Who Wears the Pants? Gender Identity Norms and Intra-Household Financial Decision Making

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December 7, 2017

Abstract

Using microdata from U.S. household surveys, I document that families with a financially sophisticated husband are more likely to participate in the stock market than those with a wife of equal financial sophistication. This pattern is best explained by gender identity norms, which constrain women's influence over intra-household financial decision making. A randomized controlled experiment reveals that female identity hinders idea contribution by the wife, whereas male identity causes men to be obstinate. These findings suggest that gender identity norms can have real consequences for household financial well-being.

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1. Introduction

In the antebellum South, women were expected to "recognize their proper and subordinate place and to be obedient to the head of the family" (Scott, 1970). More than a century later, gender inequality persists despite women's empowerment (Ridgeway, 2011). To illustrate, married women's labor force participation has surged from 2 percent to 73 percent over the past century (Fernández, 2013). However, working wives spend an average of 26 hours per week on housework and child care, whereas their husbands spend only half of that amount.[1] It is therefore surprising that little is known in the literature about whether gender norms shape household financial decisions. This question naturally arises because these decisions are often jointly made by spouses who may frequently disagree with each other and any inequality between them is likely to be material. In this paper, I consider gender identity norms as a potentially important friction that influences intra-household financial decision making.

Economists have long highlighted the importance of traditional norms for economic outcomes. Bertrand, Kamenica, and Pan (2015) show that the social norm "a man should earn more than his wife" plays an important role in the distribution of relative income within households, the patterns of marriage and divorce, the female labor supply, and the division of home production between spouses. While their empirical analysis focuses on the United States, the impact of gender norms is pervasive. In an influential paper, Udry (1996) finds that yields on plots controlled by African women are 20 percent lower than yields on plots controlled by men within the same household. Most strikingly, virtually all fertilizer is concentrated on the plots controlled by men even if it is well known that the marginal product of fertilizer diminishes. This failure in efficient factor allocation within the household arises

[1] Data are from the American Time Use Survey conducted by the Bureau of Labor Statistics for 2003 through 2015. I restrict the sample to dual-earner married couples who are 24−64 years old and have at least one child. Housework includes such nonmarket work as meal preparation and cleanup, doing laundry, ironing, dusting, and vacuuming. As in Aguiar and Hurst (2007), child care includes primary child care (e.g., changing diapers), educational child care (e.g., reading to children), and recreational child care (e.g., playing games with children).

from the socially imposed division of labor between genders.

The household finance literature, by contrast, predominantly treats households as single agents; thus, interactions between family members are largely ignored. This modeling choice is convenient because standard tools of consumer theory can then be readily applied at the household level. Yet the family economics literature presents ample evidence that the "unitary" approach struggles to explain a wide range of family behaviors in various societies (Lundberg, Pollak, and Wales, 1997; Browning and Chiappori, 1998; Duflo, 2003). Therefore, opening the black box of the decision-making process within families is not only a necessary condition for evaluating the impact of gender identity norms but also a promising route for understanding how households manage their financial decisions.

A serious challenge to empirically testing the gender identity norm hypothesis is that intra-household financial decision making is almost by definition unobservable. My primary goal in this paper is to make a first attempt at this challenge, and my approach is straightforward. Imagine a world without gender norms. In such a world, it should not matter whether the husband or the wife has more knowledge that is relevant to their financial decisions. On the other hand, in a world with strong gender norms, the wife's influence may be constrained even if she is more financially sophisticated. Specifically, I use household stock market participation decisions as a testing ground.[2] The prior literature suggests that imparting financial knowledge to financially unsophisticated households is likely to induce them to participate in the stock market (van Rooij, Lusardi, and Alessie, 2011). Which spouse receives the financial knowledge should be irrelevant. In contrast, the gender identity norm hypothesis expects no increase in participation tendency if the wife is the recipient of

[2]The stylized fact in the literature is that participation is far from universal (Haliassos and Bertaut, 1995) as prescribed by canonical models of lifetime consumption and portfolio choice (Samuelson, 1969; Merton, 1971). The existing literature has different views on this puzzle. Vissing-Jørgensen (2003) interprets non-participation as a rational choice of households facing participation costs. On the other hand, alternative explanations consider non-standard preferences and beliefs (Barberis, Huang, and Thaler, 2006; Guiso, Sapienza, and Zingales, 2008). Recent work using high-quality data from Scandinavian countries has revealed that sizable windfall gains have a relatively small impact on household participation in the equity market (Andersen and Nielsen, 2011; Briggs et al., 2015). The new evidence favors the view of Campbell (2016) that in many cases failure to participate in the stock market "is likely to be a mistake."

financial knowledge but the husband makes the household's financial decisions all by himself.

I use a career in finance as a proxy for financial knowledge and delve into microdata from the Annual Social and Economic Supplement of the Current Population Survey (1988−2017). I find that 29 percent of the households in which neither spouse works in finance participate in the stock market. Among households in which one spouse works in finance, 48 percent of the households in which the husband works in finance participate in the stock market, whereas only 36 percent of the households in which the wife works in finance invest in any stock or mutual fund. In other words, a financially sophisticated husband increases the probability of household participation in the stock market by 69 percent of the average sample probability, compared with only 27 percent for a financially sophisticated wife. The discrepancy between these two effects provides the first support for the gender identity norm hypothesis. In a multivariate regression framework with a battery of fixed effects imposed, I find that households in which the husband works in finance have a 2.5 percentage point higher probability of participating in the stock market than those in which the wife works in finance. I confirm the baseline effect using microdata series from the 5 percent sample of the decennial Census (1980, 1990, and 2000) pooled with the American Community Survey (2006−2015).

Before investigating the gender identity norm hypothesis, I evaluate a number of alternative interpretations of the baseline effect. One interpretation is that this effect might be driven by the fact that women are on average more risk averse than men. I evaluate risk preference as a potential omitted variable using data from the National Longitudinal Survey of Youth 1979 Cohort. I find that married women who work in finance are even more risk seeking in placing bets than married men who work in finance. A potential selection bias induced by risk preference would therefore work against finding the baseline result, so my estimate of the impact of gender identity norms is likely to be conservative.

To address selection effects more generally, I show in a placebo analysis that a career in finance increases the probability that a single individual will participate in the stock market

approximately the same amount regardless of gender. It is therefore unlikely that some unobserved confounding characteristics that affect married couples and single individuals similarly could bias the baseline result. Meanwhile, this placebo analysis also alleviates the concern that some measurement error of household stock market participation drives the baseline effect.

Next, I provide evidence in favor of the gender identity norm hypothesis. In particular, I show in three subsamples that the difference between the effects of financial knowledge established in the baseline result is positively correlated with traditional gender role attitudes. First, I focus on married couples brought up by working mothers. These households are less averse to the idea that the wife works outside the home and are thus less likely to hold traditional gender role attitudes (Fernández, Fogli, and Olivetti, 2004). The baseline result is indeed weaker in this subsample. Descendants of pre-industrial societies where women specialized in activities within the home constitute a second subsample. These societies developed the belief that the natural place for women is within the home, and descendants of these societies tend to hold more traditional gender role attitudes (Alesina, Giuliano, and Nunn, 2013). I find that the baseline result is stronger in this subsample. I examine as the third subsample households in which the husband is born and raised in a southern state, where gender role attitudes are in general more traditional (Rice and Coates, 1995). Consistent with the gender identity norm hypothesis, the baseline result is stronger among southern families.

In the final part of my analysis, I conduct a randomized controlled experiment to investigate potential mechanisms underlying the empirical findings. I use employee stock purchase plans as the testing ground because it is arguably a better-defined investment mistake to pass up an opportunity with positive profits but no risk (Babenko and Sen, 2014) than to decline to participate in the stock market in general. To estimate the causal impact of gender identity, I prime the salience of gender identity randomly to the subjects. Two mechanisms emerge. First, female identity hinders idea contribution by the wife. This effect is distinct

from that of women's lack of confidence in gender-incongruent areas (Coffman, 2014). Second, male identity causes men to be less open to an opposing viewpoint from their wife, even if it is a superior solution.

The principal contribution of this paper to the household finance literature is to provide one of the first sets of evidence that household financial decisions can be distorted by gender identity norms. The existing literature attributes discrepancies between how households should make their financial decisions and what they actually do primarily to *individual-level* behavioral biases or mistakes (Campbell, 2006; Guiso and Sodini, 2013). Yet this paper demonstrates that *social* influences can be another key factor. More broadly, my work is part of the growing literature of social finance that studies how social processes affect financial outcomes (Hirshleifer, 2015). While my focus on stock market participation decisions is largely motivated by the considerable interest among financial economists in the field of household finance, I believe that my findings extend to other major household financial decisions, such as savings choice in retirement plans, mortgage decisions, and asset allocation decisions, among others.

An important welfare implication of my results arises from the following three stylized facts. Over the past three decades, the financial service sector has grown enormously, accounting for more than a quarter of the growth of the services sector as a whole (Greenwood and Scharfstein, 2013). The consequent complexity of modern financial systems poses a daunting challenge to households of limited financial sophistication (Campbell, 2016). During the same period, the proportion of households in which the wife has a college education has doubled from 34 percent to 68 percent.[3] However, gender role attitudes have changed little or even reversed since the mid-1990s (Cotter, Hermsen, and Vanneman, 2011; Fortin, 2015). As financial decisions become more challenging and as women become more educated, households are likely to incur nonnegligible welfare losses given the evidence in this paper that women's influence over intra-household financial decisions is constrained by gender identity

[3]I use microdata series from the 5 percent sample of the 1980 Census and the 2008−2012 American Community Survey. The sample is restricted to married women who are 24−64 years old.

norms.

The remainder of the paper unfolds as follows. The next section lays out related research. Section 3 describes the data and empirical design. Section 4 documents the main results. Section 5 presents evidence in favor of the gender identity norm hypothesis. Section 6 conducts a randomized controlled experiment to investigate underlying mechanisms and Section 7 concludes.

2. Related Literature

This paper relates to three strands of the economics literature in addition to the previously mentioned papers. First, the social economics literature developed by Becker and Murphy (2000) has established that social influences on behavior are pervasive. One specific type of social influence, the gender norm, has received special attention. Fisman et al. (2006) highlight the role of gender norms in the marriage market by documenting that men do not value women's intelligence or ambition when it exceeds their own. Using data from the World Values Surveys, Fortin (2005) finds that traditional gender role attitudes are strongly and negatively associated with female employment rates across 25 OECD countries. Even if women decide to participate in the labor force, gender norms play a major role in recruiting processes (Kuhn and Shen, 2013). My paper complements this literature by identifying the impact of gender norms in the novel setting of household financial decisions.

This paper also relates to the family economics literature pioneered by Becker (1973, 1974, 1991) and Chiappori (1988, 1992). There is mounting evidence that interactions between individuals within households are key to understanding household behavior (Browning, Chiappori, and Weiss, 2014). There is, however, substantially less work on intra-household financial decision making. Examples include the work of Anderson and Baland (2002) and Ashraf (2009), who examine household savings in Kenya and the Philippines, respectively. This paper, in contrast, focuses on the United States, where households face considerably

more challenging financial decisions involving modern capital markets. In addition, Mazzocco (2004), Olafsson and Thörnqvist (2016), Addoum, Kung, and Morales (2016), and Addoum (2017) investigate intra-household savings and portfolio choice. Unlike these papers, I embrace the view that households often lack the knowledge to manage their financial matters optimally. I further argue that traditional norms can be costly for households, which are facing increasingly complex financial decisions.

The third related strand of literature imports identities and norms from sociology and social psychology to economics and emphasizes that people's perceptions of "who they are" and "what is proper" are fundamental to their choices (Akerlof and Kranton, 2000, 2010). Using a general model of identity management, Bénabou and Tirole (2011) develop a theory of moral behavior that offers a unified account of empirical puzzles including unstable altruism, coexistence of social and antisocial punishments, and taboo tradeoffs. In a laboratory setting, Benjamin, Choi, and Strickland (2010) identify the marginal behavioral effect of social identity on discount rates and risk aversion. However, researchers have devoted little attention to understanding how identity affects financial decisions. One exception is D'Acunto (2015), who shows in a controlled environment that men become overconfident in a pure game of chance if gender identity is manipulated to be salient to them. My paper contributes to this nascent literature by underscoring the role of gender identity in shaping household financial decisions.

