Assets, Local Conditions, and Stress-related Health Outcomes (Extended Abstract)

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Many biologically plausible hypotheses have been proposed to account for the well-documented relationships between social and economic outcomes on the one hand, and health outcomes on the other. For example, one class of hypotheses describes potential roles for physiological stress in translating financial insecurity or undesirable neighborhood conditions into gradual and chronic deterioration of a broad array of biological systems, leading eventually to cardiovascular disease, more rapid aging, and greater susceptibility to infectious disease. Empirical evaluation of these hypotheses is extremely difficult, in part because the processes by which all these outcomes are assigned are so complex and deeply interrelated.

We use residential property valuations to shed light on the causal impacts of financial wealth and community characteristics on health status. The period from the early 1990s to 2006 saw dramatic increases in property values across the United States, but the rate of appreciation varied widely across geographic locations–in part because communities followed different development trajectories than even their nearby neighbors. Our study is designed to exploit this geographic heterogeneity in order to evaluate the empirical evidence regarding causal impacts of financial security and desirable local conditions on an array of stress-related health outcomes in American homeowners born before the year 1953.

The key identifying assumption in our approach is that changes in housing values over the medium term are driven by factors that are unforetold and uninfluenced by any individual market actor. This assumption is motivated by the idea that in at least a very large part, the price of a property represents the expected net present value of the services it will provide. Therefore, at least within a geographic cluster of communities, homes with similar values in any given baseline year should have similar prospects to appreciate in value over the medium term; those that end up appreciating more are simply those that experienced a positive realization regarding local conditions (like

an expanding labor market) that would have been just as likely for the others. As we discuss below, this assumption has an empirically testable implication, allowing us to present evidence that bolsters its plausibility.

Subject to our identifying assumption, we can treat growth in housing values as quasirandomly assigned. This allows us to give a causal interpretation to observed correlations between individual stress-related health outcomes and rates of appreciation in property valuations, at least when the analysis is restricted to comparisons within geographic clusters of communities.

We posit two channels by which housing prices can be expected to be causally linked to stress-related health outcomes. First, we note that at least for American homeowners in late middle age and older, overall financial wealth–and housing wealth in particular–represent important and salient determinants of consumption prospects. The unique importance of housing wealth stems from the twin facts, documented elsewhere in the literature, that housing wealth tends to represent families' primary buffer against adverse economic shocks late in life, and also that it tends to be the primary determinant of overall financial position. Therefore, appreciations in housing values represent quasirandomly assigned augmentation in individuals' overall wealth position, and improved financial security as they approach retirement. Another channel by which housing values might be causally linked to stress-related health outcomes derives from the fact that the changes in local conditions which drive up housing prices may themselves have beneficial effects on individuals' health. The epidemiological literature posits many neighborhood characteristics as potential physiological stressors, chronic exposure to which can be detrimental to medium and long run health. If changes in any of these undesirable characteristics are reflected in price changes (as they are likely to be), then housing value appreciation may function as a summary measure. We interpret our main results to reflect a reduced-form composite of the dual impacts on health of both wealth and improvements in local conditions. In supplementary analyses, however, we will aim to shed light on the relative impacts of these two distinct channels.

We draw on two types of data for our analyses. The first includes detailed longitudinal information on individuals and households available from the Health and Retirement Survey (HRS)–a biannual survey of a nationally representative sample of Americans born before the year 1953–and the second are real estate valuations computed at the ZIP code level by private sector investment advisor firms. Using geocoded information on the residential locations of survey respondents, we are able to combine these data in order to identify those homeowners who lived in communities that experienced more rapid run-ups in housing values from those who lived in communities that fared less well.

We begin our analysis by noting that our identifying assumption implies that, after matching on initial property values, no ex ante characteristics of respondents or their communities should provide any predictive information on the subsequent rate of appreciation. In our first set of

analyses, we test this implication. First, we document the unsurprising fact that housing values in any time period reflect many potentially confounding individual and community characteristics. For example, individuals who were exercising regularly at the time of their baseline interview were living in residential properties that were valued about six percent higher compared with individuals who were not exercising regularly. However, we then go on to show that once we control flexibly for baseline valuation, not exercise behavior nor any of about two dozen other baseline characteristics predict anything about the subsequent evolution of the value. We interpret these results as providing empirical evidence to bolster the intuitive plausibility of our key identifying assumption.

