Inheritances, Intergenerational Transfers, And the Accumulation of Health

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PRELIMINARY AND INCOMPLETE

Abstract

There are many pathways explaining the relationship between socio-economic status and health. However measurement of this relationship is clouded by endogeneity. SES may influence health and health may influence SES. Inheritances can provide an exogenous shock to financial resources, allowing us to measure the impact of additional financial resources on health. However this requires that other aspects of the intergenerational transmission of health and wealth can be adequately controlled for. This paper takes advantage of the panel and intergenerational structure of the PSID to measure the effects of inheritances on health and to investigate the causes of this relationship. Repeated observations of the same individuals allow us to include fixed effects to control for the lasting impact of childhood and other normally unobserved characteristics. Observation of multiple members of the same dynasty allows us to consider whether the source of an inheritance matters. Finally, some individuals are observed as children and thus we can control for the impact of parental investment in their children's' well-being. Overall we find that inheritances are strongly correlated with health, but on average, there is no causal effect. However, inheritances have differential affects on health for some subsets of the population.

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I. Introduction

Understanding the relationship between Health and SES is a notoriously difficult problem, primarily due to endogeneity. In particular, the role of intergenerational transmission of both Health and SES clouds the casual relationship. This paper takes advantage of the multigenerational structure of the PSID to investigate this relationship. In particular we focus on the effect of inheritances on health. Inheritances may provide an exogenous shock to one's financial resources, if other aspects of the intergenerational transmission of health and wealth can be adequately controlled for.

Research on inheritances has largely focused on the motives of the bequeathing. Whether bequests occur due to a true "bequest motive" or are accidental and how bequests contribute to capital accumulation has led to a long standing debate (Kotlikoff and Summers (1981), Modigliani (1988), Gale and Scholz (1994), Hurd (2001) and Dynan, Skinner and Zeldes (2002)). Additionally, papers such as Bernheim, Shleifer and Summers (1985) Perozek (1998) and Norton and Taylor (2005) have considered an exchange hypothesis, whereby children devote time to their parents in order to receive a bequest later on. This paper instead focuses on the effects of bequests on the receiving generation. Regardless of the motivations of the giving or receiving generation prior to death, wealth is transferred and this additional money may have an impact on the receiving generation. If a bequest motive does exist, then those who inherit may have also been the beneficiaries of other (including non-monetary) intergenerational transfers.

While the transmission of wealth is not insignificant, parents contribute not only to the financial capital of their children, but also to their human and health capital. The investments that parents make in their children are likely to be correlated; all else equal we would expect that parents who want to transfer wealth to their children through bequests will also contribute to

their children's well-being in other ways. Parents who are interested in maximizing the wellbeing of their offspring will likely make investments (both of money and time) in their children, setting the marginal utility created by financial transfers equal to the marginal utility created by other transfers. In this paper we investigate whether individuals who inherit are on average better off than those who do not and whether there is evidence of a causal impact or only a correlation.

Socioeconomic status (SES), measured by education, income or wealth, has been found to be highly correlated with health.[2] Two main mechanisms for this relationship exist.[3] First, poor health may lead to low socioeconomic status, because those who are in poor health are less able to work and tend to face higher medical costs limiting their ability to accumulate wealth. Second, SES, education and financial resources may directly cause better health. Education and cognitive skills may help those of higher socio-economic status to make better health choices, but we would not expect a shock to financial resources to significantly matter in this case. A large part of the literature has considered another pathway, that socioeconomic status as a child can influence health later in life.[4] This paper focuses on the effect of financial resources on health. Inheritances may provide a shock to financial resources. Even if inheritances are anticipated their timing is exogenous.

Inheritances may be correlated with individuals' health for several reasons. First, and most straight forward, inheritances provide additional financial resources allowing recipients to purchase more health and health care. This would be particularly important for credit constrained individuals. If this is the case there would be a causal relationship between inheritances and

[2] For a summary of this literature see Smith (1999).
[3] It is also possible that some third factor such as risk aversion or time preferences lead to the correlation between Socioeconomic status and health.
[4] See for example Case, Fertig and Paxson (2003), Hayward and Gorman (2004)

health. Second, inheritances may signal the overall strength of a dynasty. This dynastic strength would manifest itself in higher SES, better health and more ability to leave a bequest. Inheritances could be associated with better health because parents who bequeath wealth to their children may have disproportionately higher SES and therefore better health. Third, bequests (and a bequest motive) may signal some interest in your child. Under this scenario, parents who have more interest in their children's well-being would be more likely both to invest in their offspring's health and to leave bequests. Previous research shows that childhood health can have a long lasting effect into adulthood.

This paper uses the Panel Study of Income Dynamics (the PSID) to investigate each of these possible mechanisms. The PSID allows us to carefully control for the overall dynastic strength by providing information both about recipient household and about the bequeathing parents. A falsification test whereby inheritances are regressed on past health further allows for identification of the later two scenarios. If inheritances have an effect on past health it suggests that it is not the inheritance itself that influences health.

We consider several other tests of these three hypotheses. First, we propose to distinguish between receiving any inheritance at all (a dummy variable), the amount of the inheritance, and the amount of the inheritance relative to overall income. If the effects are entirely due the first hypothesis, additional financial resources, then controlling for the amount (either absolute or relative) of the inheritance should be significant. Second, the causal effect of additional monetary resources should be similar for all members of the household, while the other two mechanisms should primarily hold for the offspring of a deceased and not for the spouse of the offspring. Third, we consider the possibility that inheritances have different effects across the lifecycle.

Previous research by Kim and Ruhm (2009) found no relationship between inheritances and health in the Health and Retirement Survey. However, the PSID allows us to more carefully control for SES in early childhood. In addition we propose to investigate the different possible mechanisms that might lead to a correlation between inheritances and health. In particular, the methodology used by Kim and Ruhm (2009) always includes individual fixed effects. While we agree that fixed effects are the best way to control for unobservable characteristics, including them in all models would fail to identify differences in the possible causes of a correlation between inheritances and health. In the three explanations for a correlation between inheritances and health, the second and third would be eliminated by the inclusion of individual fixed effects. While identification of the first causal relationship is the primary goal, the other mechanisms should not be ignored.