3. Data and Methodology

3.1 Data

I use two U.S. household surveys as my primary data sources: the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS) for 1988 through 2017 and the 5 percent sample of the Census (1980, 1990, and 2000) pooled with the 2006−2015 American Community Survey (ACS) Integrated Public Use Microdata Series (IPUMS) (Rug-

gles et al., 2017). I restrict both samples to non-military married couples aged 24−64 who do not live on farms or in group quarters. I further restrict the samples to households in which at least one spouse has positive labor income and neither spouse is self-employed. Married couples who live with their parents, with children who are more than 24 years old, or with other relatives, and those having more than ten children are excluded from the samples. People who work in the financial service sector are those who report their industry affiliations in the 700−712 range of the 1990 Census Bureau industrial classification scheme.[4]

The ASEC of the CPS is a sequence of annual cross-sectional samples representative of the population of the United States. These datasets are commonly used by labor economists because of the extensive coverage of labor force characteristics of U.S. civilians.[5] This paper is the first to use the ASEC of the CPS to examine household stock market participation decisions. Specifically, I exploit the question on whether the household owns any shares of stock or any mutual fund shares. From 1988 to 2017, around 2 million households are included in the ASEC of the CPS. The large sample size enables me to impose a set of fixed effects to control for observed household heterogeneities along multiple dimensions. In addition, the large sample size allows me to obtain a sufficiently large sample of households in which one spouse works in finance, which would be impossible with most other smaller datasets.

To complement the ASEC sample, I use microdata series from the U.S. Census, which represent a random draw of the U.S. population and provide micro-level observations on a wide array of economic and demographic information for more than 25 million households. In addition to the even larger sample size, an advantage of the Census sample is that respondents provide information on their place of birth and ancestry, which is critical to identifying the link between gender identity norms and household financial decisions.

[4]Specifically, they are (1) banking, (2) savings institutions including credit unions, (3) credit agencies not elsewhere classified, (4) security, commodity brokerage, and investment companies, (5) insurance, and (6) real estate including real estate-insurance offices.

[5]For example, Garthwaite, Gross, and Notowidigdo (2014) use the ASEC of the CPS as their primary data to study the effect of public health insurance on labor supply.

One important limitation of the Census data is that no direct information is available on asset market participation. However, the Census Bureau does collect detailed income data. Following Cole, Paulson, and Shastry (2014), I define households that participate in the financial market as those who report investment losses or investment income greater than \$500.[6] The \$500 cutoff point is set to exclude households with only savings accounts that generate small amounts of interest income.

Table 1 reports descriptive statistics for both samples. In the ASEC sample, 30% of the households invest in stocks or mutual funds. In the Census sample, 18% of the families participate in the financial market. In both samples, there are more married women than men working in the financial service sector. This pattern is largely due to the fact that a large number of female workers perform administrative duties. Other household characteristics are comparable across samples.

In addition, I use the National Longitudinal Survey of Youth 1979 Cohort (NLSY79) to analyze the effect of risk preference. The NLSY79 follows a nationally representative sample of 12,686 individuals who were 14−22 years old in 1979. I extract the 2010 wave of the NLSY79, which includes a set of general qualitative questions on willingness to take on risk. These self-assessed risk tolerance measures enable me to examine the effect of risk preference across industries as well as between genders.

3.2 Empirical Design

Consider the imparting of financial knowledge to a sample of financially unsophisticated households. After receiving financial information, such households should be more likely to participate in the stock market (van Rooij, Lusardi, and Alessie, 2011). In this paper, I take a further step and test whether the gender of the family member who is financially sophisticated matters. The existing literature asserts no difference, whereas the gender

[6] Investment income, termed by Cole, Paulson, and Shastry (2014), is the "pre-tax money the respondent received or lost during the previous year in the form of income from an estate or trust, interest, dividends, royalties, and rents received."

identity norm hypothesis expects a financially sophisticated wife to have a much weaker effect because she has less influence over intra-household financial decision making.

I construct my final sample as depicted in Figure 1. Households in which only the husband works in finance constitute the first part of a subsample labeled as Subsample Husband. Likewise, households in which only the wife works in finance constitute the first part of a subsample labeled as Subsample Wife. Households in which neither spouse works in finance are randomly assigned to either of the subsamples.

As illustrated in Figure 2, I first compare the stock market participation rate among households in which the husband works in finance (48%) with the rate among households in which neither spouse works in finance (29%). This first difference is 19%, which reflects the effect of financial knowledge from the husband's side. I then compare the stock market participation rate among households in which the wife works in finance (36%) with the rate among households in which neither spouse works in finance (29%). This second difference is only 7%, which reflects the effect of financial knowledge from the wife's side. The difference between these two effects provides preliminary evidence in favor of the gender identity norm hypothesis.

To execute this difference-in-difference analysis in a multivariate regression framework, I estimate the following empirical model:

$$y_i = \alpha + \beta_1 \text{Husband}_i + \beta_2 \text{Finance}_i + \beta_3 \text{Husband}_i \times \text{Finance}_i + \gamma' \mathbf{X}_i + \varepsilon_i, \tag{1}$$

where y indicates whether household i participates in the stock market, Husband indicates whether the household is assigned to Subsample Husband as defined above, Finance indicates whether either spouse works in the financial service sector, and $\mathbf{X}$ is a set of fixed effects. β_2 measures the effect of financial knowledge from the wife's side on household stock market participation, and β_3, the coefficient of interest, measures the additional effect of financial knowledge from the husband's side on household stock market participation in excess of

β_2. Because I include a large number of fixed effects, I run linear probability models with standard errors clustered at the state level.

The fixed effects control for the age, cohort of birth, race, and educational attainment of both spouses; family income; income earned by the wife relative to that earned by the husband; home ownership; number of children; heterogeneity across occupations and industries; and time-varying differences in local economic environments (Gormley and Matsa, 2014).

The preceding set of fixed effects has a number of features that merit discussion. First, since I impose the fixed effects of relative income and relative education, which are two common proxies for intra-household bargaining power, the evidence in this paper is above and beyond these two effects.

Second, an implicit assumption underlying my empirical design is that treatments of financial knowledge are homogeneous. One might wonder if men who work in finance are on average more financially knowledgeable than women who work in finance. An observation consistent with this concern is that men typically work in higher positions in the financial industry, as Table 1 indicates. To assuage this concern, I include the occupation fixed effects to ensure that I compare households within the same broad occupation group.[7]

Third, while the large sizes of both samples are advantageous for my analysis, one limitation is that no information is reported on wealth, which is a key determinant of household stock market participation (Mankiw and Zeldes, 1991; Calvet, Campbell, and Sodini, 2007). To alleviate this omitted variable concern, I construct twenty-seven family income fixed effects with $10,000 income buckets (twenty in total) if family income is less than $200,000, with $50,000 income buckets (six in total) if family income is between $200,000 and $500,000, and with another bucket if family income exceeds $500,000. After including these fixed effects in my specification, I effectively compare households within each income bucket; hence, they are relatively homogeneous in wealth.

[7] I group occupations into 11 broad categories following Acemoglu and Autor (2011): (1) managers, (2) professionals, (3) technicians, (4) sales, (5) office and admin, (6) personal care and personal services, (7) protective service, (8) food prep, buildings and grounds, cleaning, (9) agriculture, (10) production, craft and repair, and (11) operators, fabricators and laborers.

4. Main Results

4.1 Baseline Result

Table 2 presents the baseline regression results. Column (1) reports the same univariate result for the ASEC sample as in Figure 2. After I impose a set of fixed effects, Column (2) shows that a financially sophisticated husband increases the probability of a household participating in the stock market by 5.4 percentage points, compared with only 2.9 percentage points for a wife of equal financial sophistication. Hence, the difference between the effects of financial knowledge is 2.5 percentage points, consistent with the gender identity norm hypothesis. This effect is economically important: the size of this effect is more than one third of the impact of family income, which is one of the most important determinants of household stock market participation (Haliassos and Bertaut, 1995).[8] This baseline result is confirmed in the Census sample in Columns (3) and (4). In particular, Column (4) shows that households in which the husband works in finance have a 1.6 percentage point higher probability of participating in the financial market than those in which the wife works in finance, with all the fixed effects imposed.[9]

4.2 The Effect of Risk Preference

My analysis is not immune to endogeneity concerns, and an important one is sample selection bias. Specifically, it is possible that some unobserved characteristics that drive a person to choose a career in finance might also affect the decision of whether to participate

[8]In an untabulated analysis in which log family income is explicitly controlled for as a regressor instead of as a fixed effect, a one-standard-deviation increase in log family income is associated with a 7.9 percentage point increase in the probability of a household participating in the stock market. Hence the economic significance of the baseline estimate, which in this specification is 2.7 percentage points, equals 35 percent of the impact of family income on stock market participation decisions.

[9]The effect in the Census sample is smaller in magnitude than that in the ASEC sample largely due to the different definitions of market participation across samples. For the Census sample, I set the $500 cutoff point primarily to follow Cole, Paulson, and Shastry (2014) but the baseline result is robust to alternative cutoff points such as $100, $200, $300, $400, and $600.

in the stock market. I start by considering the possibility that risk preference is an omitted variable that contaminates the baseline result.

Risk attitude is a natural candidate because it is well documented in the literature that risk preference is an important determinant of both portfolio choices and career choices (Vissing-Jørgensen and Attanasio, 2003; Bonin et al., 2007). To address this concern, I retrieve a set of general qualitative questions on willingness to take on risk from the 2010 wave of the NLSY79.[10] In particular, I perform a simple univariate difference-in-difference analysis similar to the baseline regressions on a sample of married individuals to analyze the effect of risk preference.[11]

Table 3 reports the univariate test result. For both risk tolerance in general and risk tolerance in financial matters, the first two columns show that both men and women who work in finance are on average more risk tolerant than those who do not. However, risk tolerance between financial professionals and non-financial professionals does not differ significantly across genders. Hence, these results suggest that risk tolerance is unlikely to bias the baseline result. The last two columns show that for risk tolerance in occupation as well as risk tolerance in placing bets, the difference-in-difference estimate becomes significantly negative. In fact, women who work in finance are even more risk seeking than men who work in finance in terms of placing bets.

Drawing a sample of MBA students and another sample of directors and CEOs, Adams and Ragunathan (2017) similarly find that women in finance have similar, or even lower,

[10] Dohmen et al. (2011) find that general qualitative questions on risk attitudes have more predictive power than quantitative measures and experimental evidence. Their data source is the German Socio-Economic Panel, which has general qualitative questions identical to those I use from the NLSY79 sample. Specifically, the respondents are asked the following four questions: (1) "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" (2) "People can behave differently in different situations. How would you rate your willingness to take risks in financial matters?" (3) "How would you rate your willingness to take risks in your occupation?" (4) "How would you rate your willingness to take risks in placing 'fair' bets where, for example, you have a 50-50 chance of winning $20 and a 50-50 chance of losing $10?" Individuals rate themselves from 0 to 10, where 0 means "unwilling to take any risks" and 10 means "fully prepared to take risks."

[11] One caveat about the NLSY79 data is that it solicits responses only from respondents in the original cohort, but not from their spouses. Therefore, I am unable to aggregate the risk preferences of the married couples.

levels of risk aversion than men in finance. These results suggest that selection bias arising from risk attitudes would work against finding the baseline result. Therefore, my estimate of the impact of gender identity norms is probably conservative.

4.3 A Placebo Analysis

As argued above, the mere existence of some omitted variable that drives both career choice and portfolio choice is not sufficient to render the baseline result spurious. For the baseline result to be spurious, men who work in finance must be significantly more risk tolerant than men who do not work in finance, whereas women who work in finance must be at most marginally more risk tolerant than women who do not work in finance. The evidence from the NLSY79 sample above shows that this is not the case. Therefore, a large number of commonly contaminating unobserved characteristics against causal interpretations are likely to be minor in the setting of this paper.

However, it is possible that the baseline result can be explained by some relevant unobserved characteristics. For instance, men are more overconfident than women when it comes to trading in the stock market (Barber and Odean, 2001), and a man who works in finance could be even more overconfident. Therefore, overconfidence could be a relevant unobserved characteristic. Trust is another potentially relevant unobserved characteristic, since women have systematically lower trust in the stock market than men, especially if they are highly educated (D'Acunto, 2017).

To address the concern above, I run a placebo test on a sample of single individuals. If these unobserved characteristics affect portfolio choices made by married couples and single individuals in a similar fashion, differential effects of a career in finance between single males and single females are expected. Table 4 shows that in contrast to the baseline result, there is no significant difference between the effect of a single financially knowledgeable male and that of a single financially knowledgeable female. This is true for both the ASEC sample and the Census sample, regardless of whether the single individual is divorced or

was never married. Therefore, it is unlikely that the baseline result is biased by unobserved contaminating variables that affect married couples and single individuals similarly.