Having thus shored up our key identifying assumption, we proceed to our main analyses. These explore the question of whether changes in housing values in a community are correlated with stress-related health outcomes. Subject to our identifying assumption, we give a causal intepretation to any observed correlations. The stress-related health outcomes we examine include anthropometrics, measures of hypertension, various self-reported health conditions, indicators of psychological distress, expectations about the future, health seeking behaviors, and various specific incident morbidities. All of our analyses include as conditioning variables baseline sociodemographic characteristics, flexible controls for baseline property valuation in the respondent's community, and the main variable of interest–property valuation in the outcome year. Since both initial and final valuations are included as conditioning variables, the coefficients on the outcome year valuation can be interpreted as the reduced-form composite of the causal impact of wealth and local conditions on health.

Preliminary results indicate that for example a six percentage point acceleration in the average annual rate of appreciation in nominal housing values (which represents a movement from the slowest-appreciating quartile to the fastest) reduces waistline growth by about 0.8 inches over the course of a decade. Waist circumference is an indication of abdominal fat deposits–a very important risk factor for long-run cardiovascular disease, which has been posited to be affected by chronically high levels of circulating stress hormones. We also find that greater appreciation in housing values reduces the risk that a respondent reports difficulty sleeping, reports significant concerns that a major medical expense could deplete his or her savings, or reports difficulties with activities of daily living. Working through our other stress-related outcomes under examination, we are finding that the basic pattern holds–greater appreciation in housing values has a modest effect in reducing the risk of psychological distress and physiological dysfunction. However, our preliminary results also indicate that more rapid appreciation has no measurable effect on mortality or on major health events like heart attack or stroke during the follow-up period. Effects on these major outcomes may be too modest to observe, or may take a long time to manifest.

We intend to build on these results with two sets of secondary analyses. In the first, we will

provide some suggestive results aimed at disentangling the pure wealth effects of property value appreciation from the effects of the improvements in local conditions that gave rise to the appreciations in the first place. To this end, we will disaggregate respondents into three categories–those who do not own their homes, those homeowners whose primary residence represents less than 95 percent of their total wealth portfolio (about three quarters of all homeowners in the sample fit this category), and the rest. Subject to the assumption that effects of wealth accumulation and changes in local conditions are similar on average across these three groups, the wealth effects should be most concentrated in the last group, and non-existent in the first, whereas the effects of improvements in local conditions should be shared equally across all three groups. Our preliminary results indicate that the effects of housing market appreciation on cardiovascular outcomes and financial anxiety are indeed concentrated in the last group. However, effects on some other indicators of psychological distress are not appreciably different between the three groups.

In our final set of analyses, we will make use of respondents' own estimate of the current market value of their primary residence, which is collected in the HRS. This measure is substantively different from the third-party valuation we use in our main analyses. It is property specific, rather than ZIP code specific. Furthermore, it represents changes reported by the respondents themselves, who may or may not perceive changes in third-party valuations. Therefore, estimates of the causal impact of changes in this valuation can complement estimates from our main analyses. However, use of the self-reported valuation is fraught, in large part because of course the survey can only ask individuals for their valuations of their current residence. Therefore, we can only compute changes in valuation for those individuals who did not move over the course of the followup period. This represents less than three quarters of the eligible respondents, and our preliminary results indicate that those who moved were strongly negatively selected on baseline health characteristics. This bolsters our concern that endogenous sample selection would confound the interpretation of results of naive analyses which simply restrict the sample to those for whom self-reported valuations are available at the beginning and end of the follow up period. We address this concern by using a Heckman-style simultaneous equation approach to account for systematic attrition from the sample of homeowners. To this end, we employ the gender composition of respondents' children as instruments for sample selection. We provide evidence that those who have daughters are substantially more likely to move than those who have only sons, in keeping with patterns reported in the sociological literature that adult daughters are more likely than sons to provide in-kind support, including shelter. We further claim (plausibly) that gender composition is excludable from models of stress-related health outcomes, and therefore that it serves as a valid instrument to account for the endogenous sample selection. We will compare estimates from our Heckman-style regressions to the results of our main analyses, and relate any observed differences to potential substantive differences between the self-reported and third-party valuations.