

Financial Decision Power and Household Wealth: The Role of Personality and Cognitive Ability

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Abstract

This paper studies how financial decision power is allocated within a household and how it is related to wealth accumulation. Evidence from the Health and Retirement Study (HRS) shows that both the absolute and the relative values of husband's and wife's personality and cognitive ability predict financial decision power allocation. In light of the comparative advantage theory, this finding implies that whoever has suitable characteristics for financial decision-making that facilitates wealth accumulation should assume the responsibility. Indeed, the couple's personality and cognitive ability predict household wealth based on financial decision power role and gender.

Objective

Household financial decision-making determines the amount of money to be saved, how household financial resources are invested, what investment products are utilized, how much risk is taken, and therefore how much return can be achieved. The purpose of this article is to unpack the black box of financial decision power allocation and to investigate its relation to the accumulation of wealth. We first examine whether financial decision power allocation is based on the endowment of personality and cognitive ability. Next, we relate financial decision power allocation to household wealth accumulation through the mediation by personality and cognitive ability. Specifically, we examine how the endowments of personality and cognitive ability of the major financial decision-maker and the spouse are utilized in household financial decision-making and wealth accumulation.

Significance

Making sound financial decisions becomes especially important to household financial well-being because households are assuming greater financial responsibilities due to the uncertainty of the Social Security (Social Security Board of Trustees, 2015), the increasing utilization of defined contribution plans (U.S. Department of Labor, 2015), the increased life expectancy (U.S. National Center for Health Statistics, 2012), and the growing complexity of the financial market (Remund, 2010). At the same time, the number of products offered in the financial market has increased both in number and their complexity (Ho, Palacios, & Stoll, 2012), which has made financial decision-making more difficult than ever before. Consequently, selecting the right primary financial decision-maker is an important task for households, which has direct consequences on wealth accumulation.

Financial mistakes resulting from inefficient financial decision-making could accumulate and lead to very different trajectories of wealth accumulation. The financial security of households has implications on marriage stability and social welfare. Research has shown that the existence of couple disagreement mediates the relation between financial strain and marital instability (Dew, 2011; Gudmunson, Beutler, Israelsen, McCoy, & Hill, 2007). Financially insecure households would demand social supports, which will be costly to the society. Moreover, inefficient savings and investment decisions made by households could lead to inefficient business investment at the macroeconomic level.

The findings of this paper add to the household economics literature by including personality and cognitive ability in the distribution factors of the collective model through the lens of comparative advantage. They add new insight to the literature of gender differences in financial decision-making and help explain why male-headed household have higher wealth by isolating the effect of the gender of the financial decision-maker and the effect of their and their spouse's personality and cognitive ability on household wealth.

Method

In light of the view of a collective household model and a Roy model of comparative advantage (Roy, 1951), we introduce personality and cognitive ability as endowments for household financial decisionmaking. Specifically, collective rationality implies that who makes financial decisions within a household is purely an efficiency problem with the ultimate goal of reaching a state where no improvement of utility can be achieved by changing the allocation of financial decision power. Roy model and its extensions imply that whoever has the comparative advantage in endowments that are suitable for wealth accumulation should be the major financial decision-maker. Moreover, wealth accumulation is the result of a sequence of financial decisions given the income resources, where the financial decisions depend on decision maker's characteristics such as personality and cognitive ability.

We use the Health and Retirement Survey (HRS) longitudinal data to test this conceptual model. In our sample, each observation is a couple where both husband and wife were alive and had answered the questionnaire as a respondent in a survey wave without a proxy. The financial decision power is measured by a major financial decision-maker. We use three dependent variables: total assets, net worth, and financial wealth. The total asset is computed as the sum of net worth and debt. Our independent variables are personality, numeracy, and memory. We control for race, age, age squared, employment status measured by employed, unemployed, and retired, years of education, (log) earning, mental health and physical health. With the data, we test the following hypotheses:

- Hypothesis 1: The allocation of financial decision-making power among a couple depends on their absolute and comparative strength of personality and cognitive ability.
- Hypothesis 2: Personality and cognitive ability of the couple are associated with household wealth, and the associations depend on their financial decision power.

Results

We first investigate how personality and cognitive ability contribute to household financial power allocation. Table 1 presents the results from three models where each observation is a married couple observed in a HRS wave and the dependent variable equals one if husband is the major financial decision-maker of the household. In the first model, we use the levels of husbands' and wife's personality and cognitive ability to predict the allocation of financial decision power. In the second model, we examine how the relative strengths of personality and cognitive ability between husband and wife predict the allocation of financial decision power within the household. In the third model, we use "disadvantages" in personality and cognitive ability to predict allocation of financial decision-making power. Specifically, we generate a vector of dummies that take value of one if husband's personality or cognitive measure is lower than wife's. The results show that conscientiousness and numeracy increase the chance of being the financial decision maker for both husband and wife, yet mental stability increases wife's chance, openness decreases and memory increases husband's chance of assuming financial decision power. Comparative advantages in conscientiousness, mental stability, memory, and numeracy predict higher chance of financial decision power.

In Table 2, we explore how the allocation of financial decision power interacts with personality and cognitive ability in wealth accumulation. We first assume that the financial decision-maker should be converting their cognitive and non-cognitive skills to financial outcomes in the same way regardless of their gender, controlling for the gender of financial decision-maker and their spouse's personality and cognitive ability. Secondly, we allow this process to differ by the gender of the major financial decision-maker and the gender of the spouse. The dependent variables are total assets, net worth, and financial wealth. The results show that both the financial decision-maker's and the spouse's conscientiousness are positively related to wealth, decision-maker's agreeableness and the spouse's openness are negatively related to wealth, and the spouse's memory are related to wealth in the opposite directions depending on the spouse's gender.

Conclusion

Results from our analysis of the HRS longitudinal data suggest that both the level and the relative strength of husband's and wife's personality and cognitive ability predict financial decision power allocation within a household. This is in line with the view that whoever has the suitable characteristics for



financial decision-making that facilitates the accumulation of wealth should assume the responsibility. We also show that personality and cognitive ability indeed matter for household wealth accumulation based on financial decision power role and gender.

	(1)	(2)	(3)
Male: mean conscientiousness	0.091***	(2)	(0)
	(0.028)		
Female: mean conscientiousness	-0.060**		
remaie. mean conscientiousness	(0.028)		
Male: mean stability	0.006		
Male. Mean stability	(0.018)		
Fomalo: moan stability	0.010)		
remale. mean slability	-0.031		
Molou moon avtroversion	(0.017)		
Male. mean extraversion	0.015		
	(0.027)		
Female: mean extraversion	0.027		
	(0.027)		
Male: mean agreeableness	-0.038		
	(0.024)		
Female: mean agreeableness	0.029		
	(0.030)		
Male: mean openness	-0.077***		
	(0.027)		
Female: mean openness	-0.028		
· ····································	(0.026)		
Male: memory	0.021***		
Malo: Monory	(0.005)		
Female: memory	-0.005		
remale. memory	-0.005		
Molou numerceur	(0.005)		
Male. numeracy	0.000		
	(0.010)		
Female: numeracy	-0.055***		
	(0.008)	0.070+++	
conscientiousness: M-F		0.073^^^	
		(0.020)	
stability: M-F		0.030**	
		(0.013)	
extraversion: M-F		-0.002	
		(0.020)	
agreeableness: M-F		-0.041**	
		(0.019)	
openness: M-F		-0.023	
		(0.020)	
moon momony: M E		0.020)	
mean memory. M-F		(0.013	
		(0.004)	
mean numeracy: M-F		0.062	
		(0.006)	
mean Conscientiousness: M low			-0.030*
			(0.018)
mean stability: M low			-0.042**
			(0.019)
mean Extraversion: M low			0.010
			(0.020)
mean Agreeableness: M low			0.015

Table 1: The Allocation of Financial Decision Power

			(0.020)
mean Openness: M low			0.007
			(0.019)
mean memory: M low			-0.039**
			(0.019)
mean numeracy: M low			-0.156***
			(0.019)
Constant	1.131**	1.065**	1.160***
	(0.457)	(0.442)	(0.447)
Observations	23,854	23,854	23,854
R-squared	0.131	0.124	0.104

Notes: Each observation is a married couple observed in an HRS wave. Dependent variable takes value of one if major financial decision-maker is male and zero otherwise. Additional control variables include male's and female's employment status, race, age, age squared, log earning, years of education, mental health, physical health, and birth cohort. The household-level cross-sectional weights are applied. The standard errors clustered at the household level are reported in parenthesis.

