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Manning Up and Womaning Down: How Husbands and Wives Report Earnings When She Earns More

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To infer social preferences regarding the relative earnings of spouses, we use measurement error in the earnings reported for married couples in the Current Population Survey. We compare the earnings reported for husbands and wives in the survey with their "true" earnings as reported by their employers to tax authorities. Compared with couples where the wife earns just less than the husband, those where she earns just more are 15.9 percentage points more likely to under-report her relative earnings. This pattern reflects the reporting behavior of both husbands and wives and is consistent with a norm that husbands out-earn their wives.

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I. Introduction

Is there (still) a norm that husbands should earn more than their wives? In the U.S. marriage market, wives are more likely to earn just less than their husbands than just more, and some economists have argued that this pattern reflects an aversion to primary-earner wives (Bertrand, Kamenica, & Pan, 2015). Others have cautioned against inferring social preferences from observed marital sorting, arguing that the scarcity of primary-earner wives is consistent with a wide range of preferences regarding the relative earnings of spouses (Binder & Lam, 2018). This paper proposes an alternative source of evidence on these preferences: measurement error in the earnings reporting for husbands and wives in a large, nationally representative survey.

The desire to present oneself in a positive light can lead survey respondents to over-report socially favored behaviors and under-report disfavored ones (Bound, Brown, & Mathiowetz, 2000). Measurement error resulting from social desirability concerns is usually viewed as a problem to be overcome. For researchers interested in the true answer to a survey question, estimates are biased by systematic deviations of responses from the truth. For researchers interested in social preferences, however, these same deviations may contain useful information. We suggest that, if there is a norm that husbands should out-earn their wives, survey respondents will tend to under-report the relative earnings of wives who out-earn their husbands.

Whether and when survey-reported earnings are biased by identity-related concerns is an open question. A growing body of research shows that the difference between survey responses and administrative records varies with socioeconomic characteristics, including income, education, race, and gender (Bollinger, Hirsch, Hokayem, & Ziliak, Forthcoming; Bound & Krueger, 1991; Gideon, Heggeness, Murray-Close, & Myers, 2017; Kim & Tamborini, 2012; Kim & Tamborini, 2014;

Meyer & Mittag, 2019; Roth & Slotwinski, 2018). In addition, wages reported by proxy respondents tend to be lower than self-reported wages. As a result, estimates of the gender wage gap are higher when more women rely on proxy respondents and lower when more men do (Lee & Lee, 2012; Reynolds & Wenger, 2012). On the other hand, one study found that the downward bias in proxy-reported earnings is concentrated among single women; proxy-reported earnings for single men and married couples appear relatively accurate (Tamborini & Kim, 2013). More broadly, a review of research on survey measurement error concluded that, while social-desirability bias is a concern with survey data generally, there is little evidence of it in survey-reported earnings in particular (Bound, Brown, & Mathiowetz, 2000).

We consider a narrow identity-related concern: whether a husband should be the primary earner in his marriage. Previous research on measurement error in survey-reported earnings has focused on broad identity categories like race and gender (Gideon, Heggeness, Murray-Close, & Myers, 2017; Tamborini & Kim, 2013; Lee & Lee, 2012; Reynolds & Wenger, 2012). Because membership in these categories is correlated with myriad other characteristics that may affect earnings reporting, including unobservable characteristics, it is hard to know whether the observed differences in measurement error across categories stem from group-specific social desirability concerns. In contrast, a discontinuous change in measurement error at the point where a wife's earnings surpass her husband's seems less likely to stem from confounding differences between couples. Building on existing work showing evidence that is consistent with the presence of a male-breadwinner norm (Bertrand, Kamenica, & Pan, 2015), we directly test this hypothesis using two different sources of income data.

We use a regression-discontinuity analysis to compare the earnings reporting of couples where the wife earns just more than her husband with that of couples where she earns just less. We measure deviations of survey-reported earnings from

true earnings by comparing the earnings reported for husbands and wives in the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) with those reported by their employers in their W-2 tax filings. We find that survey respondents are 15.9 percentage points more likely to under-report the wife's share of a couple's earnings when her true share is just over half than when it is just under half. This under-reporting of the wife's earnings share reflects adjustments in earnings reporting for both husbands and wives: when a wife earns more than her husband, survey respondents are 5.1 percentage points less likely to over-report her earnings and 5.8 percentage points more likely to over-report his. We infer from these results that it is still socially preferable for a husband to earn more than his wife.

