Swedish Institute for Social Research (SOFI)

Stockholm University

WORKING PAPER 3/2019

**GENDER IDENTITY AND RELATIVE INCOME WITHIN HOUSEHOLDS -
EVIDENCE FROM SWEDEN**

by

Karin Hederörs and Anders Stenberg

Gender Identity and Relative Income within Households - Evidence from Sweden^{*}

Karin Hederos[♠] and Anders Stenberg[♠]

June, 2019

Abstract

Bertrand et al. (2015) show that in the U.S., the distribution of the wife's share of household income drops sharply at the point where the wife starts to earn more than her husband. They attribute the drop to a gender identity norm prescribing that a wife's income should not exceed her husband's income. We document a similar sharp drop in Swedish administrative register data. However, we also show that there is a large spike in the distribution of the wife's share of household income at the point where spouses earn *exactly* the same. The wives in the equal-earning couples do not have higher earnings potential than their husbands, suggesting that the spike is not generated by couples seeking to avoid that the wife earns more than her husband. Excluding the equal-earning couples, the drop is small and mostly statistically insignificant. We conclude that, if anything, we find only weak evidence that Swedish couples comply with a norm against wives earning more than their husbands.

Keywords: Gender roles, gender norms, marriage market, gender gap, gender identity
JEL classification: D10, J12, J16

^{*} We would like to thank Anders Björklund, Olle Folke, Matthew Lindquist, Johanna Rickne, Dan-Olof Rooth, Anna Sandberg and Jan Sauermann for valuable comments. We also thank participants at the Conference on Discrimination and Labour Market Research at Linneaus University (2015), the Workshop on Gender Economics of Labor Markets at Uppsala University (2017) and the National Conference in Economics at Linnaeus University (2018) for their helpful input on this work. Hederos gratefully acknowledges financial support from the Swedish Research Council for Health, Working Life and Welfare. This paper is a substantially revised version of Hederos Eriksson and Stenberg (2015).

^{♠♠} SOFI, Stockholm University, SE-106 91 Stockholm, Sweden. karin.hederos@sofi.su.se.

[♠] SOFI, Stockholm University, SE-106 91 Stockholm, Sweden. IZA, Bonn. anders.stenberg@sofi.su.se.

1 Introduction

Individuals' gender identity and social norms prescribing how men and women should behave have long been proposed to influence behavior (e.g. West and Zimmerman 1987 and Akerlof and Kranton 2000, 2002). The gender norm which has received most attention is that of a male breadwinner and a female housemaker (e.g. Bittman et al. 2003, Fernandez et al. 2004, Fortin 2005, Farré and Vella 2013 and Bertrand et al. 2015). When both men and women participate in the labor force, gender norms have also been suggested to impact occupational choice and the distribution of income within the household (e.g. Akerlof and Kranton 2000).

Quantitative evidence of how norms affect behavior is scarce since it is difficult to disentangle the impact of norms from that of other causes. Bertrand et al. (2015, henceforth BKP) break new ground in this respect in their pioneering study of the distribution of income within U.S. households. They show that the distribution of the wife's share of household earnings drops sharply at the point where the wife starts to earn more than her husband. They argue that this drop is best explained by a gender identity norm inducing an aversion to a situation in which the wife's income exceeds that of her husband. BKP also present results consistent with that this norm influences marriage and divorce rates, the division of household chores and whether and how much women work.¹

In this paper, we analyze if Swedish couples also adhere to a gender norm prescribing that a wife should not earn more than her husband. We closely follow BKP and analyze the distribution of the share of the household labor income earned by the wife. The key question is whether

¹ BKP find that, within marriage markets, when the probability increases that a randomly chosen woman earns more than a randomly chosen man, marriage rates decline. Within couples, if the wife's potential income is likely to be higher than that of her husband, the wife is less likely to work and, given that she works, her realized income relative to her potential income is lower. If the wife out-earns her husband, she does more household work relative to her husband, and the couple is more likely to divorce.

there is a discontinuous drop at the point where the wife starts to out-earn her husband. Our analyzes are based on population register data of married couples in Sweden 1990-2011, encompassing more than 1.8 million unique couples.

We find that the Swedish distribution of the wife's share of household labor income drops sharply by between 21 and 31 percent at the point where the wife starts to earn more than her husband. However, we propose a different interpretation of the drop than that suggested by BKP. Close examination of our data reveals that the distribution of the wife's share of household income exhibits a large spike at the point where spouses have *exactly* equal income. Although the equal-earning spouses make up only a small share (0.28 percent) of our sample, they account for a large part of the sharp drop. Exploiting the richness of our data, we find no indication that wives who earn the same as their husband have higher earnings potential than their husband. This result suggests that the spike is not generated by couples seeking to avoid that the wife earns more than her husband. To determine if Swedish couples adhere to the norm that a wife should not earn more than her husband, the critical question thus becomes if we still see a sharp drop after excluding the equal-earning spouses from the sample. The remaining drop is between 4 and 5 percent and it is only statistically significant when we apply our widest bandwidth. We conclude that, if anything, we find only weak support for the hypothesis that Swedish couples comply with a gender norm against wives earning more than their husbands.

To better understand why the distribution of the wife's share of household earnings has a spike at the point where spouses have equal earnings, we use cross-sectional data from 2011 to characterize the equal-earning spouses. Our results indicate that about two-thirds of the equal-earning spouses are self-employed and have chosen to have equal earnings. The vast majority of the remaining equal-earning spouses are employed by the same employer in the same plant.

Our paper is part of a small but growing set of studies following in the wake of BKP's work. Researchers using data from different countries have investigated if the distribution of the wife's share of household income drops sharply where the wife starts to earn more than her husband.² While all of these studies document that there is such a drop, several studies also suggest caution in interpreting the drop as evidence that couples comply with gender norms. In an earlier working paper version of this paper (Hederos Eriksson and Stenberg 2015), we show that there is a sharp drop in Swedish register data which in large part can be attributed to the spike at the point where spouses earn the same. The importance of this spike has also been highlighted by Binder and Lam (2018) and Zinovyeva and Tverdostup (2018). Binder and Lam (2018) show that, due to assortative matching, it may be misleading to infer social preferences about spousal differences in attributes from the observed distributions of these attributes within couples. Using U.S. administrative earnings data from the SIPP/SSA/IRS gold standard files, just as BKP, they report that the sharp drop in the distribution of the wife's share of household earnings disappears when they remove the equal-earning spouses from the sample. Zinovyeva and Tverdostup (2018) also analyze data from the U.S gold standard files. In contrast to Binder and Lam (2018), they find that a significant sharp drop remains once they exclude the equal-earning spouses. Zinovyeva and Tverdostup (2018) base their main analysis on Finnish register data. Also in these data, they document that a sharp drop remains after exclusion of the equal-earning spouses. Im-

² There are studies using data from Sweden (Hederos Eriksson and Stenberg 2015), Germany (Wieber and Holst 2015), Finland (Zinovyeva and Tverdostup 2018), the U.S (Binder and Lam 2018, Zinovyeva and Tverdostup 2018) and Switzerland (Roth and Slotwinski 2018).

portantly, they argue that the remaining drop in the Finnish data is caused by earnings convergence among co-working spouses, rather than by gender norms. They also present some suggestive evidence that this explanation may be relevant in the U.S. as well.³

We make several contributions to the literature. Our administrative register data allow for a detailed and precise analysis of couples potentially complying with gender norms about relative income within households. Our main analysis sample is at least twenty times larger than the data from the U.S. gold standard files. We show that a large part of the sharp drop at the point where the wife starts to earn more than her husband can be attributed to a spike at the point where spouses have identical earnings. Similar spikes have been demonstrated in several other countries. Our data enable us to provide a thorough description of the equal-earning couples constituting the spike, helping us understand why the spike appears. We document that the majority of the equal-earning couples are self-employed, indicating that the most important mechanism behind the spike is that spouses running a business together *are able to choose* to earn the same. In addition, we show that wives in the equal-earning couples do not have higher earnings potential than their husband. This finding suggests that the spike does not appear because wives who could earn more than their husband avoid doing so in order to comply with gender identity norms. To test if Swedish couples adhere to the norm that a wife should not earn more than her husband, we therefore remove the equal-earning couples from the sample. The remaining drop is then only statistically significant for our widest bandwidth, highlighting the importance of the choice of bandwidth in these discontinuity tests.

³ Roth and Slotwinski (2018), who use data from Switzerland, propose an additional mechanism behind the sharp drop at the point where a wife out-earns her husband. Comparing survey and administrative earnings data, they document that in survey data, women who earn more than their spouse systematically misreport their income so that the reported income is lower than their partner's income. They also provide evidence that the misreporting is driven by gender norms and that it can fully account for the sharp drop.