Table 2: Wealth and Decision Power

Total Assets Total Assets Net Morth Net Worth Net Worth Net Wealth Financial Wealth DM: maie 0.116** -0.393 0.652** -1.384 0.615** -2.21* DM: mean conscientiousness (0.0583) (0.850) (0.157) (1.825) (0.331* (0.291) (3.042) DM: mean conscientiousness (0.0695) (0.127) (0.331* (0.721) (0.371) (0.382* (0.371) (0.322) (0.373) DM: mean stability -0.0830* -0.0951 -0.152 -0.0557 -0.312 -0.572 NDM: mean stability (0.0465) (0.123) (0.250) (0.212) (0.351) (0.322) (0.373) DM: mean stability (0.3686) 0.0251 0.111 (0.123) (0.250) (0.212) (0.423) DM: mean extraversion 0.04623 -0.0527 -0.277* -0.304* -0.168 (0.335) DM: mean agreeableness -0.166* -0.176* -1.148** -0.226** -0.816** -0.144*** <		(1)	(2)	(3)	(4)	(5)	(6)
Assetts Assetts Morth Worth Worth Wealth Wealth DM: male 0.116** -0.393 0.362** -1.384 0.615** -2.217 DM: mean conscientiousness 0.166*** 0.301** 0.363** 0.512 1.436*** 1.027 NDM: mean conscientiousness 0.181** 0.188** 0.176 0.331 0.724** 0.793** DM: mean stability -0.0830* -0.0851 -0.152 -0.0557 -0.312 -0.572 DM: mean stability -0.0830* -0.0851 -0.112 0.0257 -0.012 0.0331 (0.212) (0.032) (0.021) 0.0331 (0.222) 0.0331 (0.223) (0.235) DM mean extraversion -0.0441 0.110 0.114 0.445 0.332 (0.642) NDM: mean extraversion -0.0433 -0.0527 -0.237* -0.344 -0.136 -0.0432 DM: mean agreeableness -0.103 -0.0753 0.157 -0.326* -0.106*** -1.148** DM: mean		Total	Total	Not	Not	Financial	Financial
DM: male 10302 10302 10302 10302 10302 10302 DM: mean conscientiousness (0.0583) (0.850) (0.157) (1.825) (0.291) (3.042) NDM: mean conscientiousness 0.116** -0.393 0.362** 0.512 1.436*** 1.027* NDM: mean conscientiousness 0.161** 0.185** 0.177* (0.375) (0.372) (0.572) NDM: mean stability 0.0830* -0.0951 -0.152 -0.0557 -0.312 -0.572 NDM: mean stability 0.0368 0.0251 0.111 0.0725 0.204 0.0133 DM: mean stability 0.0368 0.0251 0.111 0.0752 0.204 0.0133 DM: mean extraversion 0.00441 0.110 0.114 0.445 0.322 0.832 DM: mean agreeableness -0.144** -0.257 -0.277 -0.304* -0.136 -0.0432 DM: mean agreeableness -0.103 0.0773 0.164* (0.170) (0.284) (0.332)		Assets	Assets	Worth	Worth	Wealth	Wealth
DM: made (1,16) (0,053) (0,052) (1,25) (0,291) (3,042) DM: mean conscientiousness (1,16) (0,053) (0,17) (0,363) (0,17) (0,363) (0,17) (0,373) DM: mean conscientiousness (1,18) (1,17) (0,163) (0,17) (0,17) (0,36) (0,37) (0,572) NDM: mean stability -0,0830' -0.0951 -0.152 -0.0557 -0.312 -0.572 NDM: mean stability -0,0830' -0.0951 -0.1123 (0,022) (0,373) DM: mean stability -0,0432 (0,0520) (0,118) (0,132) (0,235) (0,042) NDM: mean extraversion -0,0463 -0,057 -0.304' -0,0432 (0,0651) (0,167) (0,322) (0,335) DM: mean agreeableness -0,114''' -0,222'' -0,244'' -0,846''' -0,846''' -0,0412 (0,364) DM: mean agreeableness -0,103 -0,0334 0,0753 0,152 (0,27) (0,530) NDM: mean opennes	DM: male	0 116**	-0.303	0.362**	_1 38/	0.615**	-2 217
DM: mean conscientiousness 0.1363/1 (0.137) (1.122) (0.217) (0.137) (1.123) (0.217) (0.157) (0.336) (0.307) (0.572) NDM: mean conscientiousness 0.161** 0.188** 0.176 0.331* 0.724** 0.788** DM: mean stability (0.0455) (0.122) (0.123) (0.255) -0.312 -0.572 NDM: mean stability (0.0455) (0.0748) (0.123) (0.250) (0.211) (0.322) (0.375) NDM: mean stability (0.0465) (0.0748) (0.123) (0.250) (0.211) (0.235) DM: mean extraversion 0.00441 0.111 0.0133 (0.261) (0.322) (0.642) NDM: mean agreeableness -0.144* -0.252* -0.546* -0.810**** -1.146*** 0.0651 (0.102) (0.167) (0.323) (0.632) (0.267) NDM: mean agreeableness -0.144** -0.252* -0.268* -0.268 -0.268 DM: mean openness -0.0360 -0.0470		(0.0592)	-0.393	(0.157)	(1 925)	(0.201)	-2.217
DM. Inteal Conscientiousness 0.166 0.501 0.505 0.132 1.435 1.027 NDM: mean conscientiousness 0.181** 0.188** 0.176 0.331* 0.724** 0.7373 DM: mean stability -0.0830* -0.0951 -0.152 -0.0557 -0.312 -0.572 NDM: mean stability -0.0830* -0.0951 -0.152 -0.0557 -0.312 -0.572 NDM: mean stability -0.0830* -0.0951 -0.152 -0.0274 -0.204 -0.0193 DM: mean extraversion -0.0493 -0.0527 -0.277* -0.034* -0.138 -0.0423 NDM: mean extraversion -0.0493 -0.0527 -0.277* -0.034* -0.0435 -0.0464 -0.110 -114* -0.443* -0.0527 -0.277* -0.034* -0.0432 -0.0482 -0.0527* -0.264** -0.804** -0.0482 -0.0423 -0.0527* -0.274* -0.036** -0.0482 -0.0453 -0.0527* -0.264*** -0.804*** -0.0482 -0.0455 -0.0475	DM: maan conscientioueness	(0.0303)	(0.000)	(0.157)	(1.625)	(0.291)	(3.042)
DM: mean conscientiousness 0.1817 0.1837 0.0311 0.0311 0.0311 0.0311 0.0311 0.0321 0.0311 0.03231 0.0251 0.0111 0.0325 0.244 0.00133 DM: mean stability 0.0363 0.0251 0.111 0.0245 0.0241 0.0332 0.0251 0.111 0.0325 0.244 0.0133 DM: mean extraversion 0.00441 0.110 0.114 0.445 0.3321 0.0452 0.847 DM: mean agreeableness -0.1033 -0.0776 0.01641 0.0170 0.0283 0.0351 0.132 0.0361 DM: mean agreeableness -0.103 -0.0344 0.0753 0.159 -0.208 -0.0482 DM: mean openness -0.0360 -0.0470 -0.416***	Divi. mean conscientiousness		0.301	(0.303)	(0.012)	1.430	1.027
NDM: mean conscientiousness 0.181* 0.176 0.131* 0.724* 0.749* DM: mean stability -0.0830* -0.0951 -0.152 -0.0557 -0.312 -0.572 NDM: mean stability 0.0368 0.0251 0.111 0.0725 0.224 (0.373) NDM: mean stability 0.0368 0.0251 0.111 0.0725 0.224 (0.373) DM: mean stability 0.0368 0.0251 0.111 0.0725 0.224 (0.373) DM: mean extraversion 0.00441 0.110 0.114 0.4435 (0.322) (0.642) NDM: mean extraversion -0.0493 -0.0527 -0.304* -0.136 -0.0432 NDM: mean agreeableness -0.144*** -0.252** -0.546*** -0.810*** -1.076*** -1.148** NDM: mean agreeableness -0.144*** -0.0225 (0.221) (0.212) (0.364) DM: mean openness -0.0345 0.0077 -0.0167 (0.325) (0.244) (0.530) DM: mean memory 0.0345*** <th></th> <td>(0.0695)</td> <td>(0.127)</td> <td>(0.157)</td> <td>(0.336)</td> <td>(0.307)</td> <td>(0.572)</td>		(0.0695)	(0.127)	(0.157)	(0.336)	(0.307)	(0.572)
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NDM: mean stability 0.0368 0.0251 0.111 0.0725 0.204 0.00193 DM: mean extraversion 0.0423) (0.0520) (0.118) (0.133) (0.216) (0.235) DM: mean extraversion -0.0493 -0.0527 -0.304* -0.134 (0.0432) DM: mean agreeableness -0.144*** -0.252** -0.546*** -0.810*** -1.146*** 0.06531 (0.106) (0.125) (0.262) (0.267) (0.530) NDM: mean agreeableness -0.143 -0.0334 0.0753 0.159 -0.208 -0.0482 DM: mean openness -0.461 0.00727 0.0215 0.1071 -0.0380 -0.0481 DM: mean openness -0.0451 0.01727 0.0215 0.1611 (0.294) (0.328) DM: mean openness -0.0380 -0.0470 -0.166 -0.0774 -0.3077 -1.06*** DM: mean memory 0.0345*** 0.0337* 0.472 0.061** 0.0428 (0.0422) (0.0589) DM: mean numeracy		(0.0465)	(0.0748)	(0.123)	(0.250)	(0.212)	(0.375)
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DM: mean extraversion 0.00441 0.110 0.114 0.445 0.352 0.819 NDM: mean extraversion -0.0605 (0.102) (0.167) (0.334) (0.332) (0.642) DM: mean agreeableness -0.144*** -0.252** -0.546*** -0.217 -0.304 -0.136 -0.0432 DM: mean agreeableness -0.144*** -0.252** -0.546*** -0.810*** -1.076*** -1.148** 0.0578 (0.0538) (0.106) (0.125) (0.222) (0.219) (0.364) DM: mean agreeableness -0.103 -0.0334 0.0757 (0.325) (0.224) (0.364) DM: mean openness -0.030 -0.0470 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.030 -0.0470 (0.152) (0.161) (0.224) (0.328) DM: mean memory 0.0345*** 0.0337 0.0472 0.0476 0.0485 (0.0524) (0.0286) DM: mean memory 0.0496*** 0.0661** 0.1485 (0.524)		(0.0423)	(0.0520)	(0.118)	(0.133)	(0.216)	(0.235)
(0.0605) (0.102) (0.1672) (0.352) (0.332) (0.642) NDM: mean extraversion (0.0621) (0.0776) (0.164) (0.170) (0.233) DM: mean agreeableness -0.144*** -0.252** -0.546*** -0.810*** -1.148** NDM: mean agreeableness -0.103 -0.0334 0.0753 0.159 -0.208 -0.0482 NDM: mean openness 0.0451 0.00727 0.0215 0.107 -0.0334 0.0453 DM: mean openness 0.0451 0.00727 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.060*** DM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.060*** DM: mean memory 0.345*** 0.037* 0.0472 0.0670 0.0835 0.102 NDM: mean numeracy 0.0496*** 0.0617** 0.0286 (0.0482) (0.0543) DM: mean numeracy 0.0573*** 0.0406	DM: mean extraversion	0.00441	0.110	0.114	0.445	0.352	0.819