Meanwhile, this placebo analysis also addresses the measurement error concern. Specifically, for the ASEC sample, respondents might not consider their retirement accounts as investment in the stock market. For the Census data, investment income could also arise from a second home or some other non-financial asset. If such measurement errors drive the baseline result, a similar pattern to the baseline result should emerge, which is not the case among single individuals.

5. Evidence for Gender Identity Norms

I rely on the Census sample to provide supporting evidence for the gender identity norm hypothesis. Specifically, I sort the sample based on ex ante measures of traditional gender norms and test whether the baseline result is positively correlated with these measures.

5.1 Influence of Working Mothers

I start by investigating intergenerational transmission of gender identity norms. I first focus on two types of transmission processes over one generation, namely, vertical transmission and oblique transmission (Cavalli-Sforza and Feldman, 1981). Vertical transmission originates from the parents, who have great influence over their children's gender-related beliefs (Glaeser and Ma, 2014). Fernández, Fogli, and Olivetti (2004) argue that men brought up by working mothers have developed less stereotypical gender role attitudes and thus are less averse to having a working wife than other men. Olivetti, Patacchini, and Zenou (2013) further explore the influence of friends' working mothers (i.e., oblique transmission) and show that this channel is also important and operates independently.

To capture both of the processes simultaneously, I calculate the employment ratio, defined as the ratio of the number of working to nonworking women aged 30−35 in the birth state

of the husband (wife) when he (she) was born, using pooled microdata series from the 1920−1990 Census. Everything else equal, the larger this ratio is, the more likely it is that the husband (wife) was brought up by a working mother and that his (her) teenage friends also had a working mother. Households with above-median employment ratios are assumed to hold less traditional gender role attitudes.

Table 5 reports the test results on the influence of working mothers. Column (1) shows that among households in which the husband is more likely to have been brought up by a working mother, households in which the husband works in finance have a 0.7 percentage point higher probability of participating in the financial market than those in which the wife works in finance. However, this statistic is 3.0 percentage points among households in which the husband is more likely to have been brought up by a stay-at-home mother. Column (2) shows that the estimates from the wife's side are comparable to those from the husband's side. These results show that the baseline effect is stronger among households that are more likely to hold traditional gender role attitudes, consistent with the gender identity norm hypothesis.

5.2 Origins of Gender Roles

I now turn to intergenerational transmission of gender identity norms over longer terms. Alesina, Giuliano, and Nunn (2013) investigate the origins of cultural differences in the belief of the appropriate role of women in society. They show that descendants of societies (e.g., Egypt and India) that traditionally practiced plough cultivation, which required considerable physical strength, have less equal gender role attitudes today. Using their data on plough use, I directly test whether the differential effects in the baseline result become larger among descendants of societies that practiced plough agriculture. To hold the external environment constant, I restrict the sample to native couples who speak foreign languages at home and report foreign ancestries.

Table 6, Column (1) shows that among households in which the husband is a descen-

dant of a society that traditionally practiced plough agriculture, households in which the husband works in finance have a 3.0 percentage point higher probability of participating in the financial market than those in which the wife works in finance. Column (2) shows that this statistic is 3.1 among households in which the wife is a descendant of a society that traditionally practiced plough agriculture. These results are again consistent with the gender identity norm hypothesis.

5.3 Southern Culture

Gender role attitudes are in general more traditional in the southern United States (Rice and Coates, 1995). An important aspect of southern culture is strong religion, and, consistent with the previous notion, Guiso, Sapienza, and Zingales (2003) find that religious people have more traditional attitudes toward women. I test whether the baseline effect becomes stronger among households with a spouse born in a southern state. I restrict the sample to families residing in the state where at least one spouse was born.

Table 7, Column (1) shows that among households in which the husband was born and has since lived in a southern state, those in which the husband works in finance have a 2.9 percentage point higher probability of participating in the financial market than those in which the wife works in finance. However, this statistic is only 1.8 percentage points among households in which the husband has not lived in a southern state. Column (2) shows that the baseline effect among households with a southern wife is not significantly different from that among households in which the wife has not lived in a southern state.

6. Underlying Machanisms

I design a randomized online survey experiment to investigate underlying mechanisms through which gender identity norms shape intra-household financial decision making. I focus on two key stages of the decision-making process between spouses: the information

contribution stage and the information aggregation stage. In particular, I test in a unified framework whether women themselves choose to be less influential in the former stage and whether their influence is downplayed by their husband in the latter stage. Importantly, the laboratory setting enables me to exogenously increase the salience of gender norms to subjects, and I can therefore evaluate the causal impact of higher salience of gender norms on intra-household financial decision making.

6.1 Experimental Design

Figure 3 illustrates the between-subject design of the experiment.[12] I recruit subjects on Amazon's Mechanical Turk (mTurk), an online platform that enables researchers to carry out survey experiments.[13] At the start of the survey, I ask three screening questions to restrict my sample to married individuals aged 24−64 who are U.S. residents.

In the first part of the survey, subjects are introduced to an employee stock purchase plan (ESPP). Specifically, they read three frequently asked questions on what ESPP is, how it works, and whether there are any restrictions on sales of company stocks. Meanwhile, they are also presented with the hypothetical company's stock performance in the past 12 months in a price chart. They are then asked whether they plan to enroll in the ESPP.

I choose the setting of ESPP as the testing ground for two main reasons. First, ESPP participation is one specific form of household stock market participation. Therefore, evidence gathered from the experiment is more likely to shed light on the mechanisms underlying my empirical findings on household stock market participation. Second, not participating in ESPPs is a well-defined investment mistake because one can buy the company stock at a discount and immediately resell it for a sure capital gain with no risk (Babenko and Sen, 2014). This setting therefore gives me the opportunity to examine the welfare implications of gender identity norms.

[12] The complete instructions for the experiment can be found in the Appendix.

[13] See Kuziemko et al. (2015), DellaVigna and Pope (2017a,b), and Lian, Ma, and Wang (2017), among others, for papers that use mTurk in the economics and finance literature.

In the second part of the survey, all subjects are randomly assigned to a writing task in which they read a text and then write a short essay of 5−10 sentences. Subjects in the primed condition are presented with a text on agentic and communal attributes, two concepts in the social psychology literature.[14] Male (female) subjects are then instructed to recall a situation when they behaved in line with "agentic" ("communal") in the presence of their wife (husband). As they write a short essay describing the situation, their thoughts, and their feelings, subjects are being primed with gender identity. In contrast, subjects in the control condition are presented with a gender-neutral text on the default American lifestyle.[15] They are then instructed to write an essay describing a time when they actively resisted such a lifestyle. Table IA1 in the Appendix reports sample essays written by subjects of both genders in both conditions.

In the final part of the survey, subjects are assigned to different arms of the experiment depending on how they answered the ESPP question in the first part of the survey. In particular, subjects who chose to participate in the ESPP are put in a scenario where their spouse is faced with the same decision. Due to some unwarranted concerns, the spouse, as an eligible employee, is not inclined to enroll in the ESPP and the subject is entitled to make a final call on this decision. Therefore, I am able to test whether gender identity affects an individual's willingness to contribute ideas to the spouse.

Subjects who did not choose to enroll in the ESPP are put in another scenario where their spouse provides the correct reasoning as to why the subject should take this arbitrage opportunity. I can therefore test whether gender identity affects an individual's openness to constructive advice from the spouse.

All subjects receive \$0.5 following the completion of the survey. They have a 20 percent

[14] As defined by Eagly and Karau (2002), "Agentic characteristics, which are ascribed more strongly to men, describe primarily an assertive, controlling, and confident tendency. In contrast, communal characteristics, which are ascribed more strongly to women, describe primarily a concern with the welfare of other people."

[15] According to Mirowsky and Ross (2015), "the default American lifestyle has three core elements: displacing human energy with mechanical energy, displacing household food production with industrial food production, and displacing health maintenance with medical dependency."

chance of earning a bonus of $1 if their completed survey is ranked above the median (i.e., among the top 50 percent of participants). I remind subjects of the bonus system several times in the survey and advise them to read the material carefully. In order to keep my priming technique effective, I also instruct them to write creatively and specify the reasons for their choices.

6.2 Experimental Results

Table IA2 reports subject characteristics for the randomized online experiment. On average, 76 percent of the male subjects chose to participate in the ESPP, compared with 73 percent for the female subjects. Consistent with other studies using mTurk, recruited subjects are on average younger and more educated than the general population. Across different subsamples, it is clear that having trading experience greatly helps the subject make the right decision. Similarly, having a high assessment of one's financial knowledge predicts a higher participation rate. In contrast, subjects who are risk averse or who do not trust others are less likely to enroll in the ESPP.

I first focus on the information contribution stage of intra-household financial decision making. For female subjects who would themselves choose to participate in the ESPP, Panel A, Figure 4 plots the proportion of subjects who are willing to contribute their ideas to their husband by treatment. Women primed with female identity are significantly less likely to contribute ideas to their husband than women in the control condition. Specifically, 60 percent of the female subjects in the control condition contradict their husband, compared with 52 percent of those in the primed condition.

The first three columns of Table 8 report the multivariate results based on Probit regression that control for individual characteristics. In particular, Column (3) indicates that female identity causes women to be over 11 percentage points less likely to contribute ideas to their husband. One possible alternative interpretation of this result is that women are simply less confident in gender-incongruent areas (Coffman, 2014). I argue that this effect

cannot be the driving force because I explicitly control for self-assessed financial knowledge. Column (3) shows that women who feel financially knowledgeable themselves are indeed more likely to contradict their husband. My result, however, should be above and beyond this effect.

Next I turn to the information aggregation stage of decision making between spouses. For male subjects who did not choose to participate in the ESPP, Panel B, Figure 4 displays the proportion of subjects who are open to constructive advice from their wife by treatment. I find that men primed with male identity are less likely to listen to their wife than those in the control condition.

The next three columns of Table 8 present the Probit estimates of the priming effect of male identity on men's openness to constructive advice from their wife. Column (6) shows that the salience of male identity makes men over 32 percent less likely to listen to their wife. Interestingly, trading experience is hazardous for them probably because men who trade frequently are overconfident about their judgment (Barber and Odean, 2001) and thus not open to opposing viewpoints. Additional analysis of gender identity on decision making between spouses is detailed in Table IA3 in the Appendix.

To sum up, the experimental evidence suggests that because of female identity, women *choose* to be less influential in the information contribution stage of decision making between spouses. In addition, even if they fully contribute their ideas, women are *forced* to be less influential because male identity causes their husband to ignore their ideas. These two mechanisms speak to an important welfare implication of gender identity norms. Given the fact that nonparticipating employees forfeit about $3,000 annually (Babenko and Sen, 2014), my experimental evidence suggests that gender identity is likely to cause nonnegligible welfare losses.

7. Conclusion

Discrepancies between how households should make their financial decisions and what they actually do are central to the field of household finance (Campbell, 2006). Applying a social lens to these discrepancies, this paper identifies an important linkage between gender identity norms and household financial decisions.

I offer both empirical and experimental evidence that gender identity norms constrain women's influence over intra-household financial decision making. Analyzing microdata from U.S. household surveys, I find that families in which the husband works in finance are 2.5 percent more likely to participate in the stock market than those in which the wife works in finance. Gender difference in risk taking cannot account for this difference, and a similar pattern is not observed among single individuals. Consistent with the gender identity norm hypothesis, the difference is attenuated among couples brought up by working mothers, but it becomes larger among descendants of societies that traditionally practiced plough agriculture and households with a southern husband. In an online randomized survey experiment, I further show the causal impact of gender identity at both the information contribution stage and the information aggregation stage of the decision-making process between spouses.

This paper raises a number of interesting questions for future research. For instance, certain patterns of household financial behavior are vastly different across countries (Badarinza, Campbell, and Ramadorai, 2016). Can they be explained by cross-country differences in cultural attributes? Guiso, Sapienza, and Zingales (2008) take a first step by showing that countries with low levels of trust exhibit low levels of stock market participation. Additionally, the evidence in this paper speaks to household welfare loss. An important follow-up question is: what is the magnitude of the welfare cost imposed by gender identity norms? Another question relates to intervention in consumer financial markets. A better understanding of how behavioral agents are susceptible to traditional norms relative to rational agents would provide invaluable information to interventionists.