Meer, Miller and Rosen (2003) examine the relationship between health and wealth using inheritances as an instrument for wealth in the PSID. While they consider some of the issues we discuss above, they do not test them directly, nor do consider different affects across the life cycle. In particular, they do not consider the possibility that inheritances may be correlated health through channels other than increasing wealth, such as the possibility that they are sign of parental interest and investment. Another facet of this issue is that inheritances may improve health but not increase wealth, if households spend their inheritance on health care, for example. Finally, they do not take advantage of the dynastic relationships that can be observed in the PSID, allowing us to carefully control for other aspects of the intergenerational transmission of health and wealth.

This paper proceeds as follows. Section 2 describes the data and the prevalence of inheritances. Section 3 describes the empirical methodology. Section 4 presents the results. Section 5 concludes.

II. Data on Inheritances and Health in the PSID

This paper uses data from the PSID to investigate the role of inheritances on health. The long term nature of the PSID and the ability to link household across generations make it particularly well suited for this research. The PSID began following households in 1968 and interviewed households every year until 1997. From 1999 onwards, households were interviewed every two years. This paper focuses primarily on data from 1984 to 2007.[5] All analysis is conducted at the individual level, thus we include both spouses and household head. This is contrast to Meer, Miller and Rosen (2003) who consider only 1984, 1989, 1994, and 1999 and only consider the head of household.

The most important variables used in this research are information about inheritances and gifts. However, two series of questions have been used to measure inheritances in the PSID. Beginning in 1988, and continuing in all future surveys households were asked:

- Did you (or anyone else in the family living there) get any other money in [the previous year]—like a big settlement from an insurance company, or an inheritance?
- How much did that amount to?
- How much of that was an inheritance?

We refer to this as the *annual question*. There are two primary advantages of this question. First, it is only about inheritances. Second, because it focuses only on the previous year it does

[5] We exclude the Latino and Immigrant samples.

not require respondents to recall events from the distant past. Beginning in 1984, and continuing every 5 years until 1999 and then every two years until 2007, households were asked:

- Some people's assets come from gifts and inheritances. During the last two [five] years, have you (or anyone in your family living there) received any large gifts or inheritances of money or property worth $10,000 or more?
- What year did you receive that?
- How much was it worth altogether, at that time?

We refer to this as the *retrospective question*. This question has the advantage of asking about all years of inheritances, allowing for observation of bequests even when the survey is fielded only every other year and even if the household misses a wave of the survey. However, from 1984 to 1999, respondents must recall all bequests over a five year period. In addition, this question combines both bequests and large gifts.

Table 1 reports summary statistics for the two measures of bequests at the individual level.[6] In eight years, 1984, 1989, 1994, 1999, 2001, 2003, 2005, and 2007, both questions are asked. Respondents should report inheritances in both questions. However there is a substantial lack of overlap. It seems that some people report the inheritances in only one of the two questions. In order to maximize the number of observations of inheritances we combine the data across the two questions. If an inheritance is reported in only one question, we use that amount. If inheritances are reported in both questions we use the average amount.[7] Note that this is in contrast to the method used by Meer, Miller and Rosen (2003) who use only data from the second set of questions.

[6] This means that some inheritances are observed twice, once for the husband and once for the wife. Of the 4500 individuals who are observed to receive bequests, XXX share these with a spouse who is also included in the data.
[7] We also considered the sum of the two amounts and the maximum of the two amounts. These variations made no difference to our results. Using the original questions is also possible, however, there are fewer observations and results are often not significant.

Roughly 2 percent of individuals receive an inheritance in any given year and approximately 1.5 percent report in each of the two questions, leading to a total of 4510 inheritances. The average amount of an inheritance, if received, is $165,119 with a median of $23,046. The amounts reported in the retrospective question are larger on average, in part due to the restriction, in some years, that inheritances be more than $10,000. If received, inheritances relative to household taxable income are 613% at the mean, but only 39% at the median. Over all years, 13.6 percent of individuals will receive an inheritance at some point in time. And approximately a quarter of inheritance go to individuals who receive more than one inheritance.

Because of the timing of these questions, we examine the effect of inheritances received in the previous year, the previous 2 years, and the previous 5 years on health. Using the year of receipt, data from the second set of questions is transformed to assign each inheritance to the year it was received. Thus if an inheritance is received in 1992 this amount is matched to health in 1993. Table 1 also presents summary statistics for the measures of inheritances received in the past 2 or 5 years. The average amount of inheritances received over the past 2 years is $217,659 with a median of $25,436. Over 5 years these numbers increase to $416,869 and $28,763 respectively.

A key premise of this research is that the timing of inheritances is random. To investigate this, the first column of Table 2 presents the results of a logit regression predicting the receipt of an inheritance. The first two columns present the results of a logit regression; the first reports coefficients, the second marginal effects. We see that many variables are significant. Age, marital status, self employment, total household taxable income, and education all are associated with a higher likelihood of receiving an inheritance. Men, whites, and people in the western region are also more likely to receive inheritances. Labor income, age squared, and

being black are associated with a lower likelihood of receiving an inheritance. These results suggest that the receipt of a bequest is not random.

In the last two columns, we consider the timing of inheritances. Among those who ever receive an inheritance, we run a conditional fixed effect logit to predict when they receive an inheritance. Here we see that only age and marital status matter. People are more likely to receive bequests when they are older. This is unsurprising, if most people receive bequests from their parents, the older you are the more likely your parents are to die. Similarly we see a diminishing marginal probability. Second, individuals who are married are more likely to receive inheritances. This too is unsurprising, with two people in the household, there are twice as many parents to leave a bequest.