NDM: mean extraversion -0.0433 -0.0527 -0.27* -0.304* -0.136 -0.0432 DM: mean agreeableness -0.144*** -0.252** -0.810*** -1.076*** -1.148** DM: mean agreeableness -0.103 -0.0334 0.0753 0.159 -0.208 -0.0422 NDM: mean agreeableness -0.103 -0.0334 0.0753 0.159 -0.030 -0.0482 DM: mean openness -0.0451 0.00727 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.0380 -0.0470 -0.416*** -0.037* -1.052*** -1.060*** NDM: mean openness -0.0380 -0.0470 -0.416*** -0.037* -1.052*** -1.060*** NDM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0835 0.102 NDM: mean numeracy 0.0466** 0.0471 0.0228) 0.0485 (0.0224) (0.0539) NDM: mean numeracy 0.0345*** 0.0615** 0.149*** 0.0579 0.129** NDM:		(0.0605)	(0.102)	(0.167)	(0.354)	(0.332)	(0.642)
DM: mean agreeableness -0.144*** -0.252*** -0.546*** -0.810*** -1.076*** -1.148** DM: mean agreeableness -0.103 -0.0334 0.0753 0.1225) (0.262) (0.267) (0.538) NDM: mean agreeableness -0.103 -0.0334 0.0753 0.159 -0.208 -0.0482 DM: mean openness 0.0451 0.00727 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.066*** OM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.066*** DM: mean memory 0.0345*** 0.0347* 0.0670 0.0835 0.102 DM: mean numeracy 0.046*** 0.0615*** 0.061** 0.149*** 0.0573 0.129** DM: mean numeracy 0.046*** 0.0177 (0.0286) (0.0482) (0.0543) DM: mean numeracy 0.136*** 0.161*** 0.06573 (0.171) (0.162) D	NDM: mean extraversion	-0.0493	-0.0527	-0.277*	-0.304*	-0.136	-0.0432
DM: mean agreeableness -0.144*** -0.252** -0.546*** -1.076*** -1.148** NDM: mean agreeableness -0.103 -0.0383 (0.106) (0.125) (0.262) (0.267) (0.530) NDM: mean agreeableness -0.103 -0.0343 0.0753 0.159 -0.0482 (0.364) DM: mean openness 0.0451 0.00727 0.0215 0.107 -0.0320 -0.106 NDM: mean openness -0.0380 -0.0472 0.0215 0.107 -0.0284 (0.530) NDM: mean openness -0.0380 -0.0472 0.0617 (0.325) (0.284) (0.328) DM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0835 0.102 DM: mean numeracy 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** DM: mean numeracy 0.136*** 0.1657 (0.115) (0.104) (0.162) DM: mean numeracy 0.136*** 0.0443 (0.0524) (0.0548) (0.267) 0.165		(0.0621)	(0.0776)	(0.164)	(0.170)	(0.293)	(0.335)
NDM: mean agreeableness (0.0538) (0.106) (0.125) (0.262) (0.267) (0.530) NDM: mean agreeableness -0.103 -0.0334 0.0753 0.159 -0.208 -0.0482 DM: mean openness (0.0676) (0.0908) (0.222) (0.219) (0.312) (0.364) DM: mean openness .0.0451 0.00727 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.062*** -1.060*** (0.0589) (0.0707) (0.0177) (0.0289) (0.0670 0.0835 0.102 DM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** NDM: mean numeracy 0.136*** 0.119*** 0.121* 0.1555 0.224** 0.166 NDM: mean numeracy 0.0579*** 0.0406 0.04857 0.1149*** 0.126* 0.162 NDM: mean numeracy 0.136*** 0.119*** 0.121* 0.156 0.224** 0.166	DM: mean agreeableness	-0.144***	-0.252**	-0.546***	-0.810***	-1.076***	-1.148**
NDM: mean agreeableness -0.103 -0.0334 0.0753 0.159 -0.208 -0.0482 DM: mean openness 0.0451 0.00727 0.0215 0.107 -0.0330 (0.364) DM: mean openness 0.0451 0.0727 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.060*** DM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.060*** DM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0835 0.102 NDM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** NDM: mean numeracy 0.136*** 0.112** 0.0281 (0.0485) (0.0543) DM: mean numeracy 0.136*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 DM: ma	5	(0.0538)	(0.106)	(0.125)	(0.262)	(0.267)	(0.530)
DM: mean openness (0.0676) (0.0908) (0.222) (0.219) (0.312) (0.364) DM: mean openness 0.0451 0.00727 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.0380 -0.0470 -0.416*** -0.0325 (0.284) (0.530) DM: mean openness (0.0589) (0.0704) (0.152) (0.161) (0.294) (0.328) DM: mean memory (0.345*** 0.0337* 0.0472 0.0670 0.0835 0.102 NDM: mean memory (0.0107) (0.0177) (0.0289) (0.0485) (0.0579) 0.129** NDM: mean numeracy 0.136*** 0.1615*** 0.0661** 0.149*** 0.0579 0.129* NDM: mean numeracy 0.136*** 0.119*** 0.06677 (0.115) (0.104) (0.162) NDM: mean numeracy 0.0573**** 0.0406 0.0487 -0.0255 0.224** 0.166 (0.0277) (0.043) (0.0573) (0.154) (0.673) 0.166 0.434 (0.673	NDM: mean agreeableness	`-0.103 [´]	-0.0334	0.0753	0.159 [´]	-0.208	-0.0482
DM: mean openness 0.0451 0.00727 0.0215 0.107 -0.0730 -0.106 NDM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.060*** DM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.060*** DM: mean memory 0.0345*** 0.0337* 0.0472 0.0615 (0.161) (0.294) (0.328) DM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** NDM: mean numeracy 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** NDM: mean numeracy 0.1077 (0.0177) (0.0281) (0.0284) (0.0485) (0.0443) DM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 DM: male *DM: mean stability 0.0277 0.0229 0.528 0.1673 DM: male *DM: mean stability 0.0298 -0.102 0.434 DM: male *DM: mean agreeableness 0.		(0.0676)	(0.0908)	(0.222)	(0.219)	(0.312)	(0.364)
DM: mean openness (0.0651) (0.115) (0.157) (0.325) (0.284) (0.530) NDM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.052*** -1.060*** DM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0835 0.102 DM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0835 0.102 NDM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** (0.0107) (0.0127) (0.0281) (0.0286) (0.0485) (0.0543) DM: mean numeracy 0.136*** 0.119*** 0.121* 0.156 0.177* 0.263 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: male *DM: mean conscientiousness -0.170 -0.229 0.528 0.162 0.434 M: male *DM: mean extroversion -0.173 -0.520 -0.715 0.162 0.434 DM: male *DM: mean openness 0.	DM ⁻ mean openness	0.0451	0.00727	0.0215	0.107	-0.0730	-0.106
NDM: mean openness -0.0380 -0.0470 -0.416*** -0.307* -1.060*** DM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0835 0.102 DM: mean memory 0.0345*** 0.037** 0.0472 0.0670 0.0835 0.102 NDM: mean memory 0.0496*** 0.0617** 0.0661** 0.149*** 0.0579 0.129** NDM: mean numeracy 0.0496*** 0.0617** 0.0661** 0.149*** 0.0579 0.129** NDM: mean numeracy 0.136*** 0.119*** 0.121* 0.156 0.177* 0.263 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean conscientiousness -0.170 -0.229 0.528 0.0166 0.0487 -0.102 0.434 DM: mean stability 0.02971 (0.0548) (0.0200) (0.166) DM: male *DM: mean stability 0.0298 -0.102 0.434 0.673) DM: male *DM: mean agreeableness 0.162 0		(0.0651)	(0.115)	(0.157)	(0.325)	(0.284)	(0.530)
INDM: mean memory 0.0589 0.07704 (0.152) 0.0670 0.0835 0.102 DM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0835 0.102 NDM: mean memory 0.046*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** NDM: mean numeracy 0.136*** 0.0127 (0.0281) (0.0286) (0.0422) (0.0543) DM: mean numeracy 0.136*** 0.119*** 0.0281) (0.0286) (0.0422) (0.0543) DM: mean numeracy 0.136*** 0.119*** 0.0281) (0.0286) (0.0422) (0.0543) NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean stability 0.0297 (0.0443) (0.0657) (0.115) (0.104) (0.162) DM: male *DM: mean stability 0.0298 -0.102 0.434 (0.673) 0.528 0.434 DM: male *DM: mean agreeableness 0.162 0.425 0.143 (0.733) 0.622) 0.423 DM: male *DM: mean openness 0.0614 -0.120 0.0819 <th>NDM: mean openness</th> <td>-0.0380</td> <td>-0.0470</td> <td>-0 416***</td> <td>-0.307*</td> <td>-1 052***</td> <td>-1.060***</td>	NDM: mean openness	-0.0380	-0.0470	-0 416***	-0.307*	-1 052***	-1.060***