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Table 1. Descriptive Statistics

This table reports descriptive statistics for the two samples in this paper: the Annual Social and Economic Supplement (ASEC) of the Current Population Survey for 1988 through 2017 and the 5% sample of the Census (1980, 1990, and 2000) pooled with the American Community Survey (2006−2015). The financial outcome variable for the ASEC sample is a dummy equal to one if the household owns any shares of stock in corporations or any mutual fund shares. The financial outcome variable for the Census sample is a dummy equal to one if the household reports investment losses or investment income greater than $500. For each dataset, the final sample is constructed as illustrated in Figure 1. Both samples are restricted to non-military married couples aged 24−64 who do not live on farms or in group quarters. It is further required that at least one spouse has positive labor income and neither spouse is self-employed. Married couples who live with their parents, with children who are more than 24 years old, or with other relatives, and those having more than ten children are excluded from the samples. Income variables are deflated in 2010 dollars by the price index for personal consumption expenditures.

	ASEC (N = 543,173)		Census (N = 5,591,610)	
	Mean	SD	Mean	SD
Financial outcome	29.99%	45.82%	17.64%	38.11%
Husband in finance	4.56%	20.86%	4.17%	20.00%
Wife in finance	6.12%	23.96%	5.89%	23.55%
Husband age	43.11	9.92	43.56	10.48
Wife age	41.00	9.69	41.41	10.31
Husband race				
White	73.94%	43.89%	80.77%	39.40%
Black	7.10%	25.68%	6.29%	24.28%
Other	18.96%	39.20%	12.94%	33.56%
Wife race				
White	73.56%	44.10%	80.29%	39.78%
Black	6.61%	24.85%	5.86%	23.48%
Other	19.83%	39.87%	13.85%	34.55%
Husband education				
No high school credential	14.56%	35.27%	11.41%	31.79%
High school graduate	26.35%	44.05%	34.71%	47.60%
Some college	25.32%	43.49%	22.85%	41.99%
College graduate	33.76%	47.29%	31.03%	46.26%
Wife education				
No high school credential	13.85%	34.54%	9.77%	29.68%
High school graduate	26.09%	43.91%	37.00%	48.28%
Some college	27.36%	44.58%	24.37%	42.93%
College graduate	32.70%	46.91%	28.87%	45.31%
Log husband income	10.13	2.54	10.19	2.44
Log wife income	7.62	4.34	7.60	4.25
Log family income	11.05	0.79	11.06	0.78
Home ownership				
Rent	20.53%	40.39%	18.95%	39.19%
Owned	79.47%	40.39%	81.05%	39.19%
Number of children	1.37	1.08	1.31	1.24

Table 2. Baseline Regressions

This table reports the OLS estimates of the differential effects of the husband versus the wife working in finance on household stock market participation. The dependent variable for the ASEC sample is a dummy equal to one if the household owns any shares of stock in corporations or any mutual fund shares. The dependent variable for the Census sample is a dummy equal to one if the household reports investment losses or investment income greater than \$500. Finance indicates whether any member of the household works in finance. Husband indicates whether the household is assigned to Subsample Husband defined in Figure 1. Age is grouped into three-year intervals from 24 to 64 and a cohort of birth is defined as a ten-year birth interval. Race is classified into non-hispanic white, black, and otherwise. Education is split into four categories: people without a high school credential, high school graduates, college dropouts, and college graduates. Family income is defined as total income from both spouses. It is classified into 27 bins: $\$10,000 + (n-2) \times \$10,000 \leq$ family income $< \$10,000 + (n-1) \times \$10,000$ $(n = 1, 2, ..., 20)$, $\$250,000 + (n-2) \times \$500,000 \leq$ family income $< \$250,000 + (n-1) \times \$50,000$ $(n = 1, 2, ..., 6)$, and family income $\geq \$500,000$. Relative income is defined as the ratio of the husband's income to the wife's income. It is classified into 22 bins: $n <$ relative income $\leq n + 1$ $(n = 1, 2, ..., 9)$, $1/(n+1) \leq$ relative income $< 1/n$ $(n = 1, 2, ..., 9)$, relative income > 10, relative income < 0.1, husband's income $= 0$, and wife's income $= 0$. Home ownership indicates whether the housing unit is rent or owned. The occupation of the husband (wife) and the industry affiliation of the spouse are controlled for as fixed effects for households assigned to Subsample Husband (Wife) defined in Figure 1. Occupations are grouped into 11 broad categories following Acemoglu and Autor (2011). Industries are a balanced panel of 214 industries based on the 1990 Census code following Autor, Dorn, and Hanson (2013). Income variables are deflated in 2010 dollars by the price index for personal consumption expenditures. Standard errors in parentheses are clustered at the state level and levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	ASEC		Census	
	(1)	(2)	(3)	(4)
Finance × Husband	0.119***	0.025***	0.107***	0.016***
	(0.010)	(0.006)	(0.003)	(0.001)
Finance	0.077***	0.029***	0.006***	0.006***
	(0.004)	(0.003)	(0.002)	(0.001)
Husband	0.000	0.016***	0.000	0.008***
	(0.001)	(0.001)	(0.000)	(0.001)
Fixed Effects:				
Husband age group	No	Yes	No	Yes
Wife age group	No	Yes	No	Yes
Husband cohort of birth	No	Yes	No	Yes
Wife cohort of birth	No	Yes	No	Yes
Husband race × Wife race	No	Yes	No	Yes
Husband edu. × Wife edu.	No	Yes	No	Yes
Family income	No	Yes	No	Yes
Relative income	No	Yes	No	Yes
Home ownership	No	Yes	No	Yes
Number of children	No	Yes	No	Yes
Occupation	No	Yes	No	Yes
Industry	No	Yes	No	Yes
State × Year	No	Yes	No	Yes
Observations	543,173	543,173	5,591,610	5,591,610
Adj. R^2	0.009	0.209	0.004	0.166

Table 3. The Effect of Risk Preference

This table analyzes the effect of risk preference. The dependent variables are four types of self-assessed risk tolerance (RT) measures. For each measure, the ratings range from 0 to 10, where 0 means "unwilling to take any risks" and 10 means "fully prepared to take risks." Finance indicates whether the respondent works in the finance. Husband indicates whether the respondent is a husband. Data are from the 2010 wave of the National Longitudinal Survey of Youth 1979 Cohort. The sample is limited to married individuals and robust standard errors are reported in parentheses. Levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	General	Financial Matters	Occupation	Placing Bets
	(1)	(2)	(3)	(4)
Finance × Husband	0.066	0.052	−0.461*	−0.489*
	(0.236)	(0.216)	(0.257)	(0.267)
Finance	0.405**	0.372**	0.399**	0.522***
	(0.174)	(0.159)	(0.190)	(0.200)
Husband	0.672***	0.772***	0.795***	0.408***
	(0.095)	(0.088)	(0.105)	(0.107)
Constant	4.373***	3.198***	3.512***	3.860***
	(0.066)	(0.059)	(0.071)	(0.073)
Observations	4,052	4,052	4,052	4,052
Adj. R^2	0.019	0.027	0.014	0.004

Table 4. Placebo Analysis: Evidence from Single Individuals

This table reports the results of a placebo test on non-military single individuals aged 24−64 who live by themselves and not on farms or in group quarters, have positive labor income, and are not self-employed. Finance indicates whether the individual works in finance. Male indicates whether the individual is male. Fixed effects of age group, cohort of birth, race, education, income, homeownership, occupation group, and state-year are included. Standard errors in parentheses are clustered at the state level and levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	ASEC		Census	
	Never Married	Divorced	Never Married	Divorced
	(1)	(2)	(3)	(4)
Finance × Male	0.016	0.011	0.004	0.005
	(0.011)	(0.013)	(0.003)	(0.004)
Finance	0.053***	0.051***	0.011***	0.021***
	(0.010)	(0.010)	(0.002)	(0.002)
Male	0.027***	−0.001	0.029***	0.004***
	(0.003)	(0.004)	(0.001)	(0.001)
Fixed effects	Yes	Yes	Yes	Yes
Observations	99,957	66,935	1,083,004	809,879
Adj. R^2	0.175	0.154	0.147	0.113

Table 5. The Influence of Working Mothers

This table relies on the Census sample limited to white natives and reports regressions for the influence of working mothers. The dependent variable is a dummy equal to one if the household reports investment losses or investment income greater than $500. Employment ratio is defined as the ratio of the number of working to nonworking women aged 30−35 in the birth state of the husband (wife) when he (she) was born. Working mother is a dummy equal to one if the employment ratio is above the sample median. Standard errors in parentheses are clustered at the state level and levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	Husband's Side	Wife's Side
	(1)	(2)
Working mother × Finance × Husband	−0.023***	−0.026***
	(0.004)	(0.003)
Working mother × Finance	−0.008***	−0.008***
	(0.002)	(0.002)
Working mother × Husband	0.001	0.001*
	(0.001)	(0.001)
Working mother	0.002**	0.000
	(0.001)	(0.001)
Finance × Husband	0.030***	0.031***
	(0.003)	(0.003)
Finance	0.012***	0.012***
	(0.002)	(0.002)
Husband	0.009***	0.009***
	(0.001)	(0.001)
Spouse cohort of birth× birth state FE	Yes	Yes
All the other FEs	Yes	Yes
Observations	4,020,743	4,020,743
Adj. R^2	0.168	0.168

Table 6. Origins of Gender Roles: Traditional Plough Practice

This table relies on the Census sample and reports regressions for intergenerational transmission of gender identity norms over longer horizon based on the reported ancestries of both spouses. The dependent variable is a dummy equal to one if the household reports investment losses or investment income greater than $500. Traditional plough use is a dummy equal to one if the fraction of citizens with ancestors that used plough cultivation in pre-industrial agriculture in the husband's (wife's) reported country of ancestry exceeds 50%. Data on traditional plough cultivation practice are from Alesina, Giuliano, and Nunn (2013). The sample is limited to natives who speak foreign languages at home and who also report foreign ancestries. Standard errors in parentheses are clustered at the state level and levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	Husband's Side	Wife's Side
	(1)	(2)
Traditional plough use × Finance × Husband	0.037***	0.034***
	(0.011)	(0.010)
Traditional plough use × Finance	0.004	0.001
	(0.008)	(0.007)
Traditional plough use × Husband	0.000	−0.003
	(0.003)	(0.003)
Traditional plough use	0.013***	0.007
	(0.005)	(0.007)
Finance × Husband	−0.007	−0.003
	(0.011)	(0.008)
Finance	0.007**	0.006*
	(0.004)	(0.003)
Husband	0.004	0.006***
	(0.003)	(0.003)
Spouse ancestry FE	Yes	Yes
All the other FEs	Yes	Yes
Observations	135,665	149,397
Adj. R^2	0.167	0.172

Table 7. Southern Culture

This table relies on the Census sample limited to white natives and shows regressions for the impact of a southern spouse. The dependent variable is a dummy equal to one if the household reports investment losses or investment income greater than $500. The sample is further limited to families residing in the state that the husband (wife) was born. Southern family indicates whether the husband (wife) was born in a southern state and southern states include Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, and Texas. Standard errors in parentheses are clustered at the state level and levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	Husband's Side	Wife's Side
	(1)	(2)
Southern family × Finance × Husband	0.011**	0.006
	(0.004)	(0.005)
Southern family × Finance	0.000	0.002
	(0.003)	(0.003)
Southern family × Husband	−0.001*	0.000
	(0.001)	(0.001)
Finance × Husband	0.018***	0.017***
	(0.003)	(0.003)
Finance	0.009***	0.008***
	(0.002)	(0.002)
Husband	0.009***	0.009***
	(0.001)	(0.001)
Spouse birth state FE	Yes	Yes
All the other FEs	Yes	Yes
Observations	2,521,658	2,532,163
Adj. R^2	0.150	0.151

Table 8. Gender Identity and Decision Making between Spouses

This table reports causal effects of gender identity on decision making between spouses. Columns (1)−(3) report results from the information contribution stage. The sample is restricted to female subjects who chose to participate in the employee stock purchase plan (ESPP). The dependent variable of the probit regression is a dummy equal to one if the wife contradicts her husband, who is an eligible employee but not inclined to enroll in the ESPP. Columns (4)−(6) report results from the information aggregation stage. The sample is restricted to male subjects who did not choose to participate in the ESPP. The dependent variable of the probit regression is a dummy equal to one if the husband follows the advice from his wife, who by design has the correct reasoning. Gender identity is a dummy equal to one if the subject is primed with gender identity, and all the other independent variables are defined in Table IA2. Coefficients are reported as marginal effects and robust standard errors are reported in parentheses. Levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	Information Contribution Stage			Information Aggregation Stage		
	(1)	(2)	(3)	(4)	(5)	(6)
Gender identity	−0.082*	−0.081*	−0.111**	−0.116	−0.289**	−0.324**
	(0.045)	(0.045)	(0.046)	(0.113)	(0.114)	(0.146)
Age		0.004*	0.003		−0.009	−0.010
		(0.002)	(0.002)		(0.008)	(0.009)
White		−0.070	−0.029		0.155	0.163
		(0.062)	(0.065)		(0.137)	(0.120)
College graduate		0.101**	0.064		0.274**	0.315***
		(0.051)	(0.052)		(0.111)	(0.113)
Full-time employed		0.142***	0.112**		0.225*	0.356***
		(0.046)	(0.047)		(0.121)	(0.100)
Log family income		−0.005	−0.032		−0.162	−0.033
		(0.037)	(0.038)		(0.108)	(0.112)
Having child		0.066	0.040		−0.209	−0.295*
		(0.054)	(0.054)		(0.128)	(0.171)
Trading experience			0.205***			−0.437**
			(0.053)			(0.171)
Financial literacy			0.084*			0.161
			(0.049)			(0.165)
Risk aversion			−0.127**			0.231*
			(0.050)			(0.124)
Trust			−0.025			−0.145
			(0.049)			(0.132)
Observations	492	492	492	74	74	74
Pseudo R^2	0.005	0.033	0.083	0.011	0.136	0.284

Figure 1. Sample Construction

This figure illustrates how to construct the final sample for each household survey data. Households in which only the husband works in finance constitute the first part of Subsample Husband and those in which only the wife works in finance constitute the first part of Subsample Wife. Households in which neither spouse works in finance are randomly assigned to either Subsample Husband or Subsample Wife.