II. Data: Matched Survey and Income-Tax Records

This paper asks whether survey respondents deflate the earnings of primary-earner wives or inflate the earnings secondary-earner husbands, relative to their true earnings. To answer this question, we need matched data on husbands' and wives' survey-reported and true earnings. We obtain data on survey-reported earnings from Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from 2003 to 2013. The CPS ASEC is a household-based survey providing nationally representative data on the income, employment, and demographic characteristics of the non-institutionalized civilian population in the U.S. The survey identifies relationships between household members, including husbands and wives, allowing us to construct a nationally representative sample of married couples.

Interviewers administer the CPS ASEC questionnaire to adult members of sampled households, either in person or by telephone. In most cases, a single household respondent completes the questionnaire for all household members. The

respondent for a married couple in the CPS ASEC may be the husband, the wife, or another adult household member. To distinguish between the husbands and wives whose earnings we study and the respondents who provide information about them, we refer to the former as "survey subjects" and the latter as "survey respondents."

We obtain data on husbands' and wives' "true" earnings from the Social Security Administration's Detailed Earnings Records (DER). The DER contains administrative records of individual income reported by employers to the Internal Revenue Service (IRS). Specifically, for each tax year from 1978 onward, it contains workers' earnings from all jobs with W-2 filings, as well as self-employment income covered by either the Federal Insurance Contributions Act (FICA) or the Self-Employment Contributions Act (SECA).

We match the survey records of CPS ASEC survey subjects to their DER earnings records using a unique individual identifier called a Protected Identification Key (PIK). Using probabilistic matching on identifiers like name, date of birth, and street address, the Census Bureau assigns PIKs to records in both survey and administrative datasets (Layne, Wagner, & Rothhaas, 2014). Specifically, the bureau attempts to match each person in a survey or administrative dataset to a person in an internal reference file that contains the PIKs. An evaluation of the bureau's matching process found that it typically assigns PIKs to between 90 and 93 percent of survey records and 98 percent of administrative records (Mulrow, Mushtaq, Pramanik, & Fontes, 2011). We match each survey record with a PIK in our CPS ASEC sample of husbands and wives to any DER records that share the same PIK.

We construct our survey- and administrative-earnings measures to maximize their comparability. For a given survey subject in a given year, our survey-earnings measure is the total wage and salary income that the household respondent reported that the survey subject earned during that year. Our administrative-earnings

measure for the same survey subject in the same year is his or her total wage and salary income (the sum of wages, tips, and deferred compensation) from all jobs with W-2 filings.[1] We convert all dollar amounts to 2010 dollars with the Consumer Price Index research series using current methods (CPI-U-RS).

We treat our administrative-earnings measure as a measure of husbands' and wives' true earnings, even though tax records are not perfectly accurate and survey records may be more accurate than tax records in some cases. The key assumption behind this approach is that measurement error in husbands' and wives' tax records is unrelated to their social preferences regarding primary-earner wives. Given that employers submit W-2 forms for their employees directly to the IRS, it would be difficult for workers to distort the earnings recorded for them in the administrative data. In contrast, CPS ASEC respondents may feel some pressure to give socially desirable answers when interacting with an interviewer and could easily distort the earnings recorded for workers in the survey data.

We construct our analytic sample from the pooled 2003–13 CPS ASEC samples. The sample includes observations of different-sex married couples whose marriages meet the following criteria in the calendar year before their interview: First, both spouses are between 25 and 54 years old. Second, both spouses are employed. Third, because our earnings measures exclude self-employment income, both spouses have their primary job (the job they held longest during the survey reference year) with a private-sector or government employer. This last requirement excludes couples where one or both spouses are primarily self-employed. We refer to the observations that meet these substantive sample-selection criteria as the