DM: mean memory 0.0345*** 0.0337* 0.0472 0.0670 0.0245 0.0240 NDM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** NDM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** DM: mean numeracy 0.136*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** DM: mean numeracy 0.136*** 0.191*** 0.126 0.0482) (0.0243) NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean conscientiousness -0.170 -0.229 0.528 0.102 0.434 DM: male *DM: mean stability 0.0298 -0.102 0.434 0.6673 0.6733 DM: male *DM: mean extroversion -0.173 -0.520 -0.715 0.434 DM: male *DM: mean openness 0.162 0.425 0.143 DM: male *DM: mean agreeableness 0.162 0.425 0.143 DM: male *DM: mean openness 0.0614 -0.120 0.0819 DM: male *DM:	NEM. mean openneed	(0.0589)	(0.0704)	(0 152)	(0.161)	(0 294)	(0.328)
DM: mean memory 0.0496 0.0496*** 0.0485 (0.0485) (0.0485) (0.0485) NDM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** DM: mean numeracy 0.136*** 0.119*** 0.0281) (0.0286) (0.0482) (0.0543) DM: mean numeracy 0.136*** 0.119*** 0.121* 0.156 0.177* 0.263 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean stability 0.0218) (0.0267) (0.0532) (0.0548) (0.0920) (0.166) DM: male *DM: mean stability 0.0298 -0.102 0.434 (0.673) DM: male *DM: mean agreeableness 0.162 0.425 0.143 (0.733) DM: male *DM: mean openness 0.162 0.425 0.143 (0.673) DM: male *DM: mean openness 0.0614 -0.120 0.0819 (0.627) NDM: male *NDM: mean stability 0.0269 -0.3	DM: mean memory	0.0345***	0.0337*	0.102)	0.0670	0.0835	0 102
NDM: mean memory 0.0496*** 0.0615*** 0.0661** 0.149*** 0.0579 0.129** DM: mean numeracy 0.136*** 0.119*** 0.121* 0.156 0.177* 0.263 DM: mean numeracy 0.136*** 0.119*** 0.121* 0.156 0.177* 0.263 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean stability 0.0297) (0.0532) (0.0548) (0.0920) (0.106) DM: male *DM: mean stability 0.0298 -0.102 0.434 (0.0288) (0.262) (0.423) DM: male *DM: mean agreeableness 0.162 0.425 0.143 (0.120) (0.388) (0.733) DM: male *DM: mean openness 0.162 0.425 0.143 (0.122) (0.291) (0.608) 0.0819 DM: male *NDM: mean -0.02	DM. mean memory	(0.00+0	(0.0337)	(0.0280)	(0.0070	(0.0524)	(0.0805)
NDM: mean numeracy 0.0490 0.0413 0.0413 0.0481 0.0286) 0.0482 (0.0482) DM: mean numeracy 0.136*** 0.119*** 0.121* 0.156 0.177* 0.263 NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 NDM: mean conscientiousness -0.170 -0.229 0.528 (0.0218) (0.0287) (0.0532) (0.0548) (0.0920) (0.166) DM: male *DM: mean conscientiousness -0.170 -0.229 0.528 (0.673) DM: male *DM: mean stability 0.0298 -0.102 0.434 (0.0888) (0.262) (0.423) DM: male *DM: mean extroversion -0.173 -0.520 -0.715 (0.120) (0.388) (0.733) 0.425 0.143 DM: male *DM: mean agreeableness 0.162 0.425 0.143 DM: male *DM: mean openness 0.0614 -0.120 0.0819 DM: male *DM: mean openness 0.0137 (0.372) (0.627) NDM: male *NDM: mean -0.0269 -0.321 -0.138		0.0406***	0.0615***	0.0661**	(0.0+0.0)	0.0570	0.120**
DM: mean numeracy 0.136*** 0.119*** 0.00281) (0.0280) (0.0462) (0.0462) NDM: mean numeracy 0.036*** 0.119*** 0.121* 0.156 0.177* 0.263 NDM: mean numeracy 0.0573*** 0.0443) (0.0657) (0.115) (0.104) (0.162) NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 DM: male *DM: mean conscientiousness -0.170 -0.229 0.528 DM: male *DM: mean stability 0.0298 -0.102 0.434 DM: male *DM: mean extroversion -0.173 -0.520 -0.715 DM: male *DM: mean agreeableness 0.0614 -0.120 0.0888) (0.733) DM: male *DM: mean openness 0.0614 -0.120 0.0819 0.0819 DM: male *DM: mean openness 0.0614 -0.120 0.0819 DM: male *NDM: mean -0.0269 -0.321 -0.138 conscientiousness (0.158) (0.471) (0.716) NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.0802) <td< td=""><th>NDW. mean memory</th><td>(0.0490)</td><td>(0.0013</td><td>(0.0001</td><td>(0.0296)</td><td>(0.0379</td><td>(0.129)</td></td<>	NDW. mean memory	(0.0490)	(0.0013	(0.0001	(0.0296)	(0.0379	(0.129)
DM. mean numeracy 0.136 0.119 0.121 0.136 0.177 0.263 NDM: mean numeracy 0.0573*** 0.0443 (0.0657) (0.115) (0.104) (0.162) NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 DM: male *DM: mean conscientiousness -0.170 -0.229 0.528 M: male *DM: mean stability 0.0298 -0.102 0.434 DM: male *DM: mean extroversion -0.173 -0.520 -0.715 DM: male *DM: mean agreeableness 0.162 0.425 0.433 DM: male *DM: mean openness 0.162 0.425 0.413 DM: male *DM: mean openness 0.162 0.425 0.143 DM: male *DM: mean openness 0.0614 -0.120 0.0819 DM: male *NDM: mean openness 0.0614 -0.0269 -0.321 -0.138 conscientiousness (0.158) (0.471) (0.716) NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.260) 0.269 -0.321 -0.138 0.0802 <	DM: maan numaraay	(0.0107)	(0.0127)	(0.0201)	(0.0200)	(0.0462)	(0.0543)
NDM: mean numeracy (0.0297) (0.0443) (0.0657) (0.115) (0.104) (0.162) NDM: mean numeracy 0.0573*** 0.0406 0.0487 -0.0555 0.224** 0.166 DM: male *DM: mean conscientiousness -0.170 -0.229 0.528 DM: male *DM: mean stability 0.0298 -0.102 0.434 DM: male *DM: mean stability 0.0298 -0.102 0.434 DM: male *DM: mean extroversion -0.173 -0.520 -0.715 DM: male *DM: mean agreeableness 0.162 0.425 0.143 DM: male *DM: mean openness 0.162 0.425 0.143 DM: male *DM: mean openness 0.0614 -0.120 0.0819 DM: male *NDM: mean -0.0269 -0.321 -0.138 conscientiousness (0.158) (0.471) (0.716) NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.236) (0.246) 0.237	Divi. mean numeracy	(0.130)	0.119	(0.121)	0.150	0.177	0.203
NDM: mean numeracy 0.0573 0.0406 0.0487 -0.0553 0.224 0.166 (0.0218) (0.0267) (0.0532) (0.0548) (0.0920) (0.106) DM: male *DM: mean conscientiousness -0.170 -0.229 0.528 (0.154) (0.381) (0.673) DM: male *DM: mean stability 0.0298 -0.102 0.434 (0.0888) (0.262) (0.423) DM: male *DM: mean extroversion -0.173 -0.520 -0.715 M: male *DM: mean agreeableness 0.162 0.425 0.143 DM: male *DM: mean openness 0.162 0.425 0.143 DM: male *DM: mean openness 0.0614 -0.120 0.0819 (0.137) (0.372) (0.627) 0.0819 DM: male *NDM: mean -0.0269 -0.321 -0.138 conscientiousness (0.158) (0.471) (0.716) NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.236) (0.449) 0.237		(0.0297)	(0.0443)	(0.0657)	(0.115)	(0.104)	(0.162)
(0.0218) (0.0267) (0.0532) (0.0548) (0.0920) (0.106) DM: male *DM: mean conscientiousness -0.170 -0.229 0.528 (0.154) (0.381) (0.673) DM: male *DM: mean stability 0.0298 -0.102 0.434 (0.0888) (0.262) (0.423) DM: male *DM: mean extroversion -0.173 -0.520 -0.715 (0.120) (0.388) (0.733) DM: male *DM: mean agreeableness 0.162 0.425 0.143 (0.122) (0.291) (0.608) DM: male *DM: mean openness 0.0614 -0.120 0.0819 (0.137) (0.372) (0.627) NDM: male *NDM: mean -0.0269 -0.321 -0.138 conscientiousness (0.158) (0.471) (0.716) NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.236) (0.449) (0.449)	NDM: mean numeracy	0.0573	0.0406	0.0487		0.224	0.166
DM: male *DM: mean conscientiousness -0.170 -0.229 0.528 (0.154) (0.381) (0.673) DM: male *DM: mean stability 0.0298 -0.102 0.434 (0.0888) (0.262) (0.423) DM: male *DM: mean extroversion -0.173 -0.520 -0.715 (0.120) (0.388) (0.733) DM: male *DM: mean agreeableness 0.162 0.425 0.143 (0.122) (0.291) (0.608) DM: male *DM: mean openness 0.0614 -0.120 0.0819 DM: male *NDM: mean -0.0269 -0.321 -0.138 conscientiousness (0.158) (0.471) (0.716) NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.236) (0.449) 0.237	DM male *DM manual contraction (income	(0.0218)	(0.0267)	(0.0532)	(0.0548)	(0.0920)	(0.106)
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NDM: male *NDM: mean -0.0269 -0.321 -0.138 conscientiousness (0.158) (0.471) (0.716) NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.236) (0.449)			(0.137)		(0.372)		(0.627)
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NDM: male *NDM: mean stability 0.0590 0.165 0.688 (0.0802) (0.236) (0.449) NDM: male *NDM: mean sutroversion 0.0190 0.2301			(0.158)		(0.471)		(0.716)
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			(0.0802)		(0.236)		(0.449)
NDIVI: male NDIVI: mean extroversion -0.0180 -0.0304 -0.327	NDM: male *NDM: mean extroversion		-0.0180		-0.0304		-0.327

