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Financial literacy and mortgage equity withdrawals

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ABSTRACT

Mortgage equity withdrawals (MEW) are correlated with covariates consistent with a permanent income framework augmented for credit-constraints. We assess linkages between MEW and financial literacy/education using the Health and Retirement Study (HRS) and Panel Study of Income Dynamics (PSID). We find that the financially literate are 3–5 percentage points less likely to withdraw housing equity via non-home equity loan mortgages using the HRS, while college graduates are 5 percentage points less likely than those without a high school degree in the PSID. Among those withdrawing housing equity in the PSID, college graduates extract significantly less equity and are less likely to have high levels of housing leverage after doing so.

1. Introduction

Mortgage equity withdrawals (MEWs) supported consumption booms in the UK (Miles, 1992; and Muellbauer and Murphy, 1997) and US (Aron et al., 2012; Greenspan and Kennedy, 2008; Hurst and Stafford, 2004; and Mian and Sufi, 2010, 2011). At the macro-level, MEWs are positively correlated with an increased sensitivity of consumption to housing wealth (Duca, 2006; Carroll et al., 2011) and at the micro level, with liquidity constraints (Benito, 2009; Browning et al., 2008; Hurst and Stafford, 2004). These findings are consistent with permanent-income models incorporating credit constraints, in which housing collateral eases credit constraints for some families (Engelhardt, 1996; Muellbauer and Lattimore, 1995). MEWs also enable families to rebalance their portfolios without incurring large costs of selling homes. Because MEWs are a lower cost way of withdrawing housing equity than selling, MEWs offer homeowners a more efficient way to re-optimize not only consumption paths, but also portfolios following increases in net housing assets. However, some households were not fully aware of the risks they took, in line with data showing positive total mortgage equity withdrawal via mortgage refinancing even when this resulted in higher average mortgage interest rates in 2006 and 2007 (Freddie Mac, 2013) and with evidence that many are financially illiterate.[1]

Studies have found strong linkages between financial literacy and behavior. Financial illiteracy has been linked to sub-optimal retirement saving (Lusardi and Mitchell, 2007), low wealth accumulation (Behrman et al., 2012), over-borrowing (Lusardi and Tufano, 2009), using payday loans instead of cheaper alternatives (Agarwal et al., 2009b), and reduced effectiveness of programs to enhance financial decision-making (Carlin and Robinson, 2012). While Clark et al. (2012) find that literacy was positively associated with participation in 401 k savings plans, Gustman et al. (2012), however, find no link between numeracy and knowledge of pensions. Van Rooij et al. (2011) find that financial sophistication

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[1] Many home-owners did not choose the lowest cost mortgage because of confusion about the mortgage contract (Woodward and Hall, 2010). Mistaken beliefs may have fueled the consumption boom of the mid-2000s, as Agarwal (2007) found that households who overestimated home market values consumed more and saved less than others.

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significantly affected stock market participation. Bernheim et al. (2001) found that high school financial education mandates enhanced financial knowledge and that financial literacy importantly affected wealth accumulation, while Bernheim and Garrett (2003) found that employer-based financial education effectively raised saving. In an intertemporal, theoretical optimization model in which households invest in financial literacy, Jappelli and Padula (2011) show how financial literacy and saving can be positively correlated. The literature assessing the links between credit constraints and MEW and the recent literature linking financial literacy to suboptimal saving suggests that less financially literate, ceteris paribus, may be more apt to use MEWs because they mistakenly under-save or under estimate the risks that increased leverage from MEWs pose.

However, a priori, the more financially savvy might be more apt to withdraw housing equity because they are more aware of the potential benefits. It is conceivable that the financially illiterate may be less aware of the need to rebalance their portfolios away from housing toward other assets or might inadvertently overaccumulate assets. The illiterate would tend to withdraw less equity than the literate, ceteris paribus, because they sub-optimally use MEWs to rebalance their portfolios in the former case or to finance consumption in the latter case. On the other hand, households lacking financial education are more likely to engage in MEW if, consistent with previous research, they save sub-optimally. While the strong link between MEW and mortgage default is more consistent with the later proposition, the puzzle of a likely systematic relationship between MEW and financial education is an empirical issue.