We also contribute to the literature by analyzing data from Sweden. In the study of gender norms, Sweden is a particularly interesting case since it is a country considered as one of the forerunners in terms of gender equality (e.g. Leopold et al. 2016). For several decades, the Swedish labor market has been characterized by a high female labor force participation and a low gender wage gap relative to other countries (e.g. Blau et al., 2009). On the other hand, social norms often evolve slowly, and in the 1995 World Value Survey the share of Swedish respondents agreeing with the claim “If a woman earns more than her husband, it’s almost certain to cause problems” was almost as high as that among U.S. respondents (33 in comparison to 38 percent). Excluding the equal-earning couples, the drop at the point where the wife starts to earn more than her husband is small and not robust to reasonable variations in the empirical specification. Thus, we find at most weak evidence that Swedish couples comply with gender identity norms against wives earning more than their husbands.

Our paper is structured as follows. Section 2 describes our data. In Section 3, we present our main results and in Section 4 we provide a detailed description of the equal-earning couples. Section 5 concludes.

2 Data

We use annual Swedish population register data from the years 1990-2011. The data stem from the LISA database (Integrated database for labor market research), which is administered by Statistics Sweden, and covers the entire Swedish population aged 16 and older. To set up our main analysis sample, we closely follow BKP and restrict the sample to married couples in which both spouses have positive annual labor earnings⁴ and are aged between 18 and 64. Earnings are

⁴ Variable *LoneInk*.

measured very precisely, rounded to SEK 100 (about \$11), are not top-coded and do not include transfers related to parental leave or unemployment insurance payments.⁵ In addition to earnings, there is detailed information on other labor market outcomes, demographic characteristics and education.

The total number of observations of married couples 1990-2011 is 18.1 million. Our main analysis sample only includes one observation per couple. This restriction reduces the sample to 1,857,155 unique couples. Following BKP, we use the observation from the first year the couple appears in the registers.⁶ We complement our main analysis sample with cross-sectional samples from 1991, 2001 and 2011. In these years, the number of unique couples varies between 769,049 (in 2011) and 950,742 (in 1991). We show the descriptive statistics of all of these samples in Table 1.

3 Main results

3.1 Graphical presentation of the distribution of relative income

Figure 1 depicts the frequency distribution of the wife's share of household labor earnings in our main analysis sample, grouped in 20 bins. This figure corresponds to Figure I in BKP, which is based on data from the SIPP/SSA/IRS gold standard files from 1990 to 2004. The Swedish and U.S. distributions are overall similar and both display a mode around 0.40. The Swedish wives earn, on average, 38 percent of the household labor earnings and 21 percent of them earn more than their husband.⁷ The most notable differences between the Swedish and U.S. distributions are

⁵ Starting in 1993, sick leave payments from the first 14 days of every sick leave period are included.

⁶ In the main analysis sample, 52.6 percent of couples are observed in 1990 and 27.7 percent in the years post 2000.

⁷ Between 1990 and 2011, married women's average share of household earnings increased from 0.38 to 0.42, and the fraction of couples in which the wife earns more than her husband increased from 0.17 to 0.26.

that the fraction of wives with a very low share of household earnings is higher in the U.S., while the fraction of wives earning almost as much as their husband is higher in Sweden.

The key question is if the Swedish distribution exhibits a discontinuous drop at the point where the wife starts earning more than her husband. Before we proceed to test this, we make use of our large data set to examine the distribution of relative earnings in greater detail. In Figure 2, we present the frequency distribution of the wife's share of household earnings grouped in 1 000 bins, instead of 20 bins as in Figure 1. The overall distribution is smooth except for a very distinct spike in the center of the distribution. The fraction of couples in the bin (0.499-0.500] is more than twice as high as the fraction of couples in any other bin. The spike appears because couples bunch at the point where they have *exactly* equal incomes.

In our main analysis sample, spouses have equal earnings in 0.28 percent ($N = 5,271$) of all couples.⁸ Figure A.1 in the Appendix shows the distribution of the wife's share of household earnings based on the cross-sectional data from 1991, 2001 and 2011. All of these distributions display a spike at the point where spouses have equal earnings and the fraction of equal-earning spouses is similar across years (0.25, 0.32 and 0.31 percent). The corresponding fraction in the U.S. data from the gold standard files, used by BKP, is 0.26 percent.⁹

3.2 Discontinuity tests

In this section, we test if there is a discontinuous drop at the point where the wife starts to earn more than her husband. We use the McCrary (2008) discontinuity test (also employed by BKP)

⁸ On average, the equal-earning couples appear eight times in the registers during the years 1990-2011 and spouses in these couples have equal earnings in half of these years.

⁹ BKP also employ data from the U.S. Census Bureau. In these data, the fraction of couples in which spouses have exactly equal earnings is substantially larger (a few percent) due to for example top-coding and imputation. BKP address the spike at the point where spouses have exactly equal income in the U.S. Census Bureau data in several ways. However, using the SIPP/SSA/IRS gold standard files as a reference point, they always retain 0.26 percent of the equal-earning couples.

assessing the change in log densities at a given cut-off point. The test coefficient is $\theta = \ln f^+ - \ln f^-$, where f with superscripts $+/-$ indicate the log density just to the right/left of the cut-off. Let a wife's share of household labor earnings be denoted s_{ijt} for female i in couple j in year t , where $0 < s_{ijt} < 1$. Following BKP, we estimate the discontinuity just to the right of the point where spouses earn exactly the same.

In Table 2, we show the results with the cut-off set to $s_{ijt} = 0.50001$.¹⁰ We use three different bandwidths. The first bandwidth is automatically selected in the McCrary test. We also use bandwidths corresponding to about one half and one quarter of the automatically selected one. In the first row, we display the results using the main analysis sample. Depending on the bandwidth, we find that the distribution drops discontinuously by between 20.9 and 31.2 percent at the cut-off ($p < 0.01$).¹¹ We document similar or slightly smaller drops using the cross-sectional samples from 1991, 2001 and 2011 (rows 2-4). In all samples, the drop increases in magnitude as we decrease the bandwidth.¹²

We conclude that in Sweden, just like in the U.S., the distribution of the wife's share of household income drops sharply where the wife starts to earn more than her husband. Thus, at first glance, our results appear to suggest that Swedish couples avoid situations in which the wife earns more than her husband. However, before drawing conclusions about adherence to gender norms, we examine if the sharp drop is driven by the equal-earning spouses.

¹⁰ There are no couples in which the wife's share of household labor earnings is between $s_{ijt} = 0.50$ and the cut-off.

¹¹ We also follow BKP and conduct a placebo exercise testing for the presence of a discontinuity just to the right of each point in the set $\{0.100, 0.105, 0.110, \dots, 0.445\} \cup \{0.555, 0.560, 0.565, \dots, 0.900\}$. The test coefficients, presented in Appendix Figure A.2, are all small and insignificant.

¹² In Appendix Figure A.3, we show how the drop in the main analysis sample varies across a wider range of bandwidths. It increases sharply in magnitude as the bandwidth approaches zero, while it is fairly stable for bandwidths larger than the automatically selected one.

3.3 Is the discontinuous drop driven by the equal-earning couples?

We conduct two simple tests to investigate if the discontinuous drop reported in the previous section is driven by spouses with equal earnings. First, we set the cut-off to $s_{ijt} = 0.50$ instead of $s_{ijt} = 0.50001$. Second, we smooth the spike and test if there is still a discontinuous drop. If the sharp drop is not driven by the equal-earning spouses, our test coefficient should be stable to moving the cut-off just marginally to the left and to smoothing the spike.

We present the results from these tests on the main analysis sample in Table 3. In the first row, we show the results from discontinuity tests where we set the cut-off to $s_{ijt} = 0.50$ instead of $s_{ijt} = 0.50001$. Depending on the bandwidth, the distribution now *increases* discontinuously by between 9.4 and 24.1 percent at the cut-off ($p < 0.01$).¹³ The fact that the discontinuous break in the distribution shifts signs when we move the cut-off just marginally to the left indicates that the equal-earning spouses play an important role.

Next, we smooth the spike at the point where the wife and the husband earn the same and rerun the discontinuity test setting the cut-off to $s_{ijt} = 0.50001$. We do the smoothing in four different ways. Our first approach is to simply drop all equal-earning couples. Thereafter, we keep them in the sample, but we replace the wife's share of household earnings by (i) her share the first subsequent year that she does not earn the same as her husband, (ii) a random number close to 0.50 ($s_{ijt} = 0.50 + \varepsilon$ where $\varepsilon \sim N[0,01]$) or, (iii) an imputed share based on OLS regressions of annual earnings on observable characteristics.¹⁴

¹³ We obtain similar results if we instead use the cross-sectional samples (see Appendix Table A.1).

¹⁴ For all equal-earning couples ($s_{ijt} = 0.50$), we impute wives' shares of household earnings by predicting both spouses' earnings based on separate OLS regressions for men and women of log earnings on years of schooling, age, age squared, number of children at home, and a set of dummies for having completed a college education, being foreign born, residing in the Stockholm area, being self-employed and being in a self-employed couple. We also include interactions between being self-employed and all other explanatory variables.