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		(0.121)		(0.379)		(0.646)
NDM: male *NDM: mean agreeableness		-0.164		-0.207		-0.376
		(0.134)		(0.517)		(0.680)
NDM: male *NDM: mean openness		0.0358		-0.336		-0.0559
		(0.131)		(0.372)		(0.663)
DM: male *DM: mean memory		0.00198		-0.0237		-0.0368
-		(0.0208)		(0.0549)		(0.103)
NDM: male *NDM: mean memory		-0.0339		-0.229***		-0.189*
		(0.0213)		(0.0599)		(0.0986)
DM: male *DM: mean numeracy		0.0319		-0.0225		-0.104
		(0.0586)		(0.137)		(0.196)
NDM: male *NDM: mean numeracy		0.0471		0.290**		0.200
		(0.0422)		(0.115)		(0.182)
Constant	1.164	2.003*	-0.528	-1.537	-10.17*	-12.55***
	(1.201)	(1.118)	(3.092)	(2.739)	(5.942)	(4.730)
Observations	23.854	23.854	23.854	23.854	23.854	23.854
R-squared	0.365	0.366	0.149	0.151	0.217	0.217

Notes: Each observation is a married couple observed in an HRS wave. Additional control variables include decision-maker's and non-decision-maker's employment status measured, race, age, age squared, log earning, years of education, mental health, physical health, and birth cohort, log household income, and number of kids. The household-level cross-sectional weights are applied. The standard errors clustered at the household level are reported in parenthesis.



The Impact of Economic Uncertainty on the Decision of Fertility: Evidence from Taiwan

Jiun-Nan Pan¹ Yuan Ze University

Abstract

Over the past two decades in Taiwan, there has appeared to be a growing number of young adults who don't want to get married nor have a child. Therefore, the crude marriage rate (per thousand persons) gradually declined from 7.5 pairs in 1995 to 6.3 pairs in 2014, and according to Figure 1, the general fertility rate of childbearing age women (per thousand women) showed a slight fluctuation and downward trend during the period of 1995 to 2014, and declined from 59.2 in 1995 to 33.5 in 2014. Since the total fertility rate (TFR) is defined as to the average number of children that would be born to a woman over her lifetime, it is a more direct measure of the level of fertility than the crude birth rate. Moreover, the TFR can also show the potential for population change in the country. Figure 2 presents the TFR of Hong Kong, Japan, South Korea, Singapore, and Taiwan. We can find that the rates of these five countries/regions were below 2 children, and indicating that their populations are decreasing in size and growing older.

The decrease in the TFR has happened not only in the above five countries/ regions, but also in western industrialized countries. During the twentieth century, although the fast-growing economy of western industrialized countries was labeled of human development achievements, meanwhile the



Figure 1. The general fertility rate of childbearing age women in Taiwan (1995-2014) Source: Directorate General of Budget, Accounting and Statistics (DGBAS), Executive Yuan, Taiwan.

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Figure 2. Total fertility rate of Hong Kong, Japan, South Korea, Singapore and Taiwan (children born/woman)

Source: The World Bank. http://data.worldbank.org/indicator/SP.DYN.TFRT.IN

fertility rate declined significantly. Fertility rates have declined in most countries to the levels that have been well below those needed to secure generation replacement. While attitudes towards this decline in fertility rates differ across countries, governments have introduced specific measures aimed at countering it. For example, in 2005, half of developed countries had in place policies to raise their birth rates, up from one third a decade ago (Callister and Didham, 2007).² In contrast, in the UN report on world population policies (United Nations, 2006), New Zealand, with its near-replacement fertility, was listed as having a 'satisfactory' level of fertility and was classified as wanting to 'maintain' this level.

One of the crucial issues of the fertility research in demography is low fertility in most industrialized countries, because it significantly contributes to the process of population ageing which has impact on the social and health systems. Decline in fertility is usually explained in accordance with the demographic transition framework stressing in a simplified way the improvements in infant mortality and increased living standards. Furthermore, the explanation of fertility fall below the replacement level is captured in several formal concepts which rely on socio-economic and demographic factors. The profound change in fertility is also related to economic development, however unequivocal empirical evidence on relationship between fertility and economic performance has not been obtain yet. This paper aims to extend our understanding of the demographic and economic determinants behind fertility decline including into the research an issue of economic uncertainty.

Economic uncertainty has been relatively a new determinant of fertility which begins to appear in research. The main reason for that is obvious. Economic uncertainty measurement is difficult and not straightforward. For instance, Hofman and Hohmeyer (2013) examine perceived economic uncertainty employing German Socio-economic Panel data through the announcement of a major German unemployment benefit reform. The analysis outcomes reveal that women with strong economic concern reduced fertility. On the on the hand, Pailé and Solaz (2012), Bernadrdi et al. (2008), Kreyenfeld (2005, 2010), Vignolli et al. (2012) stress the uncertainty coming from labor market. Economic uncertainty is therefore often approximated by variation in unemployment rate and income, employment status and form of employment contract. Besides that, Sobotka et al. (2011) put economic uncertainty into the context economic recession.