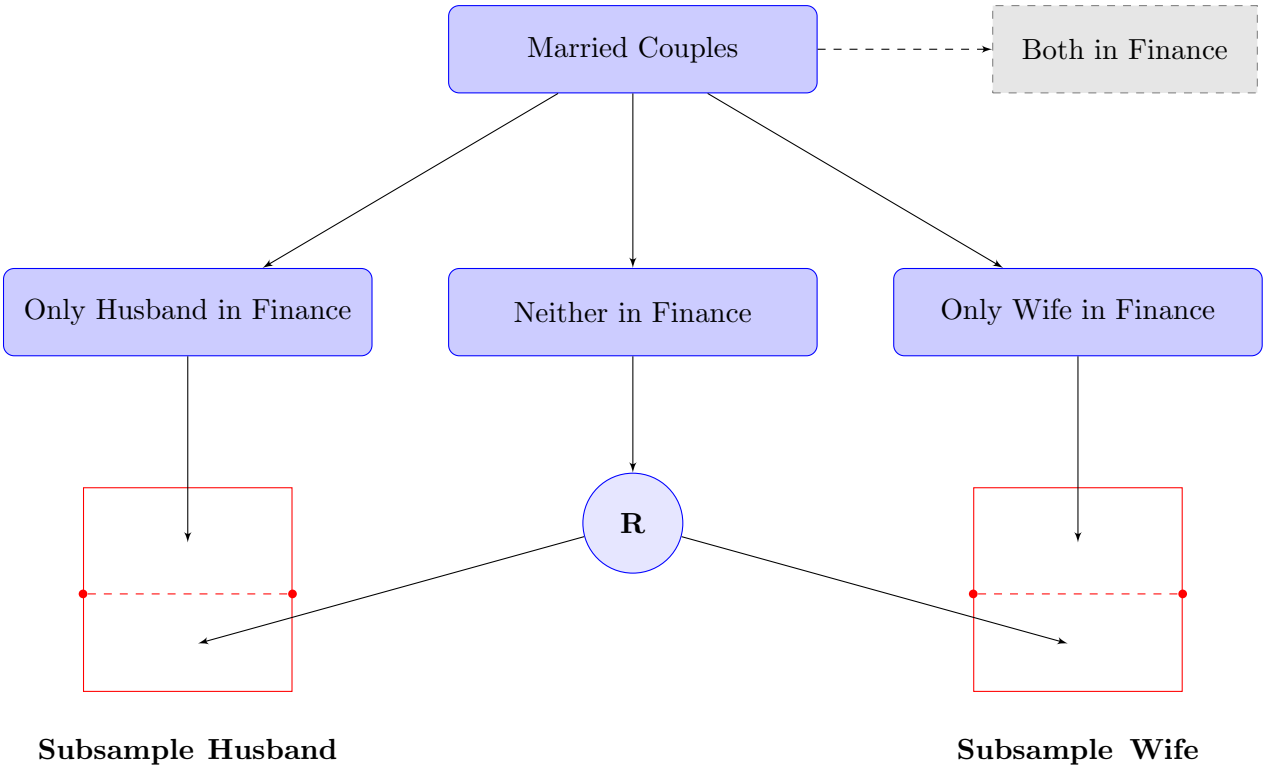


Figure 2. Career in Finance and Household Stock Market Participation

This figure plots stock market participation rates among households in which neither spouse works in finance, those in which only the wife works in finance, those in which only the husband works in finance, and those in which both spouses work in finance, respectively. A household participates in the stock market if any family member holds any stock or mutual fund. Data are from the Annual Social and Economic Supplement of the Current Population Survey for 1988 through 2017. The sample is limited to non-military married couples aged 24−64 who do not live on farms or in group quarters. It is further required that at least one spouse has positive labor income and that neither spouse is self-employed. Married couples who live with their parents, with children who are more than 24 years old, or with other relatives, and those having more than ten children are excluded from the samples.

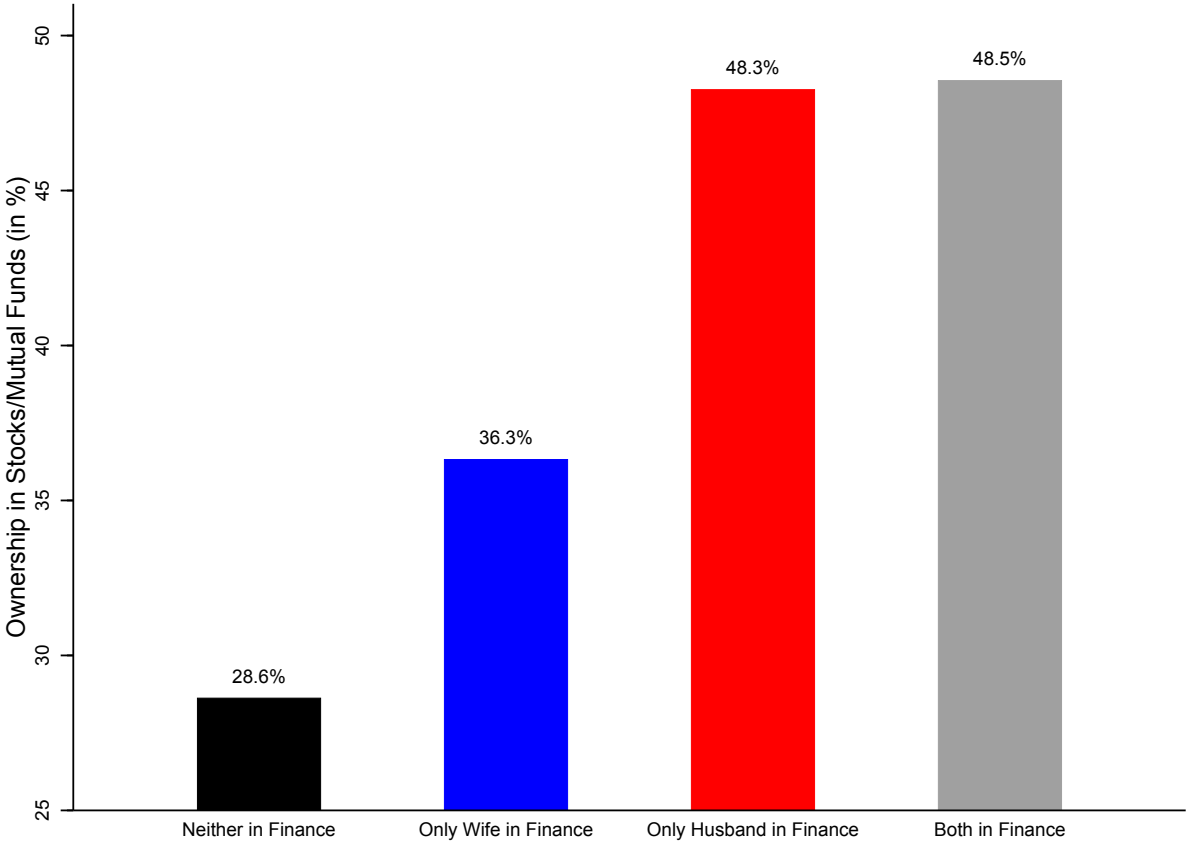


Figure 3. Experimental Design

This figure depicts the design of the randomized controlled experiment. Subjects are recruited from Amazon's Mechanical Turk and the sample is restricted to married individuals aged 24−64 who are U.S. residents. They are first introduced to an employee stock purchase plan and are asked whether they plan to participate. Then all subjects complete a writing task in which some of them are randomly assigned to the primed condition where gender identity is made salient to them, whereas the rest of them are assigned to the control condition. Finally subjects are asked to make the participation decision again in a designed scenario in which their spouse has an opposing viewpoint.

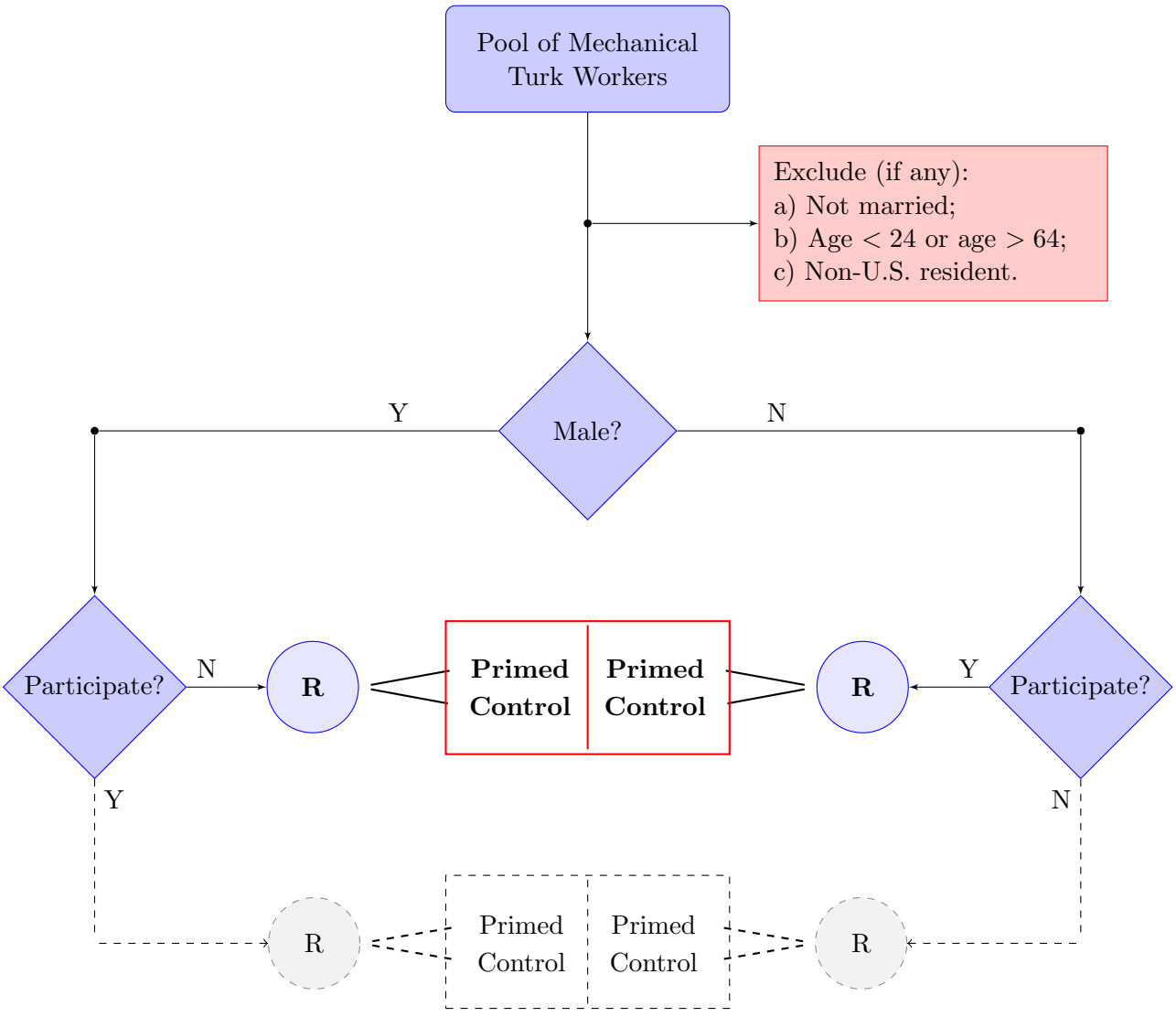


Figure 4. Gender Identity and Decision Making between Spouses

This figure presents univariate evidence from a randomized controlled experiment, which is designed to study the role of gender identity in intra-household financial decision making. Panel A plots, by treatment, women's influence in the information contribution stage of decision making between spouses. The sample is restricted to female subjects who chose to participate in the employee stock purchase plan (ESPP). The subject is willing to contribute ideas to her husband if she contradicts her husband, who is an eligible employee but not inclined to enroll in the ESPP. Panel B plots, by treatment, men's influence in the information aggregation stage of decision making between spouses. The sample is restricted to male subjects who did not choose to enroll in the ESPP. The subject is open to advice from his wife if he chooses to participate in the ESPP after hearing the advice from his wife, who by design has the correct reasoning. For both panels, error bars indicate standard errors of the arithmetic mean.

