
THSE=75th percentile	2.29	2.28	2.28
THSE=95th percentile	2.32	2.29	2.28

Note: Excludes respondents whose mother was not observed in the panel and those with missing information on mother's education and those ii) still at school. Additional variables included in all models are: gender, marital status, job status (indicating full-time or part-time status), job tenure, living in London, time (dummies) and a dummy variable indicating that information on father's education is missing. Parental financial (housing) wealth is defined as financial (housing) assets minus financial (housing) debt of the parents as in 1995 and is scaled in £10,000. Parental household income is the average of household income when the respondent was aged between 13-15 years. Both income and wealth are adjusted to 2005 prices. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Corresponding p-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level. The 10th, 25th, 50th, 75th and 95th percentiles of the parental net financial wealth distribution at which the predicted effect for this outcome are evaluated are: -£4,500, -£400, £1,600, £19,000 and £106,000. The 10th, 25th, 50th, 75th and 95th percentiles of the parental net housing wealth distribution at which the predicted effect for this outcome are evaluated are: £0 , £13,000, £46,000, £90,000 and £191,000.

Table 8: Marginal effects and predicted probabilities from probit models for the effect of parental net worth on children's homeownership

	Model I	Model II	Model III
Parental characteristics			
Natural Logarithm of parental wealth	0.012 **	0.014 **	0.012 **
	(0.030)	(0.026)	(0.027)
Mother's education (ref. below O-level)			
O-level		0.028	0.012
		(0.635)	(0.806)
A-level or above		0.034	0.043
		(0.531)	(0.388)
Father's education (ref. below O-level)			
O-level		0.166*	0.158*
		(0.083)	(0.086)
A-level or above		0.035	0.026
		(0.574)	(0.629)
Natural logarithm of parental income		-0.049	-0.045
		(0.308)	(0.328)
Individual characteristics			
Educational attainment (ref. GCSE or below)			
At least one a-level			0.127 **
			(0.022)
Degree or above			-0.042
			(0.471)
Missing education			0.094
			(0.315)
Logarithm of respondents' income			0.193 ***
			(0.000)
Married	0.338 ***	0.346 ***	0.207 ***
	(0.000)	(0.000)	(0.000)
Female	0.026	0.020	0.052
	(0.532)	(0.622)	(0.167)
Number of observations	460	460	460
Log-likelihood	-236.3	-233.3	-211.2
Pseudo R^2	0.13	0.14	0.22
Predicted probabilities setting net worth at:			
NW=10th percentile	0.19	0.17	0.18
NW=25th percentile	0.26	0.27	0.27
NW=50th percentile	0.30	0.30	0.30
NW=75th percentile	0.31	0.31	0.31
NW=95th percentile	0.32	0.33	0.32

Note: Estimates obtained from probit models. Excludes respondents whose mother was observed in the panel and those with missing information on mother's education and those ii) still at school. Additional variable included in all models is dummy variable indicating that information on father's education is missing. Parental wealth is defined as total net worth of the parents as in 1995 and is scaled in £10,000. Parental household income is the average of household income of the parents when the respondent was aged 13-15 years old. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Corresponding p-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level. The 10th, 25th, 50th, 75th and 95th percentiles of the parental wealth distribution at which the predicted effects are evaluated are: -£500, £4,000, £46,000, £106,000 and £268,000.

Table 9: Marginal effects and predicted probabilities from probit regressions for the effect of parental net financial and housing wealth on children's homeownership

	Model I	Model II	Model III
Logarithm of parental financial wealth	0.009 *	0.011 **	0.010 **
	(0.070)	(0.031)	(0.041)
Logarithm of parental housing wealth	0.008	0.009 *	0.007
	(0.130)	(0.090)	(0.129)
Number of observations	460	460	460
Log-likelihood	-234.7	-231.2	-209.6
Pseudo R^2	0.13	0.15	0.23
Predicted probabilities setting net financial wealth at :			
NFA=10^{th} percentile	0.23	0.22	0.22
NFA=25^{th} percentile	0.23	0.22	0.22
NFA=50^{th} percentile	0.29	0.29	0.29
NFA=75^{th} percentile	0.31	0.32	0.31
NFA=95^{th} percentile	0.33	0.34	0.34
Predicted probabilities setting housing equity levels at:			
THSE=10^{th} percentile	0.22	0.21	0.22
THSE=25^{th} percentile	0.22	0.21	0.22
THSE=50^{th} percentile	0.29	0.30	0.29
THSE=75^{th} percentile	0.30	0.30	0.30
THSE=95^{th} percentile	0.30	0.31	0.30