Therefore, the purpose of this study is to investigate how economic uncertainty affects fertility rate in Taiwan. Using the county-level panel data from 1995-2016 and variables drawn from the various years of *Report on the Survey of Family Income and Expenditure* (1995-2016) published by

² Countries which have total fertility rates under 1.5 and which have policies in place include Italy, Spain and Japan. Even Australia, with a rate around 1.7, has recently changed its policy stance from 'no intervention' to putting in place an explicit and indirect pro-natal fertility policy.



Directorate General of Budget, Accounting and Statistics (DGBAS), Executive Yuan,³ Taiwan, this study will show that the economic uncertainty does play an important role in decision of fertility in Taiwan.

Keywords: Economic Uncertainty, Fertility, Taiwan. JEL classification: D12, D33, J13

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³ Executive Yuan is the executive branch of the central government of Taiwan.



Theatre of Family Economics : An Interdisciplinary and Theatrical Approach to Teaching Beckerian Family Economics

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The paper presents an interdisciplinary framework of teaching modality, which applies psychodrama techniques and methods in teaching Beckerian family economics. The model integrates implications drawn from family economics, family psychology, family social work and role theories, to assess, identify and explain family resources and strengths, and the efficiency in producing family products (family commodity, in Becker's term).

The first section introduces the Well-being function, family script and role capital, which are adapted and extended from Becker's expanded utility function and household production functions. The family products include non-relational and relational products. In the first category it contains family environment, health, the quantity and quality of children. The second category—relational products, includes couple relations, parental-child relation, sibling relation, and relation with self (self worth, self-esteem, and/or self-actualizaiotn). The framework constitutes theoretical basis for teaching family economics in family theatre.

Section 2 discusses the theatrical modality and four phases in a typical session that lasts 3 hours.

Phase 1: Warm-up and motivate students with teaching in action, including using didactic interaction, questions and family sculpture to present the teaching goals of the learning unit (one session). Phase 2: Experiential learning. With specific goal and scenario, students are then grouped into a few role-played families. In family groups, students construct family sculpture, family script and stage, and also playwriting and preparing for process analysis after enactment.

Phase 3: Teacher intervenes into role-played family during and after their enactment. Through questioning, instructing, role reversal and other action techniques, the members of role-played family experience learning in roles, including family interaction, division of labor, enhancement of efficiency of household production. Teacher may take any role to facilitate enacting and teaching.

Phase 4: Closure of the session will normally include process analysis, re-enacting part of the story, interviewing family, discussing in small group, ..., etc. After the enactment of a family drama, one member of the enactment group or one of audience groups will become interviewers. With the help of teacher, the interviewers will inquire about designated roles and specific-interactions in drama. After that, all students go back to their family groups and share and discuss about the learning in roles and from the enactment. In the end, teacher explains homework assignment (either group or individual assignment).

Section 3 shows the twelve topics of the course.

- 1. Introduction of the course: Learning goals and theatrical methods
- 2. Family Well-being: Efficiency in terms of household production function
- 3. Division of labor within family, family rules, and effectiveness of family production
- 4. Family economics diagnosis (Part I): Practice with family cases
- 5. Assessment of family products (household commodity)
- 6a. Economics of having children (Economics of fertility)

6b. Family and investment in human capital

7. Economics of analysis of marriage

8. Investment in marriage capital

9. Family economics diagnosis (part II): Preparation for interviewing a family

10. Economics analysis of domestic violence

11. State and family

12. Evolution of family and public policy

In each of the sessions (a 3-hour weekly session), students are guided into family theatre and stage. They begin their journey of family well-being and experientially learn family resources and how this is connected to family member's choice and household production.

Section IV concludes the paper and discusses the findings and reflection about applying new modality in teaching family economics.





Keywords: Family Efficiency, Family products, Household Production Function, Family Well-Being Function, Theatrical Teaching Modality



The effect of having alimony payments on the financial obligations of homeowners and renters after the Great Recession

Congrong Ouyang, Ohio State University¹ Sherman D. Hanna, Ohio State University²

Abstract

The purpose of this study was to analyze how alimony payments affected the likelihood of U.S. renter and homeowner households having a heavy financial obligation after the Great Recession. In 1992, only 15% of homeowners had financial obligation payments over 40% of income (heavy burden), but the proportion increased to 22% by 2007, then dropped to 16% by 2013. The proportion of renters with heavy burdens increased from 20% in 1992 to 35% in 2007, and then increased to 42% by 2013. Descriptive patterns in 2013 showed substantial differences between homeowners and renters in terms of the relationships between household characteristics and the rates of having a heavy burden. We conducted separate logistic regressions of homeowners and renters to ascertain the effects of household characteristics on the likelihood of having a heavy burden. Having an alimony payment was strongly related to having a heavy burden for either homeowners or for renters. However, the likelihood of having a heavy burden for homeowners with college degrees than for otherwise similar homeowners without college degrees.

Keywords: Education loan; Alimony; Financial Obligation; Financial Literacy; Homeowners; Renters; Survey of Consumer Finances

Introduction

The Great Recession in the United States from 2007 to 2009 (National Bureau of Economic Research Business Cycle Dating Committee, 2010) caused severe effects on American households' finances (Bricker et al., 2011; 2014). Pfeffer, Danziger, and Schoeni (2013) estimated that from 2007 to 2011, about a guarter of American families lost 75% or more of their net worth, and student loan default rate increased from 6.7% to 9% during recession (Ionescu & Ionescu, 2014) Carrying heavy financial obligations might increase the risk to households, as a decrease in income may lead to loan defaults, including mortgage, car loans, and education loans. Hanna, Yuh, and Chatteriee (2012a) analyzed a combination of the 1992-2007 Survey of Consumer Finance (SCF) datasets to estimate the likelihood of households having a heavy financial obligation burden, which they defined as having a ratio of financial obligations payments over 40% of income. They found that the percentage of households with a heavy burden increased from 17% in 1992 to 26% in 2007. Since the Great Recession officially started in December, 2007 (National Bureau of Economic Research Business Cycle Dating Committee, 2010) and Hanna et al used 2010 SCF dataset, their analysis did not consider the consequences of the recession. Additionally, important variables such as whether households had an education loan, or alimony payments for a former spouse were not considered in the previous research. Furthermore, the Hanna et al. (2012a) multivariate analysis was on a combined sample of homeowners and renters. Therefore, the objective of this study was to analyze the effects of households having alimony payments and education loan balances on the likelihood of having a heavy financial burden, with separate analyses of homeowner and renter households, using the 2013 SCF dataset.

In 2013, less than 24% of households had heavy financial obligations. Specifically, about 14% of homeowner households and 42% renter households had heavy financial burdens. The proportion of renter households with a heavy burden doubled from 1992, and was 6 percentage points higher in 2013

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than in 2007, whereas the 2013 rate for homeowners was just over one percentage point higher than the 1992 rate, and almost 6 percentage points lower than in 2007. Both renters and homeowner households with alimony payments were more likely to have heavy financial burdens than otherwise similar households without alimony payments. The results provide insights for financial planners, educators and government agencies in helping families with managing household finance.

Literature Review

From an economist's perspective, household financial decisions should be like the choice of the level of precautionary savings (Hanna, et al., 2012a; Mody, Ohnsorge & Sandri, 2012). Greater labor income uncertainty should be associated with higher household savings. Therefore, a household with limited precautionary savings and a heavy financial obligation could be at risk if there is a substantial income drop, with serious consequences, including eviction, mortgage foreclosure, bankruptcy, and being unable to sustain an adequate level of living.

Household financial decisions can be affected by many factors, and many people may not behave rationally in terms of their financial decision (Rabin, 1998). High household financial debt is strongly related to high perception of stress, worse self-reported health, and unsatisfied socioeconomic status (Sweet, Nandi, Adam & McDade, 2013).

During the past few decades, legal changes in U.S. have made divorce much easier to complete (McMullen, 2011), the divorce rate has increased (Wilcox & Marquardt, 2011). Second (and higher order) marriages after divorce are common (Furstenberg, 1994), and some experts have projected that about half of all marriages will end in divorce (Castro, Martin & Bumpass, 1989). Economically, many households' financial obligations may be affected by having alimony payments. Researchers have found that the social economic status of divorced individuals worsen after marital separation (Burkhauser et al. 1990, 1991; 1996; Amato, 2010; McMullen, 2011Therefore, having alimony payments can be a critical financial obligation for many households' financial well-being. However, the effect of having alimony payments on households' financial obligations was unexplored during previous literature.

Dynan *et al.* (2003) and Johnson (2005) discussed financial obligations including rent, auto leases, homeowners' insurance and property taxes in addition to the established households' debt equation. This method helps in comparisons of renters and homeowners. Hanna et al. (2012a; 2012b) used the same definition of financial obligations. Hanna et al. (2012a) found that the proportion of households paying more than 40% of income for debt, rent, vehicle leases, property taxes and homeowners' insurance, increased from 18% in 1992 to 27% in 2007. Additionally, divorce rate in U.S. has been increasing for over 20 years (Stevenson & Wolfers 2007; Greenwood et al. 2012), almost 50% of ever-married people had been divorced or separated in their late 50s (Kennedy & Ruggels, 2014). Therefore, alimony expenses have become an important part of household financial obligations. In order to compare households' financial burden after great recession, we followed the definition of financial obligations discussed in Hanna et al (2012) and added households' alimony expenses.