Taken together these results suggest that while receipt of an inheritance is unlikely to be random, most observable characteristics do not predict when this will occur. Only age plays a significant role. In the results section, we will control for age and consider the possibility that age may interact with inheritances in influencing health.

In addition to interactions with age, we also interact the receipt of an inheritance with a number of other background characteristics. Table 3 presents summary statistics for these interaction terms. One of the strengths of studying inheritances in the PSID is the ability to link households within the same dynasty. This allows us to observe if another household in the dynasty received an inheritance or if someone outside of the household but in the same dynasty died. With this data, we also distinguish between individuals who are part of the original dynasty and individuals who have married into the dynasty. Of the 4510 inheritances, 1312 can be linked to another inheritance within the data. This will allow us to identify whether the

effects of bequests are different if the bequest comes from someone that you are related to. More within dynasty inheritances are observed than within dynasty deaths.

We also link inheritances to the childhood environment. The hypothesis here is that parents who take more interest in their children will be more likely to leave bequests. Thus if there is a positive effect of an inheritance, it may be driven by a correlation between bequests and other investments and intergenerational transfers. Because we use fixed effects models, these childhood investments can only be considered as interactions with the inheritance measures. We use questions from the 1968 to 1972 surveys about eating at least 4 meals per week together as a family, attending pta meetings in the last year, and whether they reported feeling obliged to help family members financially if necessary. Each of these questions was asked in the first 5 waves and averaged over the five waves. We also control for individuals who leave the original household in the first five years and form their own household. Table 3B reports the averages of these values for households that receive inheritances. Averaged across years and households, 80% report regularly eating meals together, while only 55% have attended PTA meetings in the last year. Only 33% report that they would feel they had to help their family members out financially.

The other main variable of interest is health. This will be measured using the general health status question asked since 1984. While there are some other questions about health, such as ADLs, IADLs, and information about specific conditions, this information is less valuable for this study since these questions were asked less often and therefore there is less overlap with the detailed questions about inheritances.[8] Other variables considered in our analysis include age, the individual's labor income, total taxable household income, self employment status, marital

[8] There are also questions about work limitations and days of work missed to illness. These will be considered in a later draft of the paper.

status and region. Table 4 presents summary statistics for these variables. In addition, summary statistics for variables that do not (or at least tend to not) vary over time are also included, such as gender, race, and education.

The PSID provides other information that will be used to better control for other pathways that may influence the relationship between health and SES. In particular, by focusing only on individuals who were children in the first 5 waves, we can measure the interaction between receiving a bequest and measures of parental investment during childhood. In particular we consider whether the family ate dinner together more than 4 days a week, whether the parent attended pta meetings in the last year, and whether the parents report an obligation to help other family members. These questions were asked from 1968 to 1972 and the responses were averaged over the 5 years. These are also included in table 3.

III. The Empirical Strategy

The dependent variable in our main results is self assessed health which is a discrete variable ranging from excellent to poor. More objective measures of health have been found to be correlated with self assessed health as in [INSERT REFERENCES HERE]. As stated before, the primary advantage of self assessed health in this data is the frequency with which the question was asked. However, there are limitations, which we address with a fixed effect ordered logit.

The first limitation is that health is a discrete variable thus OLS can not be used to predict health. One way that this is often dealt with is to focus on only whether or not health is excellent or very good vs good, fair or poor, as in Meer, Miller and Rosen (2003). The advantage of this is that it simplifies the analysis. However, it will not allow for observations of changes in health

within these categories. In the sample used here 45% of individuals report health to always be in the top 2 categories or always in the bottom three categories. Most (25% of the total) of these individuals do report changes in their health over time but remain in the upper or lower part of the distribution. The simplified strategy would ignore this variation in self assessed health. An ordered logit allows us to consider all variation.

Second, there may be individual biases in the way that the question is answered. For example, some individuals may be reluctant to use the word excellent, others may be very positive and always say excellent. This makes it hard to compare answers across individuals. A growing literature on vignettes and reporting biases has dealt with these issues, as in King (XXX). However, this analysis is primarily interested in examining changes in health over time. With a continuous dependent variable, changes over time would typically be addressed using a fixed effects methodology. Fixed effects also control for any permanent bias in how an individual assesses their own health.

Using a fixed effects ordered logit, we investigate the effects of inheritances on health using regressions of the following nature:

$$Health_{it} = f\left(\alpha + \beta Inherit_{it} + \delta X_{it} + \phi_i + \varepsilon_{it}\right)$$

where X contains the control variables described above. Because health is a categorical variable, a fixed effects ordered logit, following Jones and Schurer (2009), will be used. Several papers, beginning with Das and van Soest (1997), have considered this type of model. In Das and van Soest (1997) and Ferrer-i-Carbonell and Frijters, 2004; Frijters et al., 2004a,b, 2005a, separate fixed effect logit regressions are run for each possible value of the dependent variable. Different weighting methods are then used to combine the results from each separate regression. Jones and Schurer (2009) point out that a simple approximation is to calculate the average value of the

health for each individual, then create a dummy variable for each observation that indicates whether health is above or below the individual's average. This dummy variable then is the dependent variable. In this case, the fixed effect ordered logit predicts when health is above the individual average. One disadvantage of this simplification is that it is difficult to interpret the marginal effects. Thus most of our discussion will focus on whether or not results are positive (or negative) and significant. A positive coefficient would imply that health improves upon receipt of an inheritance.

Inherit will take several forms: the absolute amount of the inheritance, the relative amount of the inheritance, and a dummy if any inheritance was received at all. If the dummy is significant, but the amounts are not, this suggests that inheritances may reduce stress (especially if the individual were a care giver before death); signal parental interest, as in Bernheim and Serinerov (2003); or that any unexpected transfer can improve health. Alternatively, if the coefficients on the amounts are significant, this would suggest that improvements in financial well being can help to improve health.