We present the results from the discontinuity tests on the smoothed distributions in rows 2-5 in Table 3. Using the automatically selected bandwidth, we find that the distribution drops discontinuously by between 5.2 and 5.8 percent at the cut-off ($p < 0.05$). If we instead apply any of the two narrower bandwidths, the estimated drop varies between 3.2 percent and 4.5 percent and is no longer statistically significant.¹⁵ We conclude that the bandwidth is crucial for whether the drops in the smoothed distributions are statistically significant. In Appendix Figure A.4, we show how the drop that remains after exclusion of the equal-earnings spouses varies across a wider range of bandwidths. The magnitude of the estimated drop increases with the bandwidth, and it is significant ($p < 0.05$) for bandwidths wider than about 0.045.

In sum, when we smooth the distribution of the wife's share of household earnings, the remaining drop is between 72 and 90 percent smaller than in the baseline and it is only statistically significant when we apply our widest bandwidth. We began this section by asking if the discontinuous drop in the distribution of the wife's share of household earnings is driven by the equal-earning couples. While the exact answer to this question varies with the bandwidth, we conclude that the equal-earning couples account for a substantial part of the drop.

Strictly speaking, the equal-earning spouses do not violate a norm prescribing that the wife *should not earn more* than her husband. Interpreting the part of the sharp drop that is driven by the equal-earning spouses as evidence that couples adhere to this norm, however requires that spouses earn the same *because* of the norm. This interpretation hinges on the assumption that wives who earn the same as their husband have higher earnings potential than their husband, but have chosen not to make full use of that potential. Next, we analyze if this is the case.

¹⁵ In Appendix Table A.1 we show the corresponding results for the cross-sectional samples. Applying our widest bandwidth, the drop is 4.7-6.1 percent and statistically significant ($p < 0.10$) in most cases. Using the narrower bandwidths, the drop is 1.9-4.6 percent and not statistically significant.

3.4 Do wives in equal-earning couples have higher earnings potential than their husbands?

If spouses earn the same because of the norm, we should expect the relative earnings potential of wives in equal-earning couples ($s_{ijt} = 0.50$) to be more similar to that of wives who earn *more* than their husbands ($s_{ijt} > 0.50$) than to that of wives who earn *less* than their husbands ($s_{ijt} < 0.50$).

We start by comparing spouses' educational attainment. In Appendix Table A.2, we show that wives in equal-earning couples have, on average, slightly less schooling years than their husband (diff = -0.08, $p < 0.01$) and that they are equally likely as their husband to have completed a college degree (diff = -0.01, $p = 0.194$). Figure 3 (a) illustrates the mean spousal differences in schooling years across the distribution of the wife's share of household earnings. Wives earning exactly as much as their husbands have a substantially lower education relative to their husband compared both with wives earning more than their husband, and with wives earning slightly less than their husband. The relative education of wives in equal-earning couples most closely resembles that of wives earning about 40 percent of the household earnings. Figure 3 (b) illustrates the corresponding differences in having completed a college degree, yielding a similar impression.

Next, we investigate spousal differences in imputed earnings. We start by imputing all spouses' earnings using a Mincer-type equation (Mincer 1974) in which we predict spouses' earnings based on years of schooling and work experience.¹⁶ We then impute spouses' earnings

¹⁶ We run separate regressions for men and women of log earnings on years of schooling, age and age squared.

using a larger set of explanatory variables.¹⁷ In Figure 3 (c) and (d), we present mean spousal differences in imputed earnings across the distribution of the wife’s share of household earnings. In neither of these two figures, the wives who earn the same as their husbands appear to have higher potential earnings than suggested by the overall pattern. In sum, we do not find any evidence that wives who earn the same as their husbands have higher earnings potential than their husbands.

3.5 Do Swedish couples adhere to a gender norm prescribing that a wife should not earn more than her husband?

In Section 3.2, we demonstrated that the distribution of the wife’s share of household income drops sharply by between 20.9 and 31.2 percent at the point where the wife starts to earn more than her husband. In Section 3.3, we showed that between 72 and 90 percent of this drop can be accounted for by spouses earning exactly the same. Then, in Section 3.4, we found that wives who earn the same as their husband do not have higher earnings potential than their husbands. This result suggests that the equal-earning spouses do not have equal earnings because of the norm. It leads us to conclude that the part of the drop that is driven by these spouses does not provide evidence that couples adhere to the norm. We therefore exclude the equal-earning spouses from the sample. The remaining drop is then between 3.5 and 5.4 percent and it is only statistically significant when we apply the widest of our three bandwidths (see Table 3, row 2).¹⁸

¹⁷ We run separate OLS regressions for men and women of log earnings on years of schooling, age, age squared, number of children at home, and a set of dummies for having completed a college education, being foreign born, residing in the Stockholm area, being self-employed and being in a self-employed couple (we define a couple as self-employed if at least one spouse is self-employed and spouses work in the same 5-digit industry and no spouse works in the public sector). We also include interactions between being self-employed and all other explanatory variables.

¹⁸ In contrast, when Binder and Lam (2018) exclude the equal-earning spouses the remaining drops are never statistically significant regardless of the applied bandwidth. However, our sample is considerably larger than theirs (1.8 million couples in comparison to 89,000 couples). When we base the discontinuity tests on a random draw from the main analysis of 150,000 couples or fewer, our remaining drops are also insignificant for all our bandwidths.

We conclude that, if anything, we find only weak evidence that Swedish couples comply with a norm against women earning more than their husbands.

4 Examination of the equal-earning spouses

In the previous section, we showed that there is a spike in the distribution of the wife's share of household earnings at the point where spouses have identical earnings. The aim of this section is to provide an explanation for why there is a spike at this point. The fact that our annual earnings data are very precisely measured (rounded to SEK 100 $\approx$ \$11), makes it particularly difficult to understand how two spouses can end up with identical annual earnings. It not only requires that they have the same monthly earnings, but also that they are absent from work (due to e.g. sick leave, parental leave or vacation) to exactly the same extent. Exploiting the richness of our administrative register data, we show that the vast majority of equal-earning spouses are self-employed who have chosen to have equal earnings, or are employed in the same job.

4.1 Self-employment

In contrast to employees, self-employed individuals decide on their own wages. Spouses running a business together are consequently able to choose to have the same income. We now examine to what extent the equal-earning spouses are self-employed. We define a couple as self-employed

if it fulfills all of the following criteria: At least one spouse is self-employed¹⁹, spouses work in the same finely defined industry²⁰ and no spouse works in the public sector.²¹

In Appendix Table A.2, we present descriptive statistics at different points in the distribution of the wife's share of total household earnings. In the main analysis sample, 17 percent of the equal-earning couples are self-employed. The corresponding figure for all couples is 1 percent. Self-employment is however substantially underreported in the main analysis sample. We therefore re-examine the incidence of self-employment using the cross-sectional sample from 2011.²² In Appendix Table A.3 we show that in 2011, 68 percent of the equal-earning couples are self-employed in comparison to 3 percent of all couples.²³ Our large data set also allow us to investigate how common it is for spouses with *marginally* different earnings ($0.4985 \leq s_{ijt} < 0.50$ and $0.50 < s_{ijt} \leq 0.5015$) to be self-employed. In both the main analysis sample (Table A.2) and in the 2011 cross-section (Table A.3), self-employment is at least ten times more common among spouses with equal earnings than among spouses with marginally different earnings.

We conclude that the probability of self-employment is much higher among equal-earning couples than among other couples, and that in the year when self-employment is best measured, about two thirds of the equal-earning couples fall under our definition of a self-employed couple.

¹⁹ We define an individual as self-employed if the individual is classified as self-employed by Statistics Sweden (variable *YrkStalln* = 4 or 5), or if the individual has declared income from an active business that exceeds the annual labor earnings (variable *ForvInk* > variable *LoneInk*).

²⁰ Based on the Swedish Standard Industrial Classification (SNI) (5-digit codes, > 700 industries).

²¹ The reason why we only require that one spouse is self-employed is that in couples running a business together it is possible that one of the spouses is classified as self-employed, while the other spouse is hired as an employee and hence not classified as self-employed.

²² The measure of self-employment was improved in 1993 and then again in 2004. Prior to 1993, owners of incorporated businesses were not classified as self-employed. From 1993, they were included if the business demonstrated a surplus, and the owner(s) received both salary and dividend from their business. Consequently, the proportion of self-employed in the population increased from 2.2 percent in 1992 to 8.7 percent in 1993. In 2004, the surplus criterion was abolished, and the incidence of self-employment increased further from 8.4 percent in 2003 to 11.2 percent in 2004. Statistics Sweden provided an adjusted measure between 2003 and 2004 confirming that the increase in the incidence of self-employment between these years follows from the improvement of the measure.

²³ We show descriptive statistics for the self-employed couples in the 2011 cross-section in Appendix Table A.4.