Hanna et al. (2012b) analyzed homeowners and renters separately, but only the SCF datasets up to 2007. Hanna et al. (2012b) found some important differences in the effects of household characteristics on having a heavy burden, for instance, renter households with a Black respondent were less likely than otherwise similar households with a White respondent to have a heavy burden, but homeowner households with a Black respondent were more likely than otherwise similar households with a White respondent to have a heavy burden, but homeowner households with a Black respondent were more likely than otherwise similar households with a White respondent to have a heavy burden.

Methods

Data

The dataset for this study was the 2013 Survey of Consumer Finances (SCF). We also used a combination of the 1992 to 2013 SCF datasets for a descriptive graph. The SCF is a triennial, nationally representative survey sponsored by the Federal Reserve Board in cooperation with the Department of the Treasury (Bricker et al., 2014).

Dependent Variable

As the focus is on whether households have a heavy financial obligations ratio, it is important to consider the distribution of the ratio. Table 1 shows the mean levels and quantiles of the ratio for all

households, homeowner households, and renter households in the 2013 SCF. The mean level of the ratio is 589% for renters and 666% for homeowners, and the maximum levels are extremely high, for instance, 39,631,700% for homeowners. Therefore, use of an Ordinary Least Squares regression for multivariate analysis is not appropriate. We follow Hanna et al. (2012a; 2012b) in using a dichotomous indicator for our dependent variable, whether financial obligations payments are greater than 40% of income. Also following Hanna et al (2012a; 2012b), we followed Dynan *et al.* (2003) in defining financial obligations to include rent, vehicle leases, debt payments, real estate taxes on the household's residence and homeowners' insurance. Additionally, we include households' alimony payments in dependent variable.

Table 1. Distribution of Financial Obligations Ratio for All Households, for Homeowners, and for Renters, 2013 SCF

Quantile	all households	owners	renters
Mean	639%	666%	589%
Maximum	39631700%	39631700%	913078%
99 th percentile	168%	132%	216%
95 th percentile	79%	63%	103%
90 th percentile	60%	47%	75%
75 th percentile	38%	31%	51%
Median	24%	19%	34%
25 th percentile	13%	9%	22%
10 th percentile	4%	3%	14%
5 th percentile	2%	1%	9%
1 st percentile	0%	0%	0%
Minimum	0%	0%	0%
Weighted %	100%	65%	35%
Unweighted N	6,015	3,999	2,016

According to Hanna et al (2012a), rent payments include monthly rent on homes, site or farm/ranch, and lease payments include all monthly lease payments on vehicle. Households' debt payments include the total of monthly payments on all types of loans, such as credit cards, home mortgages, lines of credit, home improvement loans, land contracts, other residential property, vehicle loans, student loans, installment loans, margin loans, loans with insurance policies, pension loans and other loans. Homeowners' insurance is the only component that is unavailable in SCF dataset. Hanna, et al. (2012a) estimated the annual cost of homeowners' insurance as 0.4% of the value of their home. In the 2013 American Housing Survey conducted by the federal government, the median value of owner occupied units is \$160,000 and the median monthly cost of property insurance is \$63 (U.S. Department of Housing and Urban Development, 2015). Based on this information, we approximated the annual cost of homeowners' insurance as 0.5% of the value of the home. We followed Hanna, et al. (2012a) in assuming that monthly credit card payments are 2.5% of the credit card balance.

Independent Variables

Independent variables likely to be related to consumption were selected, mostly following the model used by Hanna et al. (2012a; 2012b). The explanatory variables include marital status, health, age, education of the head, racial/ethnic self-identification of the respondent, and home ownership. In addition to the variables used by Hanna et al., we added attitudinal variables: households' education loan, have alimony payments, risk tolerance, expectations for the U.S. economy, transitory income shocks (household income higher or lower than normal income), and expectations about whether the household's



income would increase faster or slower than inflation.

Analysis

Logistic regression is an appropriate technique for analysis of dichotomous dependent variables. We used the RII procedure in our logistic regressions (Lindamood, Hanna, & Bi, 2007; Montalto & Sung, 1996; Rubin, 1987). We used SAS code that was based on the SAS code described in Montalto and Yuh (1998).

Figure 1. Rates of having a financial obligations rate over 40% of income, for all households, for homeowners, and for renters, 1992-2013 SCF datasets.



Results

Descriptive Results

As previously discussed, the distribution of the ratio in 2013 (Table 1) is extremely skewed, similar to the distribution reported by Hanna et al. (2012). Figure 1 shows the proportions of all households, of homeowner households, and of renter households with a financial obligations ratio over 40%, from 1992 to 2013. The patterns for homeowners and renters were somewhat similar up until 2007 (Hanna et al., 2012b) but then in 2013 the rate for homeowners decreased while the rate for renters remained high. In 1992, the proportion of renters with a heavy burden (42%) was only about a third higher than the proportion of homeowners (16%), but in 2013, the ratio of the proportions had increased to over 2.8, indicating that the position of renters relative to homeowners had worsened.

Table 2 shows descriptive patterns in 2013 for whether households had a heavy financial obligations burden (financial obligation ratio over 40%) and independent variables, including risk tolerance. Overall, 25% of all households, 16% of homeowner households, and 42% of renter households had a heavy financial burden. Among all households, almost 38% of households with alimony payments were under heavy financial burden. About 25% of homeowners who have alimony payments carried heavy financial burden, and almost 50% renters with alimony payments had heavy financial burden. For

homeowners, about 15% of households with education loans had a heavy burden, and almost 40% of renters with education loans carried a heavy burden. For homeowners, almost 21% of households with a head under 30 had a heavy burden, then the rate was in the 16% to 18% range for those ages 30 to 69, then the rate was about 11% for those ages 70 and over. The pattern by age for renters was consistently far higher than homeowners, with 52% for renters under 30, rates of 34% to 41% for those ages 30 to 69, and 47% for renters age 70 and over.

Table 2. Distribution of Having Heavy Financial Burden (whether financial obligation is over 40%), by Household Characteristics, for All Households, For Homeowners and For Renters, 2013 SCF

,	% of household with heavy financial burden				
Characteristic	All households	Renters			
All	24.75	15.76	41.55		
Age of the head	· · ·				
Under 30	43.96	20.55	51.89		
30-39	24.54	16.45	33.74		
40-49	24.67	18.37	36.95		
50-59	23.83	16.92	41.97		
60-69	19.48	15.55	35.83		
70 and above	17.46	10.69	46.73		
Education of household		·			
< high school degree	33.40	18.78	49.08		
High school diploma	24.95	17.04	39.01		
Some college or AA	27.12	17 11	41.01		
degree	27.15	1/.11	41.21		
Bachelor but not	22.12	12.07	11 97		
graduate degree	22.15	15.97	44.87		
Graduate degree	15.86	12.05	31.48		
Racial/ethnic group of respo	ndent				
White	19.90	13.28	37.90		
Black	35.59	23.13	45.37		
Hispanic	41.95	30.85	50.65		
Asian and others	24.38	18.93	32.55		
Marital Status					
Married	12.42	12.42	29.83		
Partner	16.51	16.51	33.56		
Single male	19.63	19.63	40.07		
Single Female	22.34	22.34	52.98		
Have Child under age 18					
No Child < 18	24.17	15.38	41.65		
At least one	25.98	16.61	41.37		
Household Net Worth	· · ·				
Top 25% (>\$316,839)	9.03	8.46	18.93		
Median to 75 th					
percentile(from \$81,399	13.72	12.94	20.6		
to \$316,839)					
25 th percentile to					
median(from \$8,799 to	26.34	23.63	30.04		
\$81,399)					
Bottom 25	49.92	42.25	51.66		
percentile(<=\$8,799)	77.72	72.23	51.00		
Household Income					