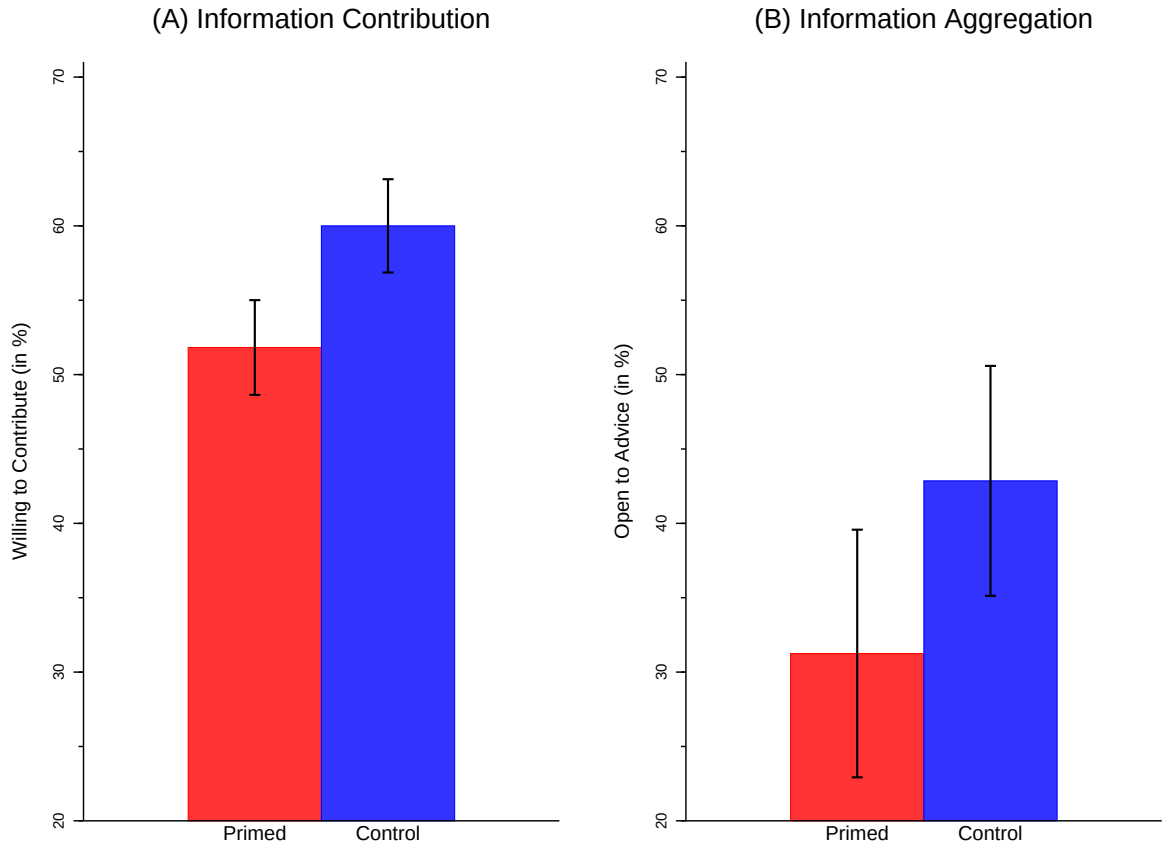


Table IA1. Sample Essays

This table reports samples essays written by recruited subjects of both genders in both randomization conditions.

Men (Primed): *In a recent minor bicycle accident involving my daughter, I displayed my agentic character. While my wife was worried about my daughter, crying and not sure what to do, I gave her specific tasks to assert my control of the situation. I had her retrieve bandages and antiseptic ointment. I had her hand the items to me, and had her retrieve other items. This allowed me to take control of the situation, and provide the best possible care for my daughter.*

Men (Control): *In regards to the first element, my wife and I have begun riding our bikes at every opportunity. Luckily we live in a city that is bicycle-friendly, otherwise that might not be an option. We've also made attempts at gardening vegetables, with limited success, as we live in the desert. We're still trying, though, even though our eggplants accidentally turned out to be devil's claw plants somehow. We also try to use alternative modes of medicine, like acupuncture, if we are injured or don't feel well, to treat the cause of the issue rather than the symptoms.*

Women (Primed): *We were on a hiking trip. The trail was not clearly marked and the map wasn't in a lot of detail. My husband thought that we should go on way to the left and I thought that we should keep going straight. He was certain his way was right so I said ok lets do it. After about a mile it was clear that we were on a path and not the designated trail and needed to go back to where we were. I was supportive of my husband's decision even though I didn't think that it was right.*

Women (Control): *I used to actively walk to the store every day instead of driving. This saved gas used driving to get groceries and it allowed me to get physical exercise. Also my husband and I have made efforts to grow some of our own food. This hasn't been very successful yet but hopefully it will improve in the future. Additionally, we resist taking any medications and pharmaceuticals. We think that these drugs are unsafe and often unnecessary. Instead we strive to eat healthily and get a lot of rest and live life without much stress. We feel like these measures help better than taking a bunch of drugs.*

Table IA2. Subject Characteristics for the Randomized Experiment

This table reports subject characteristics for the randomized controlled experiment. I restrict the sample to married individuals aged 24−64 who are U.S. residents. For each gender, subjects are divided into two groups depending on whether they chose to participate in the employee stock purchase plan. Trading experience is a dummy equal to one if the subject had experience of buying or selling investment instruments. Financial literacy is a dummy equal to one if the subject's self-assessment of overall financial knowledge is above 4 on a scale from 1 to 7, where 1 means very low and 7 means very high. Risk aversion is a dummy equal to 1 if the subject's self-assessment of willingness to take risks in financial matters is no more than 5 on a scale from 0 to 10, where 0 means unwilling to take any risks and 10 means fully prepared to take risks. Trust is a dummy equal to 1 if the subject agrees with the statement that most of the people can be trusted.

	Men				Women			
	Participants (N = 229)		Nonparticipants (N = 74)		Participants (N = 492)		Nonparticipants (N = 183)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	38.65	9.65	36.22	8.38	39.35	10.00	37.50	10.35
White	88.65%	31.79%	78.38%	41.45%	84.55%	36.18%	84.70%	36.10%
College graduate	73.36%	44.30%	66.22%	47.62%	67.48%	46.89%	65.57%	47.64%
Full-time employed	78.17%	41.40%	77.03%	42.35%	45.12%	49.81%	32.79%	47.07%
Log family income	10.55	0.57	10.54	0.57	10.49	0.67	10.38	0.62
Having child	69.00%	46.35%	59.46%	49.43%	73.58%	44.14%	68.85%	46.44%
Trading experience	79.48%	40.48%	70.27%	46.02%	69.11%	46.25%	44.26%	49.81%
Financial literacy	58.08%	49.45%	52.70%	50.27%	41.06%	49.24%	34.43%	47.64%
Risk aversion	48.47%	50.09%	66.22%	47.62%	64.23%	47.98%	85.79%	35.01%
Trust	44.54%	49.81%	43.24%	49.88%	41.67%	49.35%	36.07%	48.15%

Table IA3. Gender Identity and Decision Making between Spouses: Additional Analysis

This table reports additional analysis of the causal effects of gender identity on decision making between spouses. Columns (1)−(3) report the results from the information contribution stage. The sample is restricted to male subjects who chose to participate in the employee stock purchase plan (ESPP). The dependent variable of the probit regression is a dummy equal to one if the husband contradicts his wife, who is an eligible employee but not inclined to enroll in the ESPP. Columns (4)−(6) report the results from the information aggregation stage. The sample is restricted to female subjects who did not choose to enroll in the ESPP. The dependent variable of the probit regression is a dummy equal to one if the wife follows the advice from her husband, who by design has the correct reasoning. Gender identity is a dummy equal to one if the subject is primed with gender identity, and all the other independent variables are defined in Table IA2. Coefficients are reported as marginal effects and robust standard errors are reported in parentheses. Levels of significance are denoted as follows: * if $p < 0.10$; ** if $p < 0.05$; *** if $p < 0.01$.

	Information Contribution Stage			Information Aggregation Stage		
	(1)	(2)	(3)	(4)	(5)	(6)
Gender identity	−0.066	−0.060	−0.054	0.082	0.087	0.074
	(0.060)	(0.061)	(0.061)	(0.074)	(0.079)	(0.080)
Age		0.001	0.000		−0.008**	−0.008*
		(0.003)	(0.004)		(0.004)	(0.004)
White		0.041	0.056		0.051	0.022
		(0.098)	(0.100)		(0.109)	(0.114)
College graduate		−0.029	−0.046		−0.134*	−0.113
		(0.074)	(0.074)		(0.080)	(0.088)
Full-time employed		−0.077	−0.074		−0.026	−0.040
		(0.076)	(0.077)		(0.085)	(0.085)
Log family income		0.137**	0.101		−0.001	−0.001
		(0.061)	(0.063)		(0.065)	(0.069)
Having child		−0.041	−0.036		0.121	0.115
		(0.065)	(0.066)		(0.080)	(0.080)
Trading experience			0.021			−0.006
			(0.088)			(0.084)
Financial literacy			0.074			−0.179**
			(0.071)			(0.082)
Risk aversion			−0.111*			−0.159
			(0.064)			(0.120)
Trust			−0.017			−0.018
			(0.062)			(0.085)
Observations	229	229	229	183	183	183
Pseudo R^2	0.004	0.028	0.049	0.005	0.045	0.066

Complete Instructions for the Experiment

University of Miami Consent Form

You are being invited to take part in a research study. Before you decide to participate, it is important that you understand why the research is being done and what it will involve. Please take the time to read the following information carefully.

Purpose of Research:

We are researching how Americans learn and how they make decisions.

Study Procedures:

Before starting the study, you will be presented with three questions to determine your eligibility.

In Part A of the study, you will be introduced to a financial problem and then asked to make a decision.

In Part B of the study, you will be introduced to a theory and then asked to write a short essay.

Lastly, you will be asked to answer a few additional questions and to provide feedback.

It is very important for the success of our research project that you complete the survey until the end, once you have started. This survey should take about 15 minutes (you have up to 1 hour) to complete.

Benefit and Risk:

There are no foreseeable risks associated with participating in our study.

Confidentiality:

All records from this study will be kept confidential. Your responses will be kept private, and we will not include any information that will make it possible to identify you in any report we might publish. Research records will be stored securely on password-protected computers. The research team will be the only party that will have access to your data.

Compensation:

You will receive $0.5 following the completion of the study.

You will have a 20 percent chance of earning a bonus of $1 if your completed survey is ranked (by the requester) above the median (i.e., top 50 percent among all the participants).

Notes: Your participation is voluntary, and you may withdraw your participation at any time without any penalty to you. If you have any questions or concerns about this study, you may contact us at d.ke@umiami.edu.

YOU MUST BE A **U.S.** RESIDENT TO PARTICIPATE IN THIS SURVEY

- ◯ Yes, I would like to take part in this study, and confirm that I AM A U.S. RESIDENT and am 18 or older
- ◯ No, I would not like to participate

Please provide your mTurk worker ID (the alphanumeric string uniquely assigned to you). It is important that it is typed correctly so that we can pay you the proper amount detailed above.