This estimate is likely to be a lower bound since self-employment is still underreported (Statistics Sweden 2017).²⁴

We now turn to potential reasons why spouses in self-employed couples choose to have identical earnings. First, since Swedish spouses' earnings are taxed separately, setting earnings equal will be a tax minimizing strategy.²⁵ In Appendix Figure A.5, we examine if self-employed spouses with equal earnings in the 2011 cross-section bunch at certain earnings levels. The distribution of annual earnings of these spouses is irregular and exhibits five larger spikes. The first four spikes, in total encompassing 18 percent of observations, suggest that couples bunch at annual earnings of SEK 180,000, 240,000, 300,000 and 360,000 (monthly wages of SEK 15,000, 20,000, 25,000 and 30,000). As there are no financial incentives linked to these values, we interpret this bunching as a preference for even numbers. The rightmost spike shows that about 6 percent of couples bunch at or within SEK 10,000 below SEK 396,000 (monthly wage of SEK 33,000), where there is a kink in the tax schedule.²⁶ A second reason for why self-employed spouses set their earnings equal may be that they simply divide their earnings equally as a rule of thumb. Such equal division of monetary rewards has been observed in many other settings (Andreoni and Bernheim 2009). Third, the Swedish law prohibiting sex-based wage discrimination may have influenced the self-employed spouses to set their earnings equal.²⁷

²⁴ Statistics Sweden (2017) state that self-employment is underreported also after 2004 since owners of incorporated businesses are classified as self-employed only if they receive both salary and dividend from their business. See Bjuggren et al. (2010) for a discussion of measures of self-employment in general, and of self-employment in Sweden in particular.

²⁵ This strategy may be particularly appealing if individuals are unaware of the exact location of the kink points in the marginal taxation of income. For a discussion of the salience of the kink points to individual taxpayers, see Bastani and Selin (2014).

²⁶ The earnings distribution of self-employed couples in which spouses have different earnings follows that of the equal-earning couples fairly closely (not displayed), but the bunching is much more modest for these couples.

²⁷ 1980-1991: The 1979 Equal Treatment between Women and Men at Work Act (1979:1118), 1992-2008: The 1991 Equal Treatment Between Women and Men at Work Act (1991:433), 2009- : The Discrimination Act (2008:567).

4.2 Employed in the same job

In the previous section, we established that when self-employment is best measured, about two thirds of the equal-earning couples are self-employed. We now seek to explain how the remaining equal-earning spouses have ended up with identical earnings. One potential explanation is that these spouses are employed in the same or similar jobs with equal pay. We assess this possibility by examining to what extent the equal-earning spouses in the 2011 cross-section are employed by the same employer in the same plant.²⁸ In Appendix Table A.3, we show that non self-employed spouses employed in the same plant account for 19 percent of spouses with equal earnings.²⁹

In order for these spouses to end up with equal earnings, they should presumably work in industries in which wages are compressed and determined by collective agreements (as opposed to in individual negotiations). Such industries are typically low-skilled industries. Consistent with this hypothesis, four out of the five most common industries of employment of these spouses are typical low-skilled industries.³⁰ In addition, we show in Table A.5 that the equal-earning spouses employed in the same plant have lower education, lower earnings and are substantially less likely to have a college degree than other spouses employed in the same plant.

Some of the equal-earning spouses who are employed in the same plant may in fact be self-employed, but are not classified as such due to the remaining underreporting of self-employment

²⁸ Based on the plant number (variable *CFARNr*).

²⁹ Among the self-employed equal-earning couples in the 2011 cross-section, the fraction of spouses working in the same plant is 0.98 (Table A.4).

³⁰ Based on the 2-digit codes of the Swedish Standard Industrial Classification (SNI), the five most common industries are retail trade, wholesale trade, food and beverage service activities, social work activities and management consultancy activities.

mentioned in Section 4.1 (see Bjuggren et al. 2010 and Statistics Sweden 2017). Two characteristics of these couples are consistent with this hypothesis. First, public sector employment is much less common among these couples than among other couples.³¹ Second, four out of the five most common industries of employment of these couples are the same as those of the self-employed couples with equal earnings.³²

We began Section 4 with the aim of explaining why the distribution of the wife's share of household earnings exhibits a spike at the point where spouses have identical incomes. Close examination of our cross-sectional sample from 2011 shows that self-employed couples and spouses employed in the same plant together account for 87 percent of the equal-earning spouses. In Appendix Table A.6, we show that if we exclude these two groups of couples from the 2011 cross section and rerun the discontinuity test, the remaining sharp drop varies between 2.9 and 4.9 percent and is no longer statistically significant.³³

5 Summary and conclusion

In this paper, we investigate if Swedish couples comply with a gender identity norm prescribing that a wife should not have higher earnings than her husband. Inspired by Bertrand et al. (2015), we test this hypothesis by analyzing if the distribution of the wife's share of household earnings drops sharply at the point where the wife starts to earn more than her husband.

³¹ In the group of spouses employed in the same plant, working in the public sector is at least six times less common among spouses with equal-earnings than among spouses with just marginally different earnings (Table A.5).

³² Retail trade, wholesale trade, food and beverage service activities and management consultancy activities are on the top five lists of both self-employed spouses and spouses employed in the same plant (2-digit codes of the Swedish Standard Industrial Classification, SNI).

³³ If we only exclude the self-employed couples, the discontinuous drop is 8.3-9.1 percent ($p < 0.05$). If we only exclude the non self-employed couples in which spouses work in the same plant, the drop is largely unaffected in comparison to the baseline estimate in the 2011 cross-section.

We summarize our findings in five points. First, analyzing a sample of 1.8 million married Swedish couples from administrative registers from the years 1990-2011, we establish that the distribution drops sharply by between 21 and 31 percent at the point where the wife starts to earn more than her husband. Second, we show that there is a spike in the distribution of the share of income earned by the wife at the point where spouses have *exactly* equal earnings. These equal-earning spouses account for a large part of the sharp drop. Third, we find no indication that wives in equal-earning couples have higher earnings potential than their husbands. This result suggests that the spike is not generated by couples seeking to avoid that the wife earns more than her husband. We therefore conclude that the part of the sharp drop that is driven by the equal-earning spouses does not provide evidence that Swedish couples adhere to a norm stipulating that a wife should not earn more than her husband. To determine if Swedish couples follow this norm, the critical question thus becomes if there is still a sharp drop after exclusion of the equal-earnings spouses. Fourth, the remaining drop is between 4 and 5 percent, and it is only statistically significant when we apply our widest bandwidth. We conclude that, if anything, we find only weak support for the hypothesis that Swedish couples comply with a norm prescribing that a wife should not earn more than her husband. Finally, to gain greater insight into why there is a spike in the distribution of the wife's share of household earnings, we exploit our cross-sectional sample from 2011 to characterize the equal-earning spouses. We show that about two thirds of equal-earning couples are self-employed. These spouses decide on their own earnings, and have thus chosen to earn the same. Potential reasons include tax minimization and rules of thumb prescribing that monetary rewards should be divided equally. The vast majority of the remaining equal-earning spouses are employed in the same plant. Some couples in this group may in fact

also be self-employed but are not registered as such due to underreporting of self-employment. Another possibility is that they are employed in the same job with equal pay.

In recent years, several studies have followed the approach of Bertrand et al. (2015) to analyze if couples comply with gender identity norms about relative earnings within households. Our paper points to the importance of taking the equal-earning couples into account when conducting this analysis. It also illustrates the methodological difficulty of adequately measuring discontinuities in the presence of outliers at the cut-off. We argue that the equal-earning couples should be removed from the sample before testing if the distribution of the wife's share of household earnings drops sharply at the point where the wife starts to earn more than her husband. In the case of Sweden, keeping these couples leads to incorrect conclusions about to what extent couples adhere to gender norms.

Importantly, our results do not exclude that Swedish couples comply with gender norms prescribing that a woman should not earn more than her husband. We can only conclude that our specific test does not provide strong evidence that they do. Adherence to gender norms about spouses' relative earnings may possibly not manifest itself precisely on the margin we are studying. In future research, it would be useful to come up with alternative methods to investigate the influence of gender identity norms on the distribution of income within households.