Note: Estimates obtained from probit models. Excludes respondents whose mother was observed in the panel and those with missing information on mother's education and those ii) still at school. Additional variables included in all models are: gender, marital status and a dummy variable indicating that information on father's education is missing. Parental financial (housing) wealth is defined as financial (housing) assets minus financial (housing) debt of the parents as in 1995 and is scaled in £10,000. Parental household income is the average of household income when the respondent was aged between 13-15 years. Both income and wealth are expressed in 2005 prices. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Corresponding p-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level. The 10^{th}, 25^{th}, 50^{th}, 75^{th} and 95^{th} percentiles of the parental net financial wealth distribution at which the predicted effect for this outcome are evaluated are: -£4,500, -£500, £1,200, £13,000 and £101,000. The 10^{th}, 25^{th}, 50^{th}, 75^{th} and 95^{th} percentiles of the parental net housing wealth distribution at which the predicted effect for this outcome are evaluated are: £0 , £0, £41,000, £85,000 and £191,000.

Table 10: Marginal effect from probit regressions for the effect of parental net wealth on the probability of apparently receiving assistance with house purchase

	Estimated assistance >£1000		Estimated assistance>=£5,000		Estimated assistance>=£10,000	
Parental characteristics						
Parental wealth (ref. bottom quartile)						
2nd quartile	0.18		0.23		0.21	
	(0.25)		(0.16)		(0.22)	
3rd quartile	0.22		0.36	**	0.39	***
	(0.15)		(0.01)		(0.01)	
Top quartile	0.28	*	0.38	**	0.38	**
	(0.08)		(0.02)		(0.02)	
Log of parents' household income	0.11		0.04		-0.01	
	(0.37)		(0.75)		(0.92)	
Individual characteristics						
Logarithm of household income	-0.06		-0.05		-0.07	
	(0.56)		(0.63)		(0.49)	
London or Southeast	0.35	***	0.42	***	0.48	***
	(0.00)		(0.00)		(0.00)	
Obs.	115		108		108	
Log-likelihood	-62.6		-53.0		-49.5	
Pseudo R-squared	0.17		0.20		0.24	
Mean prediction (%)	37		31		29	

Note: Estimates obtained from probit models. Exclude respondents whose mother was not observed in the panel and those with missing information on mother's education. Additional variables included in all models are: respondent's gender, marital status, year of house purchase and a dummy variable indicating whether the respondent lives in London or the Southeast. Parental wealth is defined as total net worth (the sum of net financial and net housing wealth) of the parents as in 1995. Parental household income is the average of household income when the respondent was aged between 13-15 years. Both income and wealth are expressed in 2005 prices. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. P-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level.

Table 11: Marginal effects from probit regressions for the effect of parental net worth on homeownership probability excluding assisted homeowners

	Model I		Model II		Model III	
Parental characteristics						
Logarithm of parental wealth	0.006		0.009	*	0.006	*
	(0.180)		(0.078)		(0.096)	
Mother's education (ref. below O-level)						
O-level			-0.005		-0.005	
			(0.912)		(0.872)	
A-level or above			-0.016		-0.007	
			(0.685)		(0.802)	
Father's education (ref. below O-level)						
O-level			0.117		0.095	
			(0.172)		(0.172)	
A-level or above			0.005		-0.001	
			(0.925)		(0.983)	
Natural logarithm of parental income			-0.053		-0.043	*
			(0.139)		(0.097)	
Individual characteristics						
Education (ref. GCSE or below)						
At least one a-level					0.075	**
					(0.046)	
Degree or above					-0.027	
					(0.425)	
Missing education					0.114	
					(0.207)	
Logarithm of respondents' income					0.114	***
					(0.000)	
Married	0.323	***	0.330	***	0.171	***
	(0.000)		(0.000)		(0.001)	
Female	-0.019		-0.027		0.002	
	(0.564)		(0.404)		(0.923)	
N	413		413		413	
Log-likelihood	-156.8		-153.4		-135.5	
Pseudo R^2	0.19		0.20		0.30	

Note: The sample used in the estimation excludes respondents in full-time education. All models include controls for respondent's gender and marital status. Parental wealth is defined as total net worth (the sum of net financial and net housing wealth) of the parents as in 1995. Parental household income is the average of household income when the respondent was aged between 13-15 years. Standard errors are adjusted to account for repeated observations on siblings and half-siblings. Both income and wealth are expressed in 2005 prices. P-values in parentheses. *** indicates coefficient statistically significant at the 1% level, ** at the 5% level and * at the 10% level.