By excluding individual fixed effects in some specifications we can test whether inheritances affect health directly or whether those who will receive inheritances are different from those who do not. In this case a standard ordered logit is used. Again we can identify whether there is a positive (negative) and significant correlation between inheritances and health. If the results between these two models differ and an effect is found only in the ordered logit, but not in the fixed effect ordered logit, it implies that the correlation is likely due to unobserved heterogeneity across individuals rather than a causal effect of inheritances on health.

As a further test of this, consider the following falsification test:

$$Health_{it} = f\left(\alpha + \beta Inherit_{it+1} + \delta X_{it} + \phi_i + \varepsilon_{it}\right).$$

If those who will receive an inheritance in a future period are also healthier this suggests that the relationship between inheritances and health occurs not only through the direct impact on financial resources. In this case, inheritances could merely signal unobserved heterogeneity.

Taken all together, this methodology allows us to investigate whether inheritances affect health. We take careful steps to investigate other possible explanations for a correlation between receiving an inheritance and health. In particular, we consider the inheritances are merely correlated with health because parents that want to leave bequests to their children also make other investments in the children's well being.

IV. The Impact of Inheritances on Health

In this section we consider the impact of receiving an inheritance on health. First we consider the base case results, which examine the effect of inheritances in the last two years on health. Second, we will consider differences in effects overtime, focusing on 1, 2 and 5 year periods, in accordance with the reporting frequency in the PSID. Third, we consider in differential effects on those originally part of the dynasty and those who have married into the dynasty. Fourth, we consider the interaction between inheritances and childhood investment. Finally, we examine the effects of inter-vivos transfers.

Table 5 reports the results of the base case models. Here we consider the impact of an inheritance in either of the previous two years on health. For all models, we consider two specifications, one with fixed effects and one without fixed effects. The fixed effects specifications are modeled using the deviation from the individual's mean health as the dependent variable. This makes it difficult to interpret the marginal effects of the coefficients, thus we only report the coefficients and discuss the sign and significance. Comparing the two

specifications allows us to consider whether inheritances improve health (a causal effect) or rather those who receive inheritances tend to be healthier than average (a selection effect). Because the dependent variable in the fixed effects specifications is necessarily zero or 1, and in the no-fixed-effects specifications may range from 1 to 5, it is not appropriate to compare the magnitudes of the coefficients. The models vary in terms of the measures of inheritances that are included.

Table 5 reports the coefficients of other control variables; the results are consistent across all models and specifications. These variables are suppressed in all other tables as they do not significantly vary across specifications. For example, we see that health declines with age, in both the fixed-effects and no-fixed-effects cases. Individuals who are married are in better health than individuals who are unmarried in the no-fixed-effect specification, but compared to the individuals own average, health is worse when married. This may be because individuals tend to be unmarried when they are younger and married when they are older. The self employed tend to be in better health in both models, suggesting both a causal and a selection effect. Controls for income suggest that an individual's with higher personal labor income are in better health, both compared to the overall average, and compared to their own average. Whether income leads to better health, or those in better health are more able to work, is unclear. Household taxable income, on the other hand, is only significant in the no-fixed-effect specifications, suggesting that fluctuations over time in other sources of income do not improve health, but individuals in households that have higher total income tend to be in better health. Finally, looking at region, we find that there are differences in health patterns across regions, but these are likely to be selection effects and not causal. Region has no effect in the fixed-effects specifications.

Turning to our main variables of interest, regarding inheritances, Model 1 considers the effect of the absolute amount of an inheritance. Model 2 includes a dummy variable if the individual received an inheritance. Model 3 includes both the amount and the indicator variable. Model 4 considers the amount of the inheritance relative to a year's total household income. Model 5 includes the relative amount and the indicator variable. The amount of an inheritance, either absolute or relative, is never significant. In both the fixed-effects and no-fixed-effects specifications, larger inheritances have no impact on health. This suggests that individuals are not using their inheritances to purchase better health (or rather purchase goods and services that improve health). In models 2, 3, and 5, the dummy variable that indicates receipt of an inheritance is positive and significant in the no-fixed-effects specification, but not in the fixed-effects specifications. Individuals who receive inheritances have better health than those who do not receive inheritances, but the there is no change in health following the receipt of an inheritance.

Table 6 examines differences in effects over time. Five different time periods are considered: inheritances in the *past* 1 year, 2 years or 5 years and inheritances in the *next* 1 year or 2 years. For all periods in the past, the results are nearly identical to those in table 5. In table 6C, which considers the effects of inheritances in the past 5 years, the absolute amount of the inheritance is significant in some specifications. However, absolute amounts are represented in 1000s of dollars and the effects are economically insignificant.

Tables 6D and 6E present a falsification test: are inheritances in the future associated with better health. There should be no causal impact of inheritances on future health. Again, in the no-fixed-effect specifications, dummy variables indicating receipt of a future inheritance are positive and significant. Those who will receive inheritances tend are on average in better health

than those who will not receive inheritances. In some models in the fixed-effect specifications, negative effects of inheritances on health are found. In Model 3, controlling for the amount and a dummy variable for receipt of an inheritance, receipt of an inheritance in the future is associated with worth health. In models 4 and 5, the relative amount of a future bequest is associated with worse health. In the years preceding the death of someone who will bequeath wealth, future recipients may be under increased pressure as caregivers. This may also provide evidence for an exchange hypothesis. Individuals who can expect to receive larger bequests relative to their income may put more effort into caring for their parents in order to ensure their bequests.

Table 7 uses information on death and inheritances in other households in a dynasty to investigate whether inheritances have a different effect on people who are related to the decedent relative to those who are not. We distinguish between inheritances from within the dynasty for the original PSID household member, inheritances from within the dynasty for new spouses, and inheritances whose source is unknown (the omitted category). Over 1 and 2 years, we find no systematic differences between inheritances. The dummy for inheritances is still significant in the no-fixed-effects specifications, but not in the fixed-effects specifications.