References

- Akerlof, G. A. and R. E. Kranton (2000), Economics and Identity. *Quarterly Journal of Economics* 115 (3), 715-753.
- Akerlof, G. A. and R. E. Kranton (2002), Identity and Schooling: Some Lessons for the Economics of Education. *Journal of Economic Literature* 40, 1167-1201.
- Andreoni, J. and Bernheim, B. D. (2009). Social image and the 50–50 norm: A theoretical and experimental analysis of audience effects. *Econometrica*, 77(5), 1607-1636.
- Bastani, S., and Selin, H. (2014). Bunching and non-bunching at kink points of the Swedish tax schedule. *Journal of Public Economics*, 109, 36-49.
- Bertrand, M., Pan, J. and Kamenica, E. (2015). Gender Identity and Relative Income Within Households. *Quarterly Journal of Economics* 130(2), 571-614.
- Binder, A. J. and Lam, D. (2018) Is there a Male Breadwinner Norm? The Hazards of Inferring Preferences from Marriage Market Outcomes. NBER working paper 24907.
- Bittman, M., England, P., Sayer, L., Folbre, N., and Matheson, G. (2003). When Does Gender Trump Money? Bargaining and Time in Household Work. *American Journal of Sociology*, 109(1), 186-214.
- Bjuggren, C.M., Johansson, D. and Stenkula, M. (2010). Using Self-employment as Proxy for Entrepreneurship: Some Empirical Caveats. IFN Working Paper No. 845. Research Institute of Industrial Economics.
- Blau, F. D., Ferber, M. A. and Winkler, A. E. (2009). *The Economics of Women, Men, and Work*. 6th international edn, Upper Saddle River, New Jersey: Pearson Education.
- Fernandez, R, Fogli, A. and Olivetti, C. (2004). Mothers and Sons: Preference Development and Female Labor Force Dynamics. *Quarterly Journal of Economics* 119 (4), 1249-1299.
- Farre, L., and Vella, F. (2013). The Intergenerational Transmission of Gender Role Attitudes and its Implications for Female Labour Force Participation. *Economica*, 80(318), 219-247.
- Fortin, N. M. (2005). Gender Role Attitudes and the Labour-Market Outcomes of Women across OECD countries. *Oxford Review of Economic Policy*, 21(3), 416-438.
- Hederos Eriksson, K. and Stenberg, A. (2015). Gender Identity and Relative Income within Households: Evidence from Sweden. IZA Discussion Paper 9533.

- Leopold, T. A., Ratcheva, V. and Zahidi, S. (2016). The Global Gender Gap Report 2016. In *World Economic Forum*.
- McCrary, J. (2008). Testing for Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test. *Journal of Econometrics* 142, 698-714.
- Mincer, J. (1974). *Schooling, Experience and Earnings*. Columbia University Press. New York.
- Roth, A. and Slotwinski, M. (2018). Gender Norms and Income Misreporting within Households. CESifo Working Paper No. 7298.
- Statistics Sweden (2017). Arbetsdokument 2017-12-14. Ekonomisk Statistik. Unpublished manuscript.
- West, C. and Zimmerman, D. (1987). Doing gender. *Gender & Society*, 1, 125-151.
- Wieber, A. and Holst, E. (2015). Gender Identity and Women's Supply of Labor and Non-Market Work: Panel Data Evidence for Germany. IZA Discussion Paper 9471.
- Zinovyeva, N. and Tverdostup, M. (2018). Gender Identity, Co-Working Spouses and Relative Income within Households. IZA Discussion Paper No. 11757.

Tables:

Table 1. Descriptive statistics

Sample	Main		1991 cross-section		2001 cross-section		2011 cross-section	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Years married	9.85	11.42	16.45	11.10	17.15	11.24	15.04	11.16
Number of children	1.27	1.12	1.40	1.12	1.34	1.15	1.39	1.11
Foreign born wife	0.16	0.37	0.10	0.31	0.12	0.32	0.16	0.36
Foreign born husband	0.15	0.36	0.04	0.20	0.16	0.37	0.20	0.40
School years wife	11.94	2.31	11.49	2.25	12.23	2.26	13.01	2.26
School years husband	11.91	2.35	11.62	2.37	12.09	2.36	12.54	2.35
School years diff.	0.02	2.26	-0.13	2.25	0.14	2.27	0.47	2.30
College wife ^{a)}	0.19	0.40	0.14	0.35	0.21	0.41	0.34	0.48
College husband ^{a)}	0.18	0.39	0.16	0.37	0.20	0.40	0.26	0.44
College diff.	0.01	0.42	-0.02	0.38	0.01	0.44	0.09	0.50
Age wife	38.31	10.06	42.55	9.52	44.74	9.58	44.97	9.81
Age husband	40.92	10.28	45.03	9.60	47.07	9.57	47.26	9.85
Work exp. wife ^{b)}	20.44	10.73	25.09	10.03	26.53	10.13	25.97	10.45
Work exp. husband ^{b)}	23.05	10.85	27.44	10.08	29.00	10.05	28.74	10.44
Log earnings wife	4.64	1.24	4.76	1.02	5.07	1.03	5.36	0.97
Log earnings husband	5.29	1.12	5.38	0.91	5.58	0.97	5.79	0.86
Public sector wife	0.49	0.50	0.57	0.49	0.53	0.50	0.47	0.50
Public sector husband	0.19	0.39	0.22	0.41	0.19	0.39	0.16	0.37
Same plant ^{c)}	0.05	0.21	0.03	0.17	0.04	0.19	0.07	0.26
Same plant, not SE ^{d)}	0.04	0.20	0.03	0.17	0.03	0.17	0.05	0.21
SE wife ^{e)}	0.02	0.15	0.01	0.09	0.04	0.21	0.05	0.21
SE husband ^{e)}	0.05	0.22	0.02	0.12	0.09	0.29	0.12	0.33
SE couple ^{f)}	0.01	0.10	0.00	0.06	0.02	0.14	0.03	0.16
N	1,857,155		950,742		808,205		769,049	

Notes: The main analysis sample includes one observation per couple (from the first year that the couple appears in the registers between 1990 and 2011). The spousal differences are defined as the wife's characteristic minus the husband's characteristic. ^{a)} = 1 if the individual has completed at least three years of university studies. ^{b)} Work experience = age–6–years of schooling. ^{c)} = 1 if spouses work in the same plant. ^{d)} = 1 if spouses work in the same plant and the couple is not self-employed. ^{e)} = 1 if the individual is self-employed. ^{f)} = 1 if the couple is self-employed.

Table 2. McCrary test for discontinuity in the distribution of the wife's share of total household labor earnings.

Sample	Cut-off	(1)		(2)		(3)		N
		$\hat{\theta}$	p-value	$\hat{\theta}$	p-value	$\hat{\theta}$	p-value	
Main	0.50001	-0.209	0.000	-0.245	0.000	-0.312	0.000	1,857,155
1991 cs	0.50001	-0.197	0.000	-0.228	0.000	-0.287	0.000	950,742
2001 cs	0.50001	-0.197	0.000	-0.222	0.000	-0.279	0.000	808,205
2011 cs	0.50001	-0.157	0.000	-0.175	0.000	-0.215	0.000	769,049
Bandwidth		app. 0.060		app. 0.030		app. 0.015		

The main analysis sample includes one observation per couple (from the first year that the couple appears in the registers between 1990 and 2011). The bandwidth in column 1 is the bandwidth that is automatically selected in the McCrary (2008) test. The bandwidths in columns 2 and 3 correspond to about one half and one quarter of this bandwidth.

Table 3. McCrary test for discontinuity in the distribution of the wife's share of total household labor earnings setting the cut-off to 0.50 and after smoothing the spike at the point where spouses have equal earnings.

Sample	Cut-off	(1)		(2)		(3)		N
		$\hat{\theta}$	p-value	$\hat{\theta}$	p-value	$\hat{\theta}$	p-value	
Main	0.500	0.094	0.000	0.165	0.000	0.241	0.000	1,857,155
Main, dropping equal earners ^{a)}	0.50001	-0.054	0.023	-0.040	0.150	-0.035	0.296	1,851,884
Main, subsequent year ^{b)}	0.50001	-0.058	0.013	-0.045	0.104	-0.038	0.245	1,857,091
Main, random dispersion ^{c)}	0.50001	-0.052	0.024	-0.039	0.148	-0.032	0.313	1,857,091
Main, imputed earnings ^{d)}	0.50001	-0.053	0.024	-0.041	0.141	-0.037	0.269	1,856,808
Bandwidth		app 0.060		app 0.030		app 0.015		

Notes: The main analysis sample includes one observation per couple (from the first year that the couple appears in the registers between 1990 and 2011). The bandwidth in column 1 is the bandwidth that is automatically selected in the McCrary (2008) test. The bandwidths in columns 2 and 3 correspond to about one half and one quarter of this bandwidth.

^{a)} All equal-earning couples ($s_{ijt}=0.50$) are dropped from the sample. ^{b)} For all equal-earning couples ($s_{ijt}=0.50$), the wife's share of household earnings is replaced by her share in the first subsequent year that her share deviates from 0.50. ^{c)} For all equal-earning couples ($s_{ijt}=0.50$), the wife's share of household earnings is replaced by a random number close to 0.50 ($s_{ijt} = 0.50 + \varepsilon$ where $\varepsilon \sim N[0,01]$). ^{d)} For all equal-earning couples ($s_{ijt}=0.50$), the wife's share of household earnings is replaced by her imputed share. We impute wives' shares of household earnings by predicting both spouses' earnings based on separate OLS regressions for men and women of log earnings on years of schooling, age, age squared, number of children at home, and a set of dummies for having completed a college education, being foreign born, residing in the Stockholm area, being self-employed and being in a self-employed couple. We also include interactions between being self-employed and all other explanatory variables.