Please complete the captcha below.

Type the text

Privacy & Terms

>>

The questions below will determine your eligibility for this study. Please read them carefully and answer honestly.

What is your gender?

- ◯ Male
- ◯ Female

What is your age?

Please indicate your marital status

What is your gender?

- ◯ Never married/single
- ◯ Married (opposite-sex)
- ◯ Married (same-sex)
- ◯ Separated
- ◯ Divorced
- ◯ Widowed

>>

Congratulations! You are eligible to take part in our study. Please read the instructions below.

Part A

In Part A of this study, you will be introduced to a financial problem and then asked to make a decision.

You will have a 20 percent chance of earning a bonus of $1 if your completed survey is ranked (by the requester) above the median (i.e., top 50 percent among all the participants).

Therefore, it is important for you to (1) understand the material, and (2) specify your reasons.

You may now begin.

>>

Imagine that you work for a publicly traded company XYZ and you are eligible to participate in the Employee Stock Purchase Plan (ESPP) that XYZ offers. Please read the following material carefully before making your decision.

FAQs:

1. What is the purpose of the ESPP?

The purpose of this Plan is to provide eligible employees of XYZ who wish to become shareholders in the Company a convenient method of doing so.

2. How does the ESPP work?

Eligible employees who wish to participate in the ESPP may contribute 1% to 15% of their compensation to be withheld from each bi-weekly paycheck. These contributions are used to purchase shares of XYZ stock at the end of each three-month offering period. You can cancel the Plan at any time before the purchase. The purchase price per share shall be ninety percent (90%) of the Fair Market Value on the last regular business day of the offering.

3. Are there any limitations on the sale of stocks purchased under the Plan?

The Plan is intended to provide common stock for investment and not for resale. XYZ does not, however, intend to restrict or influence any employee in the conduct of the employee's own affairs. An employee, therefore, may sell stocks purchased under the Plan at any time the employee chooses. THE EMPLOYEE ASSUMES THE RISK OF ANY MARKET FLUCTUATIONS IN THE PRICE OF XYZ STOCK.

Price Chart: XYZ Companys stock performance in the past 12 months.

As an employee of XYZ Company, after reading the material given above, do you plan to enroll in the ESPP?

- ◯ Yes, I plan to enroll in the ESPP
- ◯ No, I don't plan to enroll in the ESPP

Please briefly specify your reasons for your choice.

>>

Part B

In Part B of this study, you will be introduced to a theory and then asked to write a short essay.

You will have a 20 percent chance of earning a bonus of $1 if your completed survey is ranked (by the requester) above the median (i.e., top 50 percent among all the participants).

Therefore, it is important for you to (1) understand the material, and (2) write creatively.

You may now begin.

>>

[*Presented to male subjects in the primed condition.*]

Please read the following text carefully. Recall a situation when you behaved in line with "agentic" as presented in the text in the presence of your wife. Describe the situation, your thoughts and feelings in a short essay (5 to 10 sentences).

There are two broad classes of content universally present in the perception of the self, other persons, and social groups – **agentic** content, which refers to goal-achievement and task functioning (competence, assertiveness, decisiveness), and communal content, which refers to the maintenance of relationships and social functioning (helpfulness, benevolence, trustworthiness).

Agentic characteristics, which are ascribed more strongly to men, describe primarily an assertive, controlling, and confident tendency – for example, aggressive, ambitious, dominant, forceful, independent, self-sufficient, self-confident, and prone to act as a leader.

In contrast, communal characteristics, which are ascribed more strongly to women, describe primarily a concern with the welfare of other people – for example, affectionate, helpful, kind, sympathetic, interpersonally sensitive, nurturant, and gentle.

[*Presented to female subjects in the primed condition.*]

Please read the following text carefully. Recall a situation when you behaved in line with "communal" as presented in the text in the presence of your husband. Describe the situation, your thoughts and feelings in a short essay (5 to 10 sentences).

There are two broad classes of content universally present in the perception of the self, other persons, and social groups – **communal** content, which refers to the maintenance of relationships and social functioning (helpfulness, benevolence, trustworthiness), and agentic content, which refers to goal-achievement and task functioning (competence, assertiveness, decisiveness).

Communal characteristics, which are ascribed more strongly to women, describe primarily a concern with the welfare of other people – for example, affectionate, helpful, kind, sympathetic, interpersonally sensitive, nurturant, and gentle.

In contrast, agentic characteristics, which are ascribed more strongly to men, describe primarily an assertive, controlling, and confident tendency – for example, aggressive, ambitious, dominant, forceful, independent, self-sufficient, self-confident, and prone to act as a leader.

[*Presented to subjects in the control condition.*]

Please read the following text carefully. Recall a time when you actively resisted the default American lifestyle as presented in the text. Describe the situation, your thoughts and feelings in a short essay (5 to 10 sentences).

The default American lifestyle has three core elements:

1) **Displacing human energy with mechanical energy.** For example, technological forces took physical activity out of transportation. Now 86% of paid workers drive a private vehicle to work.

2) **Displacing household food production with industrial food production.** For instance, a century ago, American households produced some of the food they consumed, and they prepared and served nearly all of it. Most households even baked their own bread. Today, American households spend nearly 60% of their food money away from home.

3) **Displacing health maintenance with medical dependency.** Medical interventions do not, and cannot, eliminate the physiological consequences of too much food and too little physical activity. Thirty or forty years from now, it may be common for Americans to arrive at age 65 having taken drugs for attention deficit since childhood, for depression since adolescence, for anxiety and acid reflux since early adulthood, for hypertension and cholesterol since entering middle age, and for insulin resistance since well before the end of middle age.

Each of these represents a long and relentless trend with little sign of abating. They arose as solutions to problems faced in earlier eras. Every problem has its solutions, but every solution has its problems. Together, the three displacements increasingly degrade the body systems that make people feel healthy, function well, and recover naturally.

>>

This is the final part of this survey. You will answer a few additional questions and provide feedback.

You will have a 20 percent chance of earning a bonus of $1 if your completed survey is ranked (by the requester) above the median (i.e., top 50 percent among all the participants).

Therefore, it is important for you to specify your reasons for your choices.

You may now begin.

>>

[*Presented to male subjects who chose to enroll in the ESPP in Part A of this study.*]

In Part A of this study, you were in favor of enrolling in the ESPP offered by XYZ Company. Now, suppose that it is your wife who is an eligible employee of XYZ Company. However, she is **not** inclined to participate in the ESPP due to two major concerns: 1) the investment is risky because XYZ stock has already had a good run recently and is coming off of its 52-week high; 2) both working at a company and investing in it would be like putting all the eggs in one basket, which is risky as well.

If it is up to you to make a final decision whether to participate in the ESPP, you would

◯ to enroll in the ESPP

◯ NOT to enroll in the ESPP

[*Presented to female subjects who chose to enroll in the ESPP in Part A of this study.*]

In Part A of this study, you were in favor of enrolling in the ESPP offered by XYZ Company. Now, suppose that it is your husband who is an eligible employee of XYZ Company. However, he is **not** inclined to participate in the ESPP due to two major concerns: 1) the investment is risky because XYZ stock has already had a good run recently and is coming off of its 52-week high; 2) both working at a company and investing in it would be like putting all the eggs in one basket, which is risky as well.

If it is up to you to make a final decision whether to participate in the ESPP, you would

◯ to enroll in the ESPP

◯ NOT to enroll in the ESPP

[*Presented to male subjects who chose not to enroll in the ESPP in Part A of this study.*]

In Part A of this study, you chose **not** to enroll in the Employee Stock Purchase Plan (ESPP) offered by XYZ Company. Now, imagine you are describing the ESPP to your wife and she thinks not participating in the Plan would be like leaving money on the table. At the very least, the Plan allows for an immediate resale of the purchased shares to realize an instantaneous 10% gain. This is true regardless of how the stock will perform. After hearing your wife's opinion, do you plan to enroll in the ESPP?

◯ Yes, I plan to enroll in the ESPP

◯ No, I don't plan to enroll in the ESPP

[*Presented to female subjects who chose not to enroll in the ESPP in Part A of this study.*]

In Part A of this study, you chose **not** to enroll in the Employee Stock Purchase Plan (ESPP) offered by XYZ Company. Now, imagine you are describing the ESPP to your husband and he thinks not participating in the Plan would be like leaving money on the table. At the very least, the Plan allows for an immediate resale of the purchased shares to realize an instantaneous 10% gain. This is true regardless of how the stock will perform. After hearing your husbands opinion, do you plan to enroll in the ESPP?

◯ Yes, I plan to enroll in the ESPP

◯ No, I don't plan to enroll in the ESPP

(For your reference, the ESPP FAQs and the price chart are presented below.)

Please briefly specify your reasons for your choice.

FAQs:

1. What is the purpose of the ESPP?

The purpose of this Plan is to provide eligible employees of XYZ who wish to become shareholders in the Company a convenient method of doing so.

2. How does the ESPP work?

Eligible employees who wish to participate in the ESPP may contribute 1% to 15% of their compensation to be withheld from each bi-weekly paycheck. These contributions are used to purchase shares of XYZ stock at the end of each three-month offering period. You can cancel the Plan at any time before the purchase. The purchase price per share shall be ninety percent (90%) of the Fair Market Value on the last regular business day of the offering.

3. Are there any limitations on the sale of stocks purchased under the Plan?

The Plan is intended to provide common stock for investment and not for resale. XYZ does not, however, intend to restrict or influence any employee in the conduct of the employee's own affairs. An employee, therefore, may sell stocks purchased under the Plan at any time the employee chooses. THE EMPLOYEE ASSUMES THE RISK OF ANY MARKET FLUCTUATIONS IN THE PRICE OF XYZ STOCK.

Price Chart: XYZ Companys stock performance in the past 12 months.

>>

Do you have children living with you?

- ◯ Yes
- ◯ No

How would you describe your ethnicity/race?

- ◯ European American/White
- ◯ African American/Black
- ◯ Hispanic/Latino
- ◯ Asian/Asian American
- ◯ Other

Which category best describes your highest level of education?

- ◯ Eighth Grade or less
- ◯ Some High School
- ◯ High School degree/GED
- ◯ Some College
- ◯ 2-year College Degree
- ◯ 4-year College Degree
- ◯ Master's Degree
- ◯ Doctoral Degree
- ◯ Professional Degree (JD, MD, MBA)

What is your current employment status?

- ◯ Full-time employee
- ◯ Part-time employee
- ◯ Self-employed or small business owner
- ◯ Unemployed and looking for work
- ◯ Student
- ◯ Not in labor force (e.g., retired, or full-time parent)

What was your TOTAL household income, before taxes, last year (2015)?

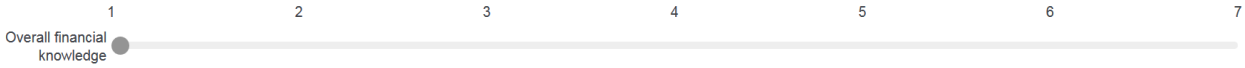
- ◯ $0 – $9,999
- ◯ $10,000 – $14,999
- ◯ $15,000 – $19,999
- ◯ $20,000 – $29,999
- ◯ $30,000 – $39,999
- ◯ $40,000 – $49,999
- ◯ $50,000 – $74,999
- ◯ $75,000 – $99,999
- ◯ $100,000 – $124,999
- ◯ $125,000 – $149,999
- ◯ $150,000 – $199,999
- ◯ $200,000+

Generally speaking, would you say that most people can be trusted or that you have to be very careful in dealing with people?

- ◯ Most people can be trusted
- ◯ One has to be very careful with other people
- ◯ I don't know

Please rate your willingness to take risks in financial matters from 0 to 10, where 0 means "unwilling to take any risks" and 10 means "fully prepared to take risks."

On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?



About how often do you buy/sell investment instruments (stocks, bonds, etc.)?

- ◯ Never
- ◯ Less frequent than once a year
- ◯ Once a year
- ◯ Once every half-year
- ◯ Every 3 months
- ◯ Once a month
- ◯ Every 2 weeks
- ◯ Once a week
- ◯ Daily

[*Presented to subjects in the primed condition.*]

The purpose of this study is to better understand how Americans learn and how they make decisions. In Part A of the study, we described to you an ESPP and asked you to decide whether to enroll in this plan. In Part B of the study, we presented to you a theory in the social psychology literature and asked you to write a short essay. Would you have answered anything differently in this survey if we had asked you to work on Part B at the end of the survey instead of right after Part A?