In Table 7C, which looks at effects after 5 years, there are some consistent differences. The correlation between inheritances and health is smaller for in-dynasty inheritances for new spouses than for unknown inheritances in all 3 models for the no-fixed-effects specifications. This further supports the selection hypothesis: that those who receive bequests tend to come from stronger households. We would expect the correlation between "strength" as measured by health and bequests to be stronger with in the dynasty than outside of it. We would expect the effect of unknown inheritances to be an average of the effect on original household member and new

spouses. In the fixed-effects specifications, we find that there is a small positive effect of inheritances on health and a negative effect for in-dynasty inheritances on original household members.

Only about a third of inheritances can be linked to an inheritance or death in the dynasty. Those that can not be assigned may come from outside of the dynasty, from the new spouse's family, or it may be that we just don't observe a death or inheritance in the original PSID dynasty.

Table 8 uses information from the first 5 waves of the PSID only for individuals who were children during the first five waves. These models investigate whether the effects of inheritances are different for families that made more investments in their children. The first model replicates earlier results for this limited sample. The results are nearly identical to those in Table 5; those who receive inheritances tend to be in better health, but there is no change in health upon receipt of an inheritance. Model 2 examines whether the effects of inheritances are different for individuals whose families ate more meals together as children. In the fixed-effects specification, we find that for those who ate more meals together as children, the receipt of an inheritance actually has a positive effect on health. Model 3 considers differences for people whose parents regularly attended PTA meetings. Here there are no significant differences from Model 1. Model 4 considers the effect of familial obligations. Individuals from families where parents felt they should provide more financial support seem to be fundamentally different. In the no-fixed-effect specification, the positive correlation between bequests and health is limited to those whose parents did not feel an obligation. In the fixed-effect specification, there is a positive effect of inheritances on health for individuals who parents did not feel an obligation to relatives.

Taken all together the results in tables5 through 8 suggest that there are important selection effects in the receipt of inheritances. Those who receive inheritances are generally in better health, but this effect is likely not to be causal. However, the average effects may mask heterogeneity in the effects. In the models with interactions, there are at times causal effects.

Table 9 considers a robustness test. One of the potential problems with the PSID data is that the retrospective question combines inheritances and large gifts. To address this possibility, table 9 examines the effect of *inter vivos* family transfers on health. Table 9A considers the impact of family transfers in the last two years. In Model 1, larger family transfers are associated with better health in the no-fixed-effect specification. In the fixed-effect specification we find no significant effect. In Model 2, in both specifications, health is worse for those who receive transfers. Model 3, which combines Models 1 and 2 finds the same results. Table 9B considers health prior to transfers. Again, larger transfers are associated with better health, but indicator variables suggest that those who receive transfers tend to be in worse health. Taken together, these results suggest that dynasties that have more money are more able to make transfers but transfers are more likely to occur when health suddenly declines.

IV. Conclusions

Because the timing of inheritances is random, they can provide an exogenous shock to financial resources which can be used to investigate the effect of wealth on health. Because health can influence income and wealth, it is often difficult to measure the impact of wealth on health. The results in this paper suggest that while the timing of inheritances is random, the receipt of an inheritance is not. Individuals who receive inheritances tend to be in better health. Bequests are likely to be left by parents who have been able to not only accumulate wealth that

can be bequeathed but also were able to produce healthy children. However, in the aggregate, following the receipt of an inheritance, no change in health is observed.

Using the long term and dynastic structure of the PSID, it is possible to investigate whether there are heterogeneous effects of inheritances. Within dynasty inheritance are positively associated with health, but the effects are smaller for those who are not related to the original dynasty. Inheritances also have different effects depending on the early life investments. There is actually a positive effect of inheritances on health for individuals whose families were more involved early in life.

One interpretation of this is that for some household there is a bequest motive. Parents who invest in their children early in life create "stronger" offspring. These parents are more able to leave bequests and desire to do so, and their children are in better health later in life. Thus inheritances represent another investment made in their children. Health accumulates for those who will receive bequests, but for most there is no causal impact.

Falsification tests that look at the health prior to inheritances suggest that health declines prior to the death of a family member. This supports the literature on negative effects of care-giving on health.

As this draft is preliminary, several additional specifications will still be considered. First, whether there are differential effects by demographic characteristics, such as age. Second, whether there are differential effects based on reported bequest motives.

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Table 1 Summary Statistics for Measures of Inheritance

Variable	Obs	Mean	Std. Dev.	Min	Median	Max
Inheritances in Previous Year						
Retrospective Question						
Indicator if received inheritance	209010	0.014	0.116	0	0	1
Amount of Inheritance	209010	3.342	229	0	0	39904
Amount if greater than 0	2850	245.124	1946	0.013	35.046	39904
Amount relative to household income	190616	0.132	18	-3846.15	0	3000
Amount relative to household income (if amount greater than 0)	2812	8.950	152	-3846.15	0.551	3000
Annual Question						
Indicator if received inheritance	173912	0.015	0.121	0	0	1
Amount of Inheritance	173912	0.747	16	0	0	1752
Amount if greater than 0	2576	50.427	117	0.001	15.261	1752
Amount relative to household income	158210	0.049	3	-80	0	600
Amount relative to household income (if amount greater than 0)	2510	3.080	21	-80	0.299	600
Combined						
Indicator if received inheritance	216681	0.021	0.143	0	0	1
Amount of Inheritance	216681	3.437	225	0	0	39904
Amount if greater than 0	4510	165.119	1550	0.001	23.046	39904
Amount relative to household income	196977	0.137	18	-3846.15	0	3000
Amount relative to household income (if amount greater than 0)	4418	6.130	120	-3846.15	0.394	3000
Inheritances in Previous 2 Years						
Combined						
Indicator if received inheritance	214747	0.036	0.185	0	0.000	1
Amount of Inheritance	214747	7.757	350	0	0	39904
Amount if greater than 0	7653	217.659	1842	4	25.436	39904
Amount relative to household income	195302	-0.562	480	-206879	0	46347
Amount relative to household income (if amount greater than 0)	7493	-14.656	2451	-206879	0.424	46347
Inheritances in Previous 5 Years						
Combined						
Indicator if received inheritance	200041	0.079	0.270	0	0	1
Amount of Inheritance	200041	32.934	861	0	0	50316
Amount if greater than 0	15804	416.869	3038	4	28.763	50316
Amount relative to household income	181759	0.998	518	-206879	0	51684
Amount relative to household income (if amount greater than 0)	15395	11.788	1780	-206879	0.475	51684

All amounts in 1,000s of 2007 dollars. Amounts relative to income are relative to current previous year's taxable household income. Households with zero taxable income are excluded in relative calculations.