Figures:

Figure 1. Distribution of the share of total household labor earnings earned by the wife, 20 bins (main analysis sample).

Notes: The main analysis sample includes one observation per couple (from the first year that the couple appears in the registers between 1990 and 2011). The sample includes married couples in which both spouses have positive incomes and are between 18 and 65 years of age. Each dot is the fraction of couples in a 0.05 relative earnings bin. The dashed vertical line indicates the relative income share = 0.50. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.50.

Figure 2. Distribution of the share of total household labor earnings earned by the wife, 1000 bins (main analysis sample).

Notes: The main analysis sample includes one observation per couple (from the first year that the couple appears in the registers between 1990 and 2011). The sample includes married couples in which both spouses have positive incomes and are between 18 and 65 years of age. Each dot is the fraction of couples in a 0.001 relative income bin. The dashed vertical line indicates the relative income share = 0.50. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.50.

Figure 3. Spousal differences in education and imputed earnings across the distribution of the wife's share of total household earnings, 1000 bins (main analysis sample).

Notes: Each dot is the fraction of couples in a 0.001 relative income bin (1000 bins). All spousal differences are defined as the wife's characteristic minus the husband's characteristic. In panels (c) and (d) we impute spouses' earnings by running separate OLS regressions for men and women of log earnings. Explanatory variables are for panel (c) years of schooling, age, and age squared. In panel (d) this model is extended to also include the number of children at home and a set of dummies for having completed a college education, being foreign born, residing in the Stockholm area, being self-employed and being in a self-employed couple. We also include interactions between being self-employed and all other explanatory variables.

Appendix

Table A.1. McCrary test for discontinuity in the distribution of the wife's share of total household labor earnings setting the cut-off to 0.500 and after smoothing the spike at the point where spouses have equal earnings.

Sample	Cut-off	(1)		(2)		(3)		N
		$\hat{\theta}$	p-value	$\hat{\theta}$	p-value	$\hat{\theta}$	p-value	
1991 cs	0.500	0.077	0.014	0.144	0.001	0.217	0.000	950,742
1991 cs, dropping equal earners ^a	0.50001	-0.056	0.096	-0.040	0.312	-0.034	0.479	948,393
1991 cs, subsequent year ^b	0.50001	-0.057	0.085	-0.046	0.240	-0.041	0.377	950,364
1991 cs, random dispersion ^c	0.50001	-0.053	0.105	-0.036	0.344	-0.032	0.493	950,742
1991 cs, imputed earnings ^d	0.50001	-0.055	0.103	-0.037	0.343	-0.032	0.499	950,606
2001 cs	0.500	0.074	0.012	0.140	0.000	0.210	0.000	808,205
2001 cs, dropping equal earners ^a	0.50001	-0.058	0.065	-0.040	0.283	-0.035	0.428	805,583
2001 cs, subsequent year ^b	0.50001	-0.061	0.052	-0.042	0.254	-0.040	0.367	807,633
2001 cs, random dispersion ^c	0.50001	-0.055	0.075	-0.038	0.290	-0.034	0.426	808,205
2001 cs, imputed earnings ^d	0.50001	-0.058	0.064	-0.042	0.255	-0.035	0.424	807,978
2011 cs	0.500	0.051	0.062	0.110	0.001	0.173	0.000	769,049
2011 cs, dropping equal earners ^a	0.50001	-0.049	0.092	-0.030	0.377	-0.019	0.645	766,696
2011 cs, prior year ^b	0.50001	-0.050	0.084	-0.032	0.351	-0.021	0.604	768,779
2011 cs, random dispersion ^c	0.50001	-0.047	0.102	-0.026	0.442	-0.020	0.613	769,049
2011 cs, imputed earnings ^d	0.50001	-0.048	0.101	-0.029	0.399	-0.020	0.621	768,694
Bandwidth		app .060		app .030		app .015		

Notes: The bandwidth in column 1 is the bandwidth that is automatically selected in the McCrary (2008) test. The bandwidths in columns 2 and 3 correspond to about one half and one quarter of this bandwidth. ^a All equal-earning couples ($s_{ijt}=0.50$) are dropped from the sample. ^b For all equal-earning couples ($s_{ijt}=0.50$), the wife's share of household earnings is replaced by her share in the first subsequent year that her share deviates from 0.50, except in 2011 where it is replaced by the year closest prior to 2011. ^c For all equal-earning couples ($s_{ijt}=0.50$), the wife's share of household earnings is replaced by a random number close to 0.50 ($s_{ijt} = 0.50 + \varepsilon$ where $\varepsilon \sim N[0,01]$). ^d For all equal-earning couples ($s_{ijt}=0.50$), the wife's share of household earnings is replaced by her imputed share. We impute wives' shares of household earnings by predicting both spouses' earnings based on separate OLS regressions for men and women of log earnings on years of schooling, age, age squared, number of children at home, and a set of dummies for having completed a college education, being foreign born, residing in the Stockholm area, being self-employed and being in a self-employed couple. We also include interactions between being self-employed and all other explanatory variables.

Table A.2. Descriptive statistics at different points in the distribution of the wife's share of total household earnings (main analysis sample).

	All	$s_{ijt} =$										
		0.10	0.20	0.30	0.40	0.50-	0.50	0.50+	0.60	0.70	0.80	0.90
Years married	9.85	6.71	8.93	11.04	10.76	9.92	15.59	9.55	9.74	9.41	9.54	10.75
Number of children	1.27	1.52	1.51	1.42	1.22	0.98	1.22	0.97	1.02	1.05	1.07	1.08
Foreign born wife	0.16	0.25	0.18	0.12	0.11	0.14	0.29	0.13	0.19	0.24	0.26	0.27
Foreign born husband	0.15	0.21	0.16	0.10	0.09	0.13	0.28	0.12	0.20	0.27	0.30	0.30
School years wife	11.94	11.77	11.82	11.68	11.85	12.48	11.31	12.53	12.47	12.14	12.11	11.85
School years husband	11.91	12.08	12.28	12.04	11.79	11.94	11.38	11.97	11.76	11.68	11.65	11.47
School years diff.	0.02	-0.31	-0.46	-0.36	0.06	0.54	-0.08	0.56	0.71	0.46	0.45	0.38
College wife ^{a)}	0.19	0.15	0.16	0.15	0.19	0.29	0.12	0.30	0.29	0.22	0.22	0.19
College husband ^{a)}	0.18	0.19	0.23	0.19	0.17	0.20	0.13	0.21	0.17	0.15	0.15	0.13
College diff.	0.01	-0.05	-0.07	-0.04	0.02	0.09	-0.01	0.09	0.12	0.07	0.07	0.06
Age wife	38.31	34.66	36.91	39.01	39.21	39.27	42.68	39.03	39.26	38.50	38.05	39.49
Age husband	40.92	37.81	39.70	41.56	41.68	41.57	45.46	41.33	41.79	40.98	40.64	41.97
Work exp. wife ^{b)}	20.44	16.97	19.17	21.38	21.40	20.88	25.70	20.55	20.87	20.46	20.06	21.76
Work exp. husband ^{b)}	23.05	19.75	21.48	23.55	23.92	23.70	28.34	23.39	24.09	23.38	23.10	24.60
Log earnings wife	4.64	3.37	4.29	4.85	5.19	5.45	4.18	5.47	5.28	5.08	4.96	4.94
Log earnings husband	5.29	5.57	5.68	5.69	5.60	5.45	4.18	5.47	4.87	4.23	3.58	2.74
Public sector wife	0.49	0.41	0.48	0.53	0.53	0.48	0.11	0.48	0.47	0.48	0.48	0.47
Public sector husband	0.19	0.16	0.17	0.19	0.20	0.24	0.08	0.24	0.21	0.20	0.19	0.14
Same plant ^{c)}	0.05	0.06	0.05	0.04	0.04	0.09	0.31	0.09	0.05	0.04	0.04	0.04
Same plant, not SE ^{d)}	0.04	0.05	0.05	0.04	0.04	0.09	0.22	0.08	0.04	0.04	0.03	0.03
SE wife ^{e)}	0.02	0.03	0.03	0.02	0.01	0.02	0.20	0.02	0.02	0.03	0.04	0.04
SE husband ^{e)}	0.05	0.04	0.03	0.03	0.03	0.04	0.17	0.04	0.08	0.12	0.14	0.18
SE couple ^{f)}	0.01	0.01	0.01	0.01	0.01	0.01	0.17	0.02	0.01	0.01	0.02	0.02
N	1,857,155	16,293	20,078	33,411	46,910	4,720	5,271	4,423	9,178	4,943	3,846	4,172

Notes: The main analysis sample includes one observation per couple (from the first year that the couple appears in the registers between 1990 and 2011). The spousal differences are defined as the wife's characteristic minus the husband's characteristic. ^{a)} = 1 if the individual has completed at least three years of university studies. ^{b)} Work experience = age – 6 – years of schooling. ^{c)} = 1 if spouses work in the same plant. ^{d)} = 1 if spouses work in the same plant and the couple is not self-employed. ^{e)} = 1 if the individual is self-employed. ^{f)} = 1 if the couple is self-employed. The samples labelled $s_{ijt} = \{0.10, 0.20, 0.30, 0.40, 0.60, 0.70, 0.80, 0.90\}$ consist of observations ± 0.005 around each stated share. The sample at $s_{ijt} = 0.50$ (marked in grey) only includes equal-earning couples. The sample labelled $s_{ijt} = 0.50+$ includes observations 0.0015 above $s_{ijt} = 0.50$ and the sample labelled $s_{ijt} = 0.50-$ includes observations 0.0015 below 0.50. We use italics to indicate that a spousal difference is not statistically significant at the 5 percent level. We use bold font to indicate that a mean characteristic of spouses with different earnings is not significantly different at the 5 percent level from the mean characteristic of spouses with equal earnings.