Filling a gap in the literature, we test whether financial literacy is correlated with MEW propensity among older homeowners in the HRS. Studies have highlighted differences between the effects of cognitive ability, numeracy and other aspects of financial literacy (Cole and Shastry, 2009). We test three 0–1 variables tracking financial literacy using answers to three financial questions asked of over age 50 households in the Health and Retirement Study (HRS), A question on numeracy tested literacy about compounding and asked if one would have more than, equal to, or less than $1.02 in a deposit account after three years if one originally deposited $1 and earned an annual interest rate of 2%. A question on money illusion tested understanding about inflation and asked if one could buy more, the same, or less than a given basket of goods if bought today with $100, or if one waited a year, during which the inflation rate was 2% and the $100 were put in a bank deposit earning 1% annual interest. The last question was on diversification literacy and tested for a basic understanding of portfolio diversification, asking if it were safer to invest in a stock mutual fund or an individual stock. Only 34% correctly answered all three questions, with 69, 78, and 55%, correctly answering the compound interest, money illusion, and portfolio diversification questions, respectively[2] (Lusardi and Mitchell, 2007). Suggesting a role for financial literacy, 13.6% of the financially literate conducted an MEW (defined later) versus 15.6% of the illiterate for an overall MEW propensity of 14.7% (Table 1).

Controlling for household economic and demographic characteristics, we find that diversification literacy most significantly affects MEW propensity, perhaps because understanding diversification entails recognizing asset price risk.[3] Consistent with this interpretation, many Americans had unrealistic house price expectations (Case et al., 2012) and those underestimating downside house price risk consumed more (Agarwal, 2007), perhaps financed with MEWs. We estimate that the financially literate are 3–5 percentage points less likely to withdraw housing equity and that the financially literate are less likely to conduct an MEW via refinancing and traditional second mortgages, but not via home equity lines of credit.

Partly because the HRS samples an older subset of households, we conducted several robustness checks. We address the possibility that financial literacy is endogenous as it may be correlated with individual risk preferences which affect MEW propensity. We control for risk aversion to prevent systematic differences in preferences from biasing estimates of financial literacy effects. Our findings are also robust to using year and region fixed effects and estimating average treatment effects using matching methods. In addition, we tried instrumenting for financial literacy with limited success. We also use alternative econometric methods to assess the potential role of omitted factors and find, using the non-IV methodology of Altonji et al. (2005), that any bias in the estimated financial literacy effect on MEW propensity is very small.

Since the HRS samples older households, we also use the larger, more nationally representative PSID, which like many data sets lacks financial literacy measures. The PSID's size allows us to quantify links between education and the degree to which equity is withdrawn. We rely on education as a proxy for literacy, motivated by evidence that education is correlated with literacy in the HRS,[4] but does not appear to have an independent effect on MEW behavior. Although data limitations prevent us from assessing optimality,[5] we are able to see if financial literacy is related to the discrete decision to withdraw housing equity using the HRS, and with the PSID, whether the extent of MEWs and their effect on leverage is linked to education. Among those who conducted MEW in the PSID, we find that the increase in housing leverage is significantly and negatively related to educational attainment. In particular, college graduates are about 8 percentage points less likely than high school dropouts to have a higher loan-to-value ratio in the year they conducted an MEW than in the year they purchased a home, or to have loan-to-value ratios above 80 percent after withdrawing equity.

This study is organized as follows. Section 2 presents our empirical specification based on theoretical factors affecting MEW propensity. Section 3 presents HRS data used in Section 4 to estimate models of MEW propensity. Section 5 relates financial literacy to education and assesses links between education and MEWs in the PSID. The conclusion examines broader and policy implications.

2. Basic model specification and estimation details

Our empirical specification follows Hurst and Stafford's (2004) theoretical model of mortgage equity withdrawal in which household i in period t chooses consumption (C_{it}), whether to withdraw housing equity [$MEW_{it} > 0$], and conditional on the MEW decision, how much equity to withdraw to maximize the following sum of lifetime expected present discounted value of utility subject to a budget constraint and binding liquidity constraints:

[2] Those not answering were classified with those who incorrectly answered as financially illiterate. Our MEW findings were similar dropping the former, with standard errors larger owing to fewer degrees of freedom.

[3] All reported results are robust to the inclusion of state fixed effects. As with others, we find that MEW propensity rises with house price appreciation and incentives to lower mortgage interest rates. In runs not shown, variables for state laws affecting bankruptcy (Lefgren and McIntyre, 2009; Lehnert and Maki, 2007) were insignificant.

[4] Our main financial literacy measure for portfolio diversification is significantly correlated (0.177, standard error of 0.063) with whether a household head is a college graduate, while the correlations with heads having only some college or a high school degree were not statistically significant. Controls for risk aversion did not alter this pattern.

[5] Canner et al. (2002) find that households used proceeds from cash-out refinancing to fund home improvements, other investments, debt reduction, and consumption. The HRS lacks details on what MEWs funded, consumption, and investment. Thus, analyzing the optimality of cash-out refinancing is infeasible using the HRS.