Table 2: Regressions Predicting Receipt of an Inheritance

	(1) Logit		(2) Fixed Effect Logit	
VARIABLES	Coef.	Marginal Effects	Coef.	Marginal Effects
Age	0.072***	0.001***	0.121***	0.002***
	(0.006)	(0.000)	(0.011)	(0.000)
Age Squared	-0.001***	-0.000***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Dummy if Married or Cohabitating	0.244***	0.003***	0.228***	0.005**
	(0.042)	(0.001)	(0.070)	(0.002)
Dummy if Self Employed	0.179***	0.003***	0.051	0.001
	(0.045)	(0.001)	(0.068)	(0.001)
Household Taxable Income	0.001***	0.000***	0.0003	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Individual Labor Income	-0.001**	-0.000**	-0.001	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
North Central Regron	-0.002	-0.000	0.351	0.006*
	(0.047)	(0.001)	(0.215)	(0.003)
Southern Region	-0.048	-0.001	0.189	0.003
	(0.046)	(0.001)	(0.183)	(0.003)
Western Region	0.256***	0.004***	0.282	0.005
	(0.048)	(0.001)	(0.207)	(0.003)
Alaska Hawaii	-0.145	-0.002	-0.531	-0.013
	(0.283)	(0.004)	(0.644)	(0.021)
Foreign Country	-0.067	-0.001	0.174	0.003
	(0.230)	(0.003)	(0.367)	(0.006)
Male	0.083**	0.001***		
	(0.032)	(0.000)		
Less than High School	-0.431***	-0.006***		
	(0.056)	(0.001)		
Some College	0.208***	0.003***		
	(0.042)	(0.001)		
College Degree	0.480***	0.009***		
	(0.046)	(0.001)		
Advanced Degree	0.754***	0.016***		
	(0.050)	(0.001)		
White	0.352***	0.005***		
	(0.074)	(0.001)		
Black	-0.923***	-0.012***		
	(0.090)	(0.001)		
Constant	-6.368***			
	(0.179)			
Observations	214091	214091	45017	45017
Number of Individuals			3255	3255

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Description of Inheritance Recipients

Table 3A: Observation of Inheritance or Death within the Dynasty of Inheritance Recipients

	Inheritance Observed	Death observed	Inheritance or Death Observed
Relative of respondent	355	127	424
Relative of respondent's spouse	669	310	888
Unknown	3,486	4,073	3,198
Total	4,510	4,510	4,510

Table 3B: Average Childhood Experiences of Inheritance Recipients

Variable	Obs	Mean	Std Dev	Min	Max
Average of Eat together more than 4 nights per week	1453	0.795	0.298	0	1
Average of Attended PTA in last year	1453	0.550	0.382	0	1
Average of Feel Obliged to help family	1453	0.326	0.329	0	1

Table 4: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	216615	42.963	15.743	0	101
Dummy if Married or Cohabitating	216681	0.719	0.450	0	1
Dummy if Self Employed	216531	0.090	0.286	0	1
Household Taxable Income	216681	57.220	76.111	-1285.4	6035.733
Individual Labor Income	216681	28.591	43.344	0	4033.074
North Central Region	216681	0.245	0.430	0	1
Southern Region	216681	0.443	0.497	0	1
Western Region	216681	0.156	0.363	0	1
Alaska Hawaii	216681	0.003	0.054	0	1
Foreign Country	216681	0.004	0.064	0	1
Male	216681	0.551	0.497	0	1
Less than High School	214260	0.234	0.423	0	1
High School	214260	0.314	0.464	0	1
Some College	147014	0.659	0.474	0	1
College Degree	214260	0.123	0.329	0	1
Advanced Degree	214260	0.067	0.250	0	1
White	216681	0.642	0.480	0	1
Black	216681	0.305	0.460	0	1
Self Assessed Health	215677	3.572	1.097	1	5

All amounts in 1,000s of 2007 dollars.

Table 5: Base Case Results Predicting Health using Ordered Logits with and without Fixed Effects For Inheritances in the Last 2 Years