Table A.3. Descriptive statistics at different points in the distribution of the wife's share of total household earnings (2011 cross-section).

	All	$s_{ijt} =$										
		0.10	0.20	0.30	0.40	0.50-	0.50	0.50+	0.60	0.70	0.80	0.90
Years married	15.04	10.79	13.11	14.61	15.35	16.22	19.57	16.09	15.49	16.02	16.27	17.89
Number of children	1.39	1.63	1.54	1.49	1.40	1.31	1.22	1.28	1.30	1.25	1.18	1.14
Foreign born wife	0.16	0.24	0.19	0.14	0.13	0.16	0.23	0.15	0.16	0.20	0.25	0.23
Foreign born husband	0.20	0.29	0.23	0.18	0.17	0.21	0.28	0.20	0.22	0.27	0.32	0.31
School years wife	13.01	12.92	13.00	12.96	12.82	13.18	12.32	13.11	13.53	13.32	13.22	12.91
School years husband	12.54	12.90	13.13	12.96	12.40	12.41	12.15	12.29	12.42	12.32	12.22	12.16
School years diff.	0.47	<i>0.02</i>	-0.12	-0.00	0.42	0.77	0.17	0.82	1.11	1.00	1.00	0.75
College wife ^{a)}	0.34	0.32	0.35	0.33	0.31	0.37	0.22	0.36	0.42	0.42	0.39	0.32
College husband ^{a)}	0.26	0.31	0.35	0.31	0.22	0.24	0.21	0.22	0.25	0.24	0.23	0.20
College diff.	0.09	0.01	-0.01	0.02	0.08	0.13	<i>0.00</i>	0.13	0.18	0.18	0.16	0.12
Age wife	44.97	40.04	42.77	44.47	45.22	46.41	48.78	46.21	46.08	46.31	46.27	47.52
Age husband	47.26	42.87	45.17	46.60	47.42	48.54	51.22	48.46	48.37	48.78	48.78	50.16
Work exp. wife ^{b)}	25.97	21.18	23.79	25.52	26.41	27.25	30.63	27.11	26.56	26.99	27.06	28.66
Work exp. husband ^{b)}	28.74	24.02	26.07	27.65	29.03	30.14	33.18	30.19	29.97	30.46	30.56	32.04
Log earnings wife	5.36	3.88	4.81	5.32	5.59	5.82	5.35	5.80	5.91	5.83	5.72	5.55
Log earnings husband	5.79	6.08	6.20	6.16	5.99	5.82	5.35	5.79	5.51	4.99	4.33	3.35
Public sector wife	0.47	0.24	0.42	0.50	0.54	0.46	0.05	0.48	0.44	0.44	0.46	0.47
Public sector husband	0.16	0.12	0.14	0.14	0.16	0.21	0.02	0.21	0.21	0.17	0.08	0.04
Same plant ^{c)}	0.07	0.08	0.06	0.06	0.06	0.17	0.86	0.13	0.06	0.05	0.06	0.05
Same plant, not SE ^{d)}	0.05	0.05	0.04	0.04	0.04	0.11	0.19	0.08	0.04	0.03	0.03	0.03
SE wife	0.05	0.08	0.06	0.05	0.04	0.06	0.54	0.05	0.05	0.06	0.06	0.06
SE husband	0.12	0.10	0.10	0.09	0.10	0.14	0.67	0.14	0.16	0.21	0.26	0.27
SE couple ^{e)}	0.03	0.03	0.02	0.02	0.02	0.05	0.68	0.05	0.02	0.03	0.03	0.02
N	769,049	3,673	5,941	11,738	22,214	3,088	2,353	2,989	5,698	2,277	1,319	1,060

Notes: The spousal differences are defined as the wife's characteristic minus the husband's characteristic. ^{a)} = 1 if the individual has completed at least three years of university studies. ^{b)} Work experience = age-6-years of schooling. ^{c)} = 1 if spouses work in the same plant. ^{d)} = 1 if spouses work in the same plant and the couple is not self-employed. ^{e)} = 1 if the individual is self-employed. ^{f)} = 1 if the couple is self-employed. The samples labelled $s_{ijt} = \{0.10, 0.20, 0.30, 0.40, 0.60, 0.70, 0.80, 0.90\}$ consist of observations +/- 0.005 around each stated share. The sample at $s_{ijt} = 0.50$ (marked in grey) only includes equal-earning couples. The sample labelled $s_{ijt} = 0.50+$ includes observations 0.0015 above $s_{ijt} = 0.50$ and the sample labelled $s_{ijt} = 0.50-$ includes observations 0.0015 below 0.50. We use italics to indicate that a spousal difference is not statistically significant at the 5 percent level. We use bold font to indicate that a mean characteristic of spouses with different earnings is not significantly different at the 5 percent level from the mean characteristic of spouses with equal earnings.

Table A.4. Descriptive statistics at different points in the distribution of the wife's share of total household earnings (self-employed couples in the 2011 cross-section).

	All	$s_{ijt} =$										
		0.10	0.20	0.30	0.40	0.50-	0.50	0.50+	0.60	0.70	0.80	0.90
Years married	17.87	14.64	16.46	17.43	17.80	18.34	20.50	17.74	18.76	17.38	17.24	19.63
Number of children	1.36	1.54	1.43	1.45	1.43	1.36	1.12	1.36	1.23	1.17	1.24	1.00
Foreign born wife	0.17	0.27	0.25	0.16	0.14	0.14	0.17	0.15	0.16	0.23	0.27	0.24
Foreign born husband	0.22	0.30	0.29	0.20	0.18	0.20	0.23	0.20	0.22	0.25	0.31	0.32
School years wife	12.33	12.12	12.33	12.16	12.21	12.55	12.28	12.50	12.55	12.52	12.62	12.30
School years husband	12.17	12.19	12.25	12.12	12.05	12.30	12.16	12.24	12.20	12.22	12.46	11.85
School years diff.	0.16	<i>-0.07</i>	<i>0.08</i>	<i>0.04</i>	0.16	0.25	0.12	0.26	0.34	0.30	<i>0.16</i>	<i>0.44</i>
College wife ^{a)}	0.21	0.18	0.23	0.19	0.18	0.24	0.21	0.23	0.24	0.26	0.28	0.21
College husband ^{a)}	0.20	0.19	0.22	0.19	0.17	0.23	0.21	0.22	0.19	0.23	0.25	0.16
College diff.	<i>0.01</i>	<i>-0.01</i>	<i>0.01</i>	<i>-0.00</i>	<i>0.00</i>	<i>0.01</i>	<i>-0.01</i>	<i>0.01</i>	0.04	<i>0.04</i>	<i>0.04</i>	<i>0.06</i>
Age wife	47.44	44.21	45.84	46.49	47.28	48.10	50.02	47.56	48.63	47.56	47.91	49.72
Age husband	50.06	47.55	48.63	49.28	49.80	50.41	52.27	49.97	51.26	51.27	51.02	53.21
Work exp. wife ^{b)}	29.14	26.26	27.56	28.38	29.07	29.53	31.79	29.09	30.10	29.08	29.41	31.52
Work exp. husband ^{b)}	31.91	29.44	30.39	31.20	31.76	32.08	34.11	31.75	33.06	33.04	32.65	35.49
Log earnings wife	5.34	3.68	4.62	5.13	5.57	5.72	5.45	5.73	5.73	5.57	5.55	5.42
Log earnings husband	5.67	5.89	6.00	5.98	5.97	5.76	5.45	5.69	5.33	4.73	4.16	3.20
Public sector wife	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public sector husband	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Same plant ^{c)}	0.91	0.88	0.91	0.92	0.93	0.93	0.98	0.93	0.85	0.81	0.80	0.81
Same plant, not SE ^{d)}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SE wife	0.44	0.28	0.29	0.30	0.33	0.52	0.76	0.57	0.55	0.56	0.60	0.52
SE husband	0.91	0.92	0.92	0.93	0.94	0.91	0.93	0.88	0.82	0.81	0.75	0.80
SE couple ^{e)}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
N	20,530	449	749	1,335	2,486	1,749	1,595	1,349	718	306	191	109