	% of household with heavy financial burden				
Characteristic	All households	Homeowners	Renters		
Top 25% (>\$89,278)	4.99	4.85	6.29		
Median income to 75 th					
percentile(from \$46,067	13.67	13.70	13.60		
to \$89,278)					
25 th percentile to					
median income(from	28.56	24.71	33.87		
\$24,348 to \$46,067)					
Bottom 25 percentile of	52 11	22.25	66 22		
income (<=\$24,348)	55.11	52.55	00.22		
US Economy Expectation in 2	Next Five Years				
Better	26.31	15.92	44.60		
Worse	24.70	16.77	40.18		
About the same	22.69	14.91	38.04		
Income Expectation					
About the same	19.76	13.01	36.06		
Faster than prices	24.03	13.89	40.49		
Slower than prices	19.16	13.30	37.01		
Unsure	34.14	22.70	47.00		
Risk Tolerance					
No Risk	33.58	20.31	45.36		
Average	20.87	13.5	34.25		
Above Average	17.76	11.24	38.94		
Substantial	30.80	20.58	51.34		
Health					
Excellent	20.07	12.14	38.77		
Good	24.48	16.81	39.60		
Fair	31.94	19.53	47.81		
Poor	35.49	21.34	48.36		
Income Relative To Normal	Income				
Higher than Normal	13.66	6.99	26.49		
About the Same	20.96	13.29	37.53		
Lower than Normal	44.37	33.19	56.51		
Employment Status					
Employee	22.47	14.63	36.68		
Self-employed	25.52	21.46	39.71		
Retired	25.12	14.62	50.71		
No Work	47.12	22.93	56.65		
Education Loan					
No Education Loan	21.16	14.66	39.81		
Have Education Loan	30.79	21.46	46.26		
Alimony Payments					
No Alimony Payment	23.11	13.84	41.11		
Have Alimony	37.70	24.83	49.64		
Payments					

2013 SCF, N=6,015.



The rate of having a heavy burden generally decreased with increasing education for homeowners, but there is not much of a pattern for renters, except that those with a post-bachelor degree had a rate of 45%, compared with a rate of 40% for those with a high school degree. For racial/ethnic groups, Hispanic homeowners (31%) and renters (51%) had much higher rates than White homeowners (13%) and renters (38%). For marital status, single females were more likely to have a heavy financial burden than couple households. Specifically, renters are much more likely to have heavy financial burden than homeowners. Households with net worth in the bottom 25% were much more likely than those in net worth percentiles to have heavy financial burdens. Similarly, households with income in the bottom 25% were much more likely to have a heavy burden than employee renters. For both homeowners and renters, those willing to take average or above average risks with investments were less likely to have a heavy financial obligations burden than those unwilling to take any risk, and those willing to take substantial risk.

Multivariate Results

Based on our logistic regression results (Table 3), household income, household net worth, having a college degree, being Hispanic, and having lower income than normal were strongly related to having financial obligations payments over 40% of income, for both homeowners and for renters. Having alimony payments was strongly related to having a heavy financial burden. The odds ratios (not shown) can be computed by exp(coefficient). Homeowners with alimony payments had odds of having a heavy financial obligations burden almost 4 times as high as the odds of otherwise similar homeowners without alimony payments, and there was a similar pattern for renters with and without alimony payments Household income and net worth were both negatively associated with having a heavy burden for both homeowners and renters. For both homeowners and renters, Hispanic households were more likely to have a heavy burden than were Asian households.

For homeowners, the odds of a Hispanic households having a heavy burden were 2.18 times the odds of an Asian household having a heavy burden. For renters, the odds for Hispanic households having a heavy financial burden were 1.9 times as high as for Asian households. For both homeowners and renters, those having a college degree were more likely than those with no college to have a heavy burden. For instance, the odds ratio for homeowner households with a bachelor degree having a heavy burden was 2.0, indicating that those with a college degree had twice the odds of otherwise similar households without a high school degree to have a heavy burden. (Based on separate tests not shown, those with a high school degree were significantly less likely to have a heavy burden than those with a college degree.) Households with income lower than normal were much more likely to have a heavy financial burden than those with a normal income level, with odds ratios of 1.9 for homeowners and 1.5 for renters.

Some variables had significant effects for only homeowners or for only renters. For renters, single males were less likely to have a heavy financial burden than married households, as married households had odds 1.8 times as high as the odds for single males.

Discussion

After the Great Recession from 2007 to 2009, about 25% of U.S. households had financial obligations over 40% of pre-tax income (Table 2) in 2013, including 16% of homeowners and 42% of renter households. When controlling household income, net worth and age, households with alimony payments are more likely to have a heavy financial burden than households with no alimony payments. Therefore, having alimony payments can be a serious burden for many families. Additionally, as the likelihood of a heavy burden was associated with having a college degree, financial education may not be an adequate solution to improve household management of financial obligations (Hanna, et al., 2012b). Among racial/ethnic groups, Hispanic homeowners and renters were much more likely to have heavy financial burdens than Asian homeowners and renters. Without any geographic information in the SCF data since 1998 (Hanna, et al, 2012a), it is possible that higher incidence of immigrants in the Hispanic groups, and/or to geographic residence patterns of households with Hispanic respondents might be related to these the differences. There are 55 million Hispanics in the U.S. and about 15 million of them



live in California, which has the largest population of any state (U.S. Census Bureau, 2015). Therefore, it is possible that Hispanic residents have higher home prices and rents due to higher housing prices in California.

The effects of age and age squared for renters in the logistic regression are not significant, though, as this is based on cross-sectional data, the pattern may represent renters becoming homeowners, so the composition of renter households' changes with age.

Conclusion

This study provides useful insights about the effect of alimony payments on U.S. households' financial obligations burdens after the Great Recession. In 2013, the proportion of renter households with heavy financial burdens was over twice the proportion in 1992, and 6 percentage points higher than in 2007, whereas the 2013 rate for homeowners was just over one percentage point higher than the 1992 rate, and almost 6 percentage points lower than in 2007. Many households shifted from being homeowners to renters, with the homeownership rate in the U.S. dropping from 68% in the third quarter of 2007 to 65% in the third quarter of 2007 (U.S. Census, 2017). Therefore, some marginal homeowners became renters after the recession. Multivariate results also show the strong effect of having alimony payments on the likelihood of having heavy financial obligations ratio. Therefore, like Hanna et al. (2012a; 2012b) concluded, it is difficult to attribute having a heavy financial obligations burden simply to households making mistakes, as households with alimony payments may be due to many different reasons. Analysis of sociological issues, such divorce and family structures, will be needed to obtain additional insights into our results.

Table 3. Logistic regressions for the likelihood of heavy financial burden with financial variables for owners and for renters, 2013 SCF

	Homeo	wners	Renters			
Variable	Coefficient	P value	Coefficient	P value		
Age of head	0.0000	0.9961	0.0058	0.7577		
Age of head squared/10000	-0.3013	0.8739	-0.9311	0.6260		
Have child under 18	0.2276	0.0992	0.2546	0.0658		
Log (income)	-1.7668	<0.0001	-1.8481	<0.0001		
Log (net worth), for >0, else Log (.01)	-0.0243	0.0152	-0.0221	0.0287		
Have Alimony payments	1.3262	<0.0001	1.3766	<0.0001		
Have education loan	0.1421	0.3657	0.1101	0.4854		
Have some risk tolerance	-0.1986	0.1070	-0.1684	0.1731		
Racial/ethnic status (reference categor	ry = Asian)					
Black	0.1234	0.6603	0.2080	0.4587		
Hispanic	0.6414	0.0257	0.7785	0.0068		
White	0.1006	0.7031	0.1656	0.5307		
Work status (reference category = Em	nployee)					
Self-employed	0.2472	0.2351	0.2117	0.3140		
No work	0.2968	0.1193	0.2496	0.1914		
Retired	0.1645	0.4250	-0.0049	0.9808		
Highest education (reference category	v = Less than Hig	gh School)				
High school degree	-0.2416	0.1534	-0.1530	0.3668		
Some college	0.2244	0.1190	0.2898	0.0444		
Bachelor degree	0.7182	0.0002	0.7476	0.0001		
Post bachelor degree	0.6668	0.0154	0.7571	0.0068		
Perceived Health Status (reference ca	tegory = Excelle	nt health)				
Good	-0.1278	0.3795	-0.0842	0.5640		
Fair	-0.1287	0.4524	-0.1015	0.5548		
Poor	-0.1716	0.4931	-0.0730	0.7717		
Household Type (reference category =	= Married)					
Live with partner	-0.2456	0.1994	-0.3382	0.0787		
Single male	-0.4122	0.0412	-0.5296	0.0090		
Single female	0.0004	0.9978	-0.1417	0.4222		
Expectation of Household Income (re	ference category	= Grow)				
Sure same	-0.3534	0.0803	-0.2191	0.2828		
Sure less	-0.2561	0.2479	-0.1179	0.5961		
Not sure	-0.3512	0.0661	-0.2627	0.1733		
Income relative to normal income (res	ference category	= About Same)				
Higher than normal	-0.3753	0.1157	-0.3338	0.1595		
Lower than normal	0.4125	0.0016	0.4229	0.0013		
US Economy during next five years (reference category = Same)						
Better	0.2252	0.0712	0.2470	0.0487		
Worse	-0.0690	0.6552	-0.0212	0.8914		
Intercept	17.592	<0.0001	18.113	<0.0001		

RII applied. Unweighted analysis of 2013 SCF, N= 3,999 for homeowners; N=2,016 for renters.



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