[*Presented to subjects in the control condition.*]

The purpose of this study is to better understand how Americans learn and how they make decisions. In Part A of the study, we described to you an ESPP and asked you to decide whether to enroll in this plan. In Part B of the study, we presented to you a theory in the sociology literature and asked you to write a short essay. Would you have answered anything differently in this survey if we had asked you to work on Part B at the end of the survey instead of right after Part A?

◯ Yes, I would have answered differently

◯ No, I wouldn't have answered differently

If you answered "Yes", please explain.

Please feel free to give us any feedback or impression regarding this survey.

Cross-Country Differences in Household Stock Market Participation: The Role of Gender Norms

By Da Ke*

The household finance literature studies the ways in which households use financial instruments to achieve their objectives (Campbell, 2006). Applying a global lens to these decisions, contemporary research on household finance reveals considerable variation across countries in household balance sheets (Campbell, 2016; Badarinza, Campbell and Ramadorai, 2016).

This paper focuses on substantial cross-country differences in household stock market participation (Guiso et al., 2003). The observed differences are shaped by both institutional and cultural factors. Giannetti and Koskinen (2010) document that household stock market participation rate is positively related to investor protection in the country. Guiso, Sapienza and Zingales (2008) show that households in countries with low levels of trust are reluctant to invest in the stock market.

In this paper, I hypothesize that households in countries with more traditional gender norms are less likely to invest in the stock market. Campbell (2016) argues that in many cases, failure to participate in the stock market is likely to be a mistake. Consistent with this view, van Rooij, Lusardi and Alessie (2011) document that households with low financial literacy are much less likely to invest in stocks. Ke (2017) shows that strong gender norms constrain women's influence over intra-household financial decision making, even if she is more sophisticated. As a result, everything else equal, a low household stock market participation rate may be observed in aggregate.

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This gender-based explanation pulls insights from three strands of the economics literature. First, the family economics literature emphasizes the role of interactions between family members in household behaviors (Browning, Chiappori and Weiss, 2014). Doepke and Tertilt (2016) further argue that opening the family black box greatly helps understanding aggregate household behaviors. Second, the social economics literature underscores social influences on consumer behaviors (Becker and Murphy, 2000). As a common type of social force, gender norms have been shown to shape family behaviors in various societies (Udry, 1996; Bertrand, Kamenica and Pan, 2015). Third, the identity economics literature pioneered by Akerlof and Kranton (2000, 2010) stresses that identity is fundamental to consumer decisions. For instance, it can help explain differences in investment behavior between genders (D'Acunto, 2015).

This paper contributes to the nascent literature of international comparative household finance. Specifically, I propose that gender norms, a cultural attribute evolved over generations, distort household decisions whether to participate in the stock market. The evidence in this paper has important implications for household welfare, all the more so in light of ever-challenging financial systems and ever-converging gender gap in education (Campbell, 2016; Goldin, Katz and Kuziemko, 2006).

I. Data

I obtain data on stock market participation across countries (fraction of households that directly hold stocks) from Giannetti and Koskinen (2010). These data exhibit substantial cross-country variation. For instance, 40% of Australian households invest

directly in stocks, whereas only about 1% of Turkish families buy equity.

Following the gender economics literature (Fortin, 2005; Alesina, Giuliano and Nunn, 2013), I measure country-level gender role attitudes using the World Value Survey and the European Values Survey. Specifically, I aggregate responses from survey participants of the same country to the statement that "when jobs are scarce, men should have more right to a job than women." This measure varies greatly across countries: the proportion of Turkish respondents who agree with the preceding statement is 60%, compared with only about 3% for the Swedish participants.

I include a number of country-level controls assembled from various sources. Information on private enforcement of securities laws across countries is from La Porta, Lopez-de-Silanes and Shleifer (2006). I construct country-level measure of trust following Guiso, Sapienza and Zingales (2008). In addition, I get data on gross domestic product (GDP) from the International Monetary Fund, income inequality from Deiningeri and Squire (1996), market capitalization from Giannetti and Koskinen (2010), and educational attainment of the population from Barro and Lee (2013).

II. Results

Figure 1 plots the relation between household stock market participation and the prevailing gender role attitudes in this country. It shows a strong negative correlation. For example, Turkey and India are the two most traditional countries in attitudes about the appropriate role of women. Meanwhile, these countries have the lowest levels of household stock market participation: 1.2% and 3.3%, respectively. In contrast, Sweden and Denmark are the two least traditional countries in gender role attitudes and their stock market participation rates are 22% and 28%, respectively.

Table 1 confirms that traditional gender role attitude has a negative impact on household stock market participation. I control for the investment protection, measured by the index of private enforcement in La Porta, Lopez-de-Silanes and Shleifer (2006), as well as the prevailing level of trust in the country. I find that countries with laws mandating disclosure and facilitating private enforcement have significantly higher levels of household stock market participation and that trust has a positive but insignificant incremental effect. In addition, I control for GDP per capita, income inequality, stock market size, and educational attainment of the population. The negative relation between gender norms and stock market participation preserves.

The effect of gender norms is not only statistically significant, but also economically significant. A back-of-the-envelope calculation suggests that if Turkey had the same level of gender norms as Germany (the median country), stock market participation would increase by 12.1% from 1.2%, which is a more than tenfold increase.

Furthermore, the gender norm hypothesis can explain limited stock market participation among wealthy individuals. Figure 2 plots the relation between the stock market participation rate of the wealthiest 5% from Guiso, Sapienza and Zingales (2008) and gender norms. There is a strong negative relation and gender norms alone can explain two-thirds of the cross-country variation.

III. Conclusion

This paper provides some suggestive evidence that gender norms play an important role in explaining cross-country differences in household financial decisions. Specifically, I show in a cross-country analysis that a one-standard-deviation increase in the level of traditional gender role attitudes is associated with a 4.3 percentage point decrease in household stock market participation, which is more than a quarter of the sample average participation rate.

One potential mechanism underlying this macro-level pattern is that gender norms constrain women's influence over intrahousehold financial decision making. Using data from U.S. household surveys and a randomized online survey experiment, Ke (2017) provides micro-level support for this

interpretation. In particular, he shows that gender norms hinder idea contribution by the wife and cause men to be less open to an opposing viewpoint.

While the paper focuses on stock market participation, it is likely that the impact of gender norms applies to other major household financial decisions. An important task for future research is to investigate what types of household financial decisions are more susceptible to gender norms and how large the total welfare cost is.

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TABLE 1—GENDER NORMS AND STOCK MARKET PARTICIPATION ACROSS COUNTRIES

	(1)	(2)	(3)	(4)
Traditional gender norm	−0.464	−0.436	−0.420	−0.304
	(0.074)	(0.080)	(0.110)	(0.157)
Private enforcement		0.177	0.175	0.198
		(0.048)	(0.048)	(0.075)
Trust			0.020	0.099
			(0.078)	(0.114)
Log GDP per capita				0.004
				(0.030)
Gini income				0.007
				(0.003)
Market capitalization to GDP				−0.050
				(0.026)
Schooling				0.010
				(0.015)
Observations	25	25	25	25
R-squared	0.434	0.568	0.568	0.696

Note: This table reports the effect of gender norms on stock market participation across countries. Traditional gender norm is the percentage of the respondents aged 24−64 in that country in all waves of the World Values Survey and the European Values Study who agree to the statement that "when jobs are scarce, men should have more right to a job than women." Data on stock market participation and market capitalization across countries are from Giannetti and Koskinen (2010). Private enforcement is an index from La Porta, Lopez-de-Silanes and Shleifer (2006). Country-level trust is constructed following Guiso, Sapienza and Zingales (2008). Data on GDP per capita are from IMF. Gini income is the Gini coefficient of income from Deiningeri and Squire (1996). Schooling is the average years of schooling of the total population over 25 in 2000 from Barro and Lee (2013). Robust standard errors are in parentheses. The constant is included in all regressions, but parameter estimates are omitted.

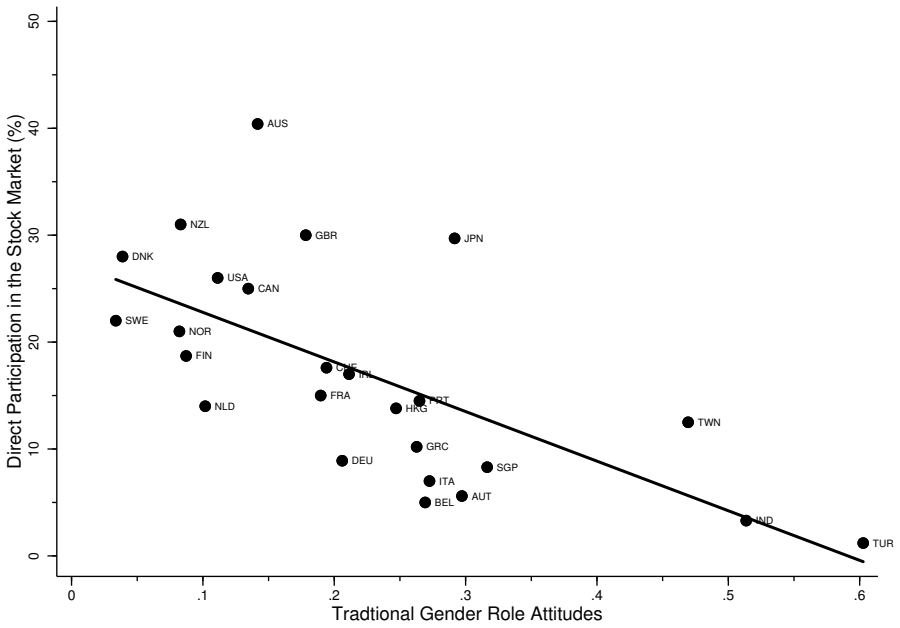

Figure 1. Gender Norms and Stock Market Participation across Countries

Note: This figure plots household direct participation in the stock market against country-level gender role attitudes. Data on stock market participation and market capitalization across countries are from Giannetti and Koskinen (2010). Country-level traditional gender role attitude is the percentage of the respondents aged 24−64 in that country from all waves of the World Values Survey and the European Values Study who agree to the statement that "when jobs are scarce, men should have more right to a job than women."

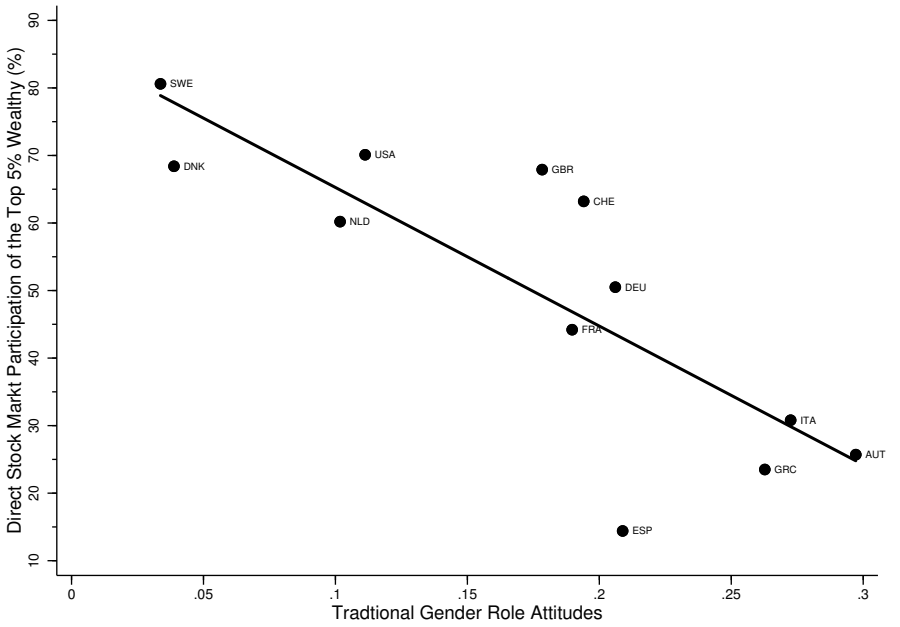

Figure 2. Gender Norms and Stock Market Participation of the Wealthy

Note: This figure plots direct stock market participation for individuals in the top 5% of the wealth distribution against country-level gender role attitudes. Data on direct stock market participation of the wealthy across countries are from Guiso, Sapienza and Zingales (2008). Country-level traditional gender role attitude is the percentage of the respondents aged 24−64 in that country in all waves of the World Values Survey and the European Values Study who agree to the statement that "when jobs are scarce, men should have more right to a job than women."