Notes: The spousal differences are defined as the wife's characteristic minus the husband's characteristic. ^{a)} = 1 if the individual has completed at least three years of university studies. ^{b)} Work experience = age-6-years of schooling. ^{c)} = 1 if spouses work in the same plant. ^{d)} = 1 if spouses work in the same plant and the couple is not self-employed. ^{e)} = 1 if the individual is self-employed. ^{f)} = 1 if the couple is self-employed. The samples labelled $s_{ijt} = \{0.10, 0.20, 0.30, 0.40, 0.60, 0.70, 0.80, 0.90\}$ consist of observations +/- 0.005 around each stated share. The sample at $s_{ijt} = 0.50$ (marked in grey) only includes equal-earning couples. The sample labelled $s_{ijt} = 0.50+$ includes observations 0.0015 above $s_{ijt} = 0.50$ and the sample labelled $s_{ijt} = 0.50-$ includes observations 0.0015 below 0.50. We use italics to indicate that a spousal difference is not statistically significant at the 5 percent level. We use bold font to indicate that a mean characteristic of spouses with different earnings is not significantly different at the 5 percent level from the mean characteristic of spouses with equal earnings.

Table A.5. Descriptive statistics at different points in the distribution of the wife's share of total household earnings (couples in the 2011 cross-section in which spouses work in the same plant and the couple is *not* self-employed).

	All	$s_{ijt} =$										
		0.10	0.20	0.30	0.40	0.50-	0.50	0.50+	0.60	0.70	0.80	0.90
Years married	<i>14.23</i>	10.42	13.03	13.74	<i>14.33</i>	15.35	17.86	14.93	14.77	15.28	15.63	13.55
Number of children	1.36	1.54	1.54	1.43	1.42	1.27	1.29	1.26	1.31	1.32	1.12	1.28
Foreign born wife	0.28	0.41	0.33	0.26	0.23	0.28	0.36	0.24	0.24	0.35	0.37	0.45
Foreign born husband	0.32	0.46	0.37	0.31	0.27	0.32	0.41	0.30	0.31	0.43	0.46	0.53
School years wife	12.79	12.53	13.00	12.73	12.78	12.65	12.32	12.96	13.26	12.95	12.53	12.19
School years husband	12.79	12.71	13.51	13.11	12.90	12.54	12.30	12.70	12.72	12.40	11.98	12.06
School years diff.	-0.00	-0.18	-0.51	-0.39	-0.12	0.11	0.03	0.26	0.54	0.55	0.55	0.13
College wife ^{a)}	0.31	0.27	0.35	0.30	0.29	0.30	0.22	0.34	0.39	0.38	0.29	0.25
College husband ^{a)}	0.30	0.28	0.40	0.35	0.30	0.28	0.24	0.29	0.29	0.25	0.22	0.24
College diff.	0.01	-0.01	-0.05	-0.05	-0.01	0.03	-0.02	<i>0.05</i>	0.10	0.13	0.07	<i>0.01</i>
Age wife	44.46	39.02	42.16	43.74	44.65	45.88	46.56	46.00	45.29	44.88	46.09	44.03
Age husband	47.15	42.66	45.45	46.56	47.30	48.30	49.21	48.28	47.77	48.08	48.30	47.52
Work exp. wife ^{b)}	25.78	20.64	23.30	25.12	25.92	27.33	28.63	27.10	26.15	25.91	27.54	25.98
Work exp. husband ^{b)}	28.45	24.04	26.04	27.54	28.46	29.85	31.24	29.62	29.16	29.66	30.20	29.51
Log earnings wife	5.43	3.73	4.76	5.28	5.63	5.79	5.14	5.83	5.87	5.74	5.62	5.46
Log earnings husband	5.81	5.94	6.14	6.13	6.03	5.83	5.14	5.79	5.48	4.91	4.24	3.25
Public sector wife	0.26	0.15	0.26	0.23	0.26	0.27	0.04	0.33	0.31	0.25	0.17	0.21
Public sector husband	0.26	0.19	0.27	0.23	0.26	0.27	0.04	0.33	0.30	0.23	0.10	0.05
Same plant ^{c)}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Same plant, not SE ^{d)}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SE wife	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
SE husband	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
SE couple ^{e)}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	35,764	809	1271	2183	4640	4108	454	2935	1177	401	208	177

Notes: The spousal differences are defined as the wife's characteristic minus the husband's characteristic. ^{a)} = 1 if the individual has completed at least three years of university studies. ^{b)} Work experience = age–6–years of schooling. ^{c)} = 1 if spouses work in the same plant. ^{d)} = 1 if spouses work in the same plant and the couple is not self-employed. ^{e)} = 1 if the individual is self-employed. ^{f)} = 1 if the couple is self-employed. The samples labelled $s_{ijt} = \{0.10, 0.20, 0.30, 0.40, 0.60, 0.70, 0.80, 0.90\}$ consist of observations +/- 0.005 around each stated share. The sample at $s_{ijt} = 0.50$ (marked in grey) only includes equal-earning couples. The sample labelled $s_{ijt} = 0.50+$ includes observations 0.0015 above $s_{ijt} = 0.50$ and the sample labelled $s_{ijt} = 0.50-$ includes observations 0.0015 below 0.50. We use italics to indicate that a spousal difference is not statistically significant at the 5 percent level. We use bold font to indicate that a mean characteristic of spouses with different earnings is not significantly different at the 5 percent level from the mean characteristic of spouses with equal earnings.

Table A.6. McCrary test for discontinuity in the distribution of the wife's share of total household labor earnings, excluding groups of couples (2011 cross section).

Sample	Cut-off	(1)		(2)		(3)		N	N at $s_{ijt} = 0.50$
		$\hat{\theta}$	p-value	$\hat{\theta}$	p-value	$\hat{\theta}$	p-value		
2011 cs	0.50001	-0.157	0.000	-0.175	0.000	-0.215	0.000	769,049	2,353
2011 cs, dropping SE ^{a)}	0.50001	-0.084	0.003	-0.083	0.016	-0.091	0.026	748,519	758
2011 cs, dropping SP ^{b)}	0.50001	-0.132	0.000	-0.147	0.000	-0.180	0.000	733,285	1,899
2011 cs, dropping SE&SP ^{c)}	0.50001	-0.049	0.108	-0.033	0.358	-0.029	0.506	712,755	304
Bandwidth		app. 0.060		app. 0.030		app. 0.015			

Notes: ^{a)}All self-employed couples are dropped from the sample. ^{b)} All non self-employed couples in which spouses work in the same plant are dropped from the sample. ^{c)} All self-employed couples and all non-self-employed couples in which spouses work in the same plant are dropped from the sample.

Figure A.1. Distribution of the share of total household labor earnings earned by the wife, 1000 bins.

(a) 1991 cross-section

(b) 2001 cross-section

(c) 2011 cross-section

Notes: The cross-sectional samples include married couples in which both spouses have positive incomes and are between 18 and 65 years of age. Each dot is the fraction of couples in a 0.001 relative income bin. The dashed vertical line indicates the relative income share = 0.50. The dashed line is the lowest smoother applied to the distribution allowing for a break at 0.50.

Figure A.2. Placebo tests (main analysis sample).

Notes: McCrary tests for discontinuity in the distribution of the wife's share of total household labor earnings at each point in the set $\{0.10001, 0.10501, 0.11001, \dots, 0.44501\} \cup \{0.55501, 0.56001, 0.56501, \dots, 0.90001\}$. We show $\hat{\theta}$ coefficients (black dots) and 95 percent confidence intervals. The dashed vertical line indicates the relative income share = 0.50.

Figure A.3. McCrary test for discontinuity in the distribution of the wife's share of total household labor earnings for different bandwidths (main analysis sample).

Notes: The cut-off is set to $s_{ijt} = 0.50001$. We show $\hat{\theta}$ coefficients (solid line) and 95 percent confidence intervals (dashed lines).

Figure A.4. McCrary test for discontinuity in the distribution of the wife's share of total household labor earnings for different bandwidths (main analysis sample after dropping equal-earning couples).

Notes: The cut-off is set to $s_{ijt} = 0.50001$. We show $\hat{\theta}$ coefficients (solid line) and 95 percent confidence intervals (dashed lines).

Figure A.5. Histogram of annual earnings of equal-earning spouses in self-employed couples (2011 cross-section)

Notes: The line shows the earnings of self-employed equal-earning spouses in the 2011 cross-section (3,190 spouses from 1,595 couples). Each dot is the fraction of spouses in a SEK 10,000 earnings bin.