	Model 1		Model 2		Model 3		Model 4		Model 5	
Amount of Inheritance	0.000	0.000			-0.000	-0.000				
	(0.000)	(0.000)			(0.000)	(0.000)				
Dummy if Inherit			0.034	0.246***	0.034	0.249***			0.031	0.204***
			(0.029)	(0.022)	(0.029)	(0.022)			(0.030)	(0.022)
Inheritance Relative to Income							-0.000	-0.000	-0.000	-0.000
							(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.039***	-0.074***	-0.040***	-0.075***	-0.040***	-0.075***	-0.023***	-0.064***	-0.023***	-0.065***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Age Squared	-0.000***	0.000***	-0.000***	0.000***	-0.000***	0.000***	-0.001***	0.000***	-0.001***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married or Cohabitating	-0.140***	0.234***	-0.140***	0.233***	-0.140***	0.233***	-0.157***	0.121***	-0.158***	0.121***
	(0.020)	(0.010)	(0.020)	(0.010)	(0.020)	(0.010)	(0.022)	(0.010)	(0.022)	(0.010)
Dummy if Self Employed	0.077***	0.320***	0.077***	0.317***	0.077***	0.317***	0.055**	0.259***	0.055**	0.256***
	(0.025)	(0.014)	(0.025)	(0.014)	(0.025)	(0.014)	(0.025)	(0.014)	(0.025)	(0.014)
Household Taxable Income	0.000	0.005***	0.000	0.005***	0.000	0.005***	0.000	0.004***	0.000	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Individual Labor Income	0.002***	0.007***	0.002***	0.007***	0.002***	0.007***	0.001***	0.006***	0.001***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
North Central Region	-0.012	-0.055***	-0.013	-0.055***	-0.013	-0.055***	-0.023	-0.056***	-0.024	-0.055***
	(0.074)	(0.013)	(0.074)	(0.013)	(0.074)	(0.013)	(0.076)	(0.013)	(0.076)	(0.013)
Southern Region	-0.072	-0.361***	-0.072	-0.358***	-0.072	-0.358***	-0.062	-0.343***	-0.062	-0.341***
	(0.061)	(0.012)	(0.061)	(0.012)	(0.061)	(0.012)	(0.063)	(0.012)	(0.063)	(0.012)
Western Region	-0.018	0.052***	-0.018	0.050***	-0.018	0.050***	-0.014	0.058***	-0.014	0.057***
	(0.075)	(0.014)	(0.075)	(0.014)	(0.075)	(0.014)	(0.077)	(0.015)	(0.077)	(0.015)
Alaska Hawaii	0.187	0.062	0.187	0.065	0.187	0.065	0.195	0.022	0.195	0.024
	(0.173)	(0.074)	(0.173)	(0.074)	(0.173)	(0.074)	(0.175)	(0.074)	(0.175)	(0.074)
Foreign Country	-0.054	0.245***	-0.053	0.246***	-0.053	0.246***	-0.037	0.261***	-0.037	0.262***
	(0.122)	(0.064)	(0.122)	(0.064)	(0.122)	(0.064)	(0.123)	(0.065)	(0.123)	(0.065)
Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Observations	198056	213618	198056	213618	198056	213618	179011	194340	179011	194340
Number of Individuals	18270	.	18270	.	18270	.	17263	.	17263	.

Cut Point 1	-5.329***	-5.336***	-5.336***	-5.560***	-5.565***
	(0.037)	(0.037)	(0.037)	(0.040)	(0.040)
Cut Point 2	-3.784***	-3.791***	-3.791***	-3.817***	-3.822***
	(0.036)	(0.036)	(0.036)	(0.038)	(0.038)
Cut Point 3	-2.118***	-2.124***	-2.124***	-2.049***	-2.053***
	(0.035)	(0.035)	(0.035)	(0.038)	(0.038)
Cut Point 4	-0.495***	-0.500***	-0.500***	-0.417***	-0.421***
	(0.035)	(0.035)	(0.035)	(0.037)	(0.037)

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

Table 6: Comparison of Effects of Inheritances Over Time

Table 6A Inheritances in the Last One Year

	Model 1		Model 2		Model 3		Model 4		Model 5	
Amount of Inheritance	0.000	0.000			0.000	-0.000				
	(0.000)	(0.000)			(0.000)	(0.000)				
Dummy if Inherit			0.020	0.245***	0.019	0.245***			0.018	0.204***
			(0.036)	(0.028)	(0.037)	(0.028)			(0.037)	(0.028)
Inheritance Relative to Income							0.000	0.000	0.000	-0.000
							(0.000)	(0.000)	(0.000)	(0.000)
Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Observations	199678	215517	199678	215517	199678	215517	180405	195987	180405	195987
Number of Individuals	18428		18428		18428		17396		17396	

Table 6B: Inheritances in the Last Two Years

	Model 1		Model 2		Model 3		Model 4		Model 5	
Amount of Inheritance	0.000	0.000			-0.000	-0.000				
	(0.000)	(0.000)			(0.000)	(0.000)				
Dummy if Inherit			0.034	0.246***	0.034	0.249***			0.031	0.204***
			(0.029)	(0.022)	(0.029)	(0.022)			(0.030)	(0.022)
Inheritance Relative to Income							-0.000	-0.000	-0.000	-0.000
							(0.000)	(0.000)	(0.000)	(0.000)
Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Observations	198056	213618	198056	213618	198056	213618	179011	194340	179011	194340
Number of Individuals	18270	.	18270	.	18270	.	17263	.	17263	.

Table 6C: Inheritances in the Last Five Years

	Model 1		Model 2		Model 3		Model 4		Model 5	
Amount of Inheritance	-0.000*	0.000			-0.000*	-0.000				
	(0.000)	(0.000)			(0.000)	(0.000)				
Dummy if Inherit			0.035	0.248***	0.045*	0.251***			0.038	0.198***
			(0.024)	(0.015)	(0.024)	(0.016)			(0.024)	(0.016)
Inheritance Relative to Income							-0.000	-0.000	-0.000	-0.000
							(0.000)	(0.000)	(0.000)	(0.000)
Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Observations	184854	199083	184854	199083	177740	199083	166984	180948	160389	180948
Number of Individuals	16704		16704		16704		15753		15753	

Table 6D: Inheritances in the Next One Year

	Model 1		Model 2		Model 3		Model 4		Model 5	
Amount of Inheritance	0.000	0.001***			0.000*	0.000**				
	(0.000)	(0.000)			(0.000)	(0.000)				
Dummy if Inherit			-0.048	0.210***	-0.071*	0.186***			-0.034	0.207***
			(0.039)	(0.030)	(0.041)	(0.031)			(0.040)	(0.030)
Inheritance Relative to Income							-0.003**	0.000	-0.004*	-0.000
							(0.001)	(0.001)	(0.002)	(0.001)
Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Observations	155025	168766	155025	168766	155025	168766	155025	168766	150387	163975
Number of Individuals	15134		15134		15134		15134		14788	

Table 6E: Inheritances in the Next Two Years

	Model 1		Model 2		Model 3		Model 4		Model 5	
Amount of Inheritance	0.000	0.000***			0.000*	0.000**				
	(0.000)	(0.000)			(0.000)	(0.000)				
Dummy if Inherit			-0.041	0.207***	-0.060*	0.189***			-0.034	0.210***
			(0.032)	(0.023)	(0.033)	(0.024)			(0.032)	(0.023)
Inheritance Relative to Income							-0.002**	-0.000	-0.002*	-0.001
							(0.001)	(0.001)	(0.001)	(0.001)
Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Observations	150812	164240	150812	164240	150812	164240	150812	164240	150812	164240
Number of Individuals	14826		14826		14826		14826		14826	

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Regressions also control for age, age squared, marital status, self employment, total household taxable income, individual labor income, and region dummies.

Table 7: Comparison of In-Dynasty Inheritances For Original Family Members and New Spouses

Table 7A: Inheritances in the Last One Year

VARIABLES	Model 1 Inheritance in Dynasty		Model 2 Death in Dynasty		Model 3 Inheritance or Death in Dynasty	
Dummy for Inheritance	0.003	0.249***	0.024	0.255***	0.011	0.249***
	(0.041)	(0.032)	(0.038)	(0.029)	(0.043)	(0.033)
Dummy for Inheritance interacted with Dynasty	-0.009	-0.036	0.048	-0.017	-0.020	-0.011
	(0.101)	(0.077)	(0.139)	(0.107)	(0.090)	(0.069)
Dummy for Inheritance interacted with Spouse's Dynasty	0.236*	0.021	-0.290	-0.305*	0.132	-0.024
	(0.136)	(0.102)	(0.220)	(0.163)	(0.125)	(0.094)
Fixed Effects	Yes	No	Yes	No	Yes	No
Observations	199678	215517	199678	215517	199678	215517
Number of Individuals	18428		18428		18428	

Table 7B: Inheritances in the Last Two Years

VARIABLES	Model 1 Inheritance in Dynasty		Model 2 Death in Dynasty		Model 3 Inheritance or Death in Dynasty	
Dummy for Inheritance	0.031	0.249***	0.039	0.254***	0.042	0.256***
	(0.033)	(0.024)	(0.031)	(0.023)	(0.034)	(0.025)
Dummy for Inheritance interacted with Dynasty	-0.050	-0.042	0.021	-0.040	-0.066	-0.034
	(0.083)	(0.062)	(0.109)	(0.082)	(0.073)	(0.054)
Dummy for Inheritance interacted with Spouse's Dynasty	0.137	-0.013	-0.260	-0.167	0.052	-0.040
	(0.114)	(0.084)	(0.180)	(0.130)	(0.104)	(0.077)
Fixed Effects	Yes	No	Yes	No	Yes	No
Observations	197968	213549	198056	213618	198056	213618
Number of Individuals	18266		18270		18270	

Table 7C: Inheritances in the Last Five Years

VARIABLES	Model 1 Inheritance in Dynasty		Model 2 Death in Dynasty		Model 3 Inheritance or Death in Dynasty	
Dummy for Inheritance	0.054**	0.257***	0.034	0.254***	0.059**	0.260***
	(0.026)	(0.017)	(0.025)	(0.016)	(0.027)	(0.018)
Dummy for Inheritance interacted with Dynasty	-0.147**	-0.020	0.055	-0.021	-0.113**	-0.013
	(0.065)	(0.044)	(0.081)	(0.055)	(0.056)	(0.038)
Dummy for Inheritance interacted with Spouse's Dynasty	0.013	-0.121**	-0.115	-0.150*	-0.034	-0.116**
	(0.090)	(0.059)	(0.137)	(0.090)	(0.082)	(0.053)
Fixed Effects	Yes	No	Yes	No	Yes	No
Observations	184586	198828	184854	199083	184854	199083
Number of Individuals	16698	.	16704	.	16704	.

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Regressions also control for age, age squared, marital status, self employment, total household taxable income, individual labor income, and region dummies.

Table 8: Comparison of Inheritances in Past 2 Years by Childhood Investments

	Model 1		Model 2		Model 3		Model 4	
Dummy if Received Inheritance	0.076	0.244***	-0.212	0.061	0.073	0.220***	0.135*	0.436***
	(0.053)	(0.038)	(0.156)	(0.112)	(0.092)	(0.066)	(0.075)	(0.055)
Inheritance Dummy interacted with average of ate 4 or more Meals together			0.368**	0.209				
			(0.185)	(0.133)				
Inheritance Dummy interacted with average of single individual household			-0.283	0.640*				
			(0.570)	(0.375)				
Inheritance Dummy interacted with average attended PTA meetings in last year					0.007	0.045		
					(0.137)	(0.098)		
Inheritance Dummy interacted with average obligation to help family members							-0.174	-0.564***
							(0.158)	(0.113)
Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No
Observations	68005	74044	68005	74044	68005	74044	68005	74044
Number of Individuals	6619		6619		6619		6619	

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Regressions also control for age, age squared, marital status, self employment, total household taxable income, individual labor income, and region dummies.

Table 9: The Impact of Inter Vivos Transfers

Table 9A: Received Income from Family in *Last* Two Years

	Model 1		Model 2		Model 3	
Amount of Income From Relatives	-0.001	0.003**			0.000	0.011***
	(0.002)	(0.001)			(0.002)	(0.002)
Dummy if Received Income From Relatives			-0.071**	-0.163***	-0.071**	-0.207***
			(0.028)	(0.017)	(0.029)	(0.019)
Fixed Effects	Yes	No	Yes	No	Yes	No
Observations	127970	141759	127970	141759	127970	141759
Number of Individuals	13738		13738		13738	

Table 9B: Will Received Income from Family in *Next* Two Years

	Model 1		Model 2		Model 3	
Amount of Income From Relatives	-0.003	0.004**			-0.005	0.013***
	(0.003)	(0.002)			(0.003)	(0.002)
Dummy if Received Income From Relatives			0.016	-0.171***	0.034	-0.222***
			(0.031)	(0.019)	(0.033)	(0.021)
Fixed Effects	Yes	No	Yes	No	Yes	No
Observations	111357	123553	111357	123553	111357	123553
Number of Individuals	12509		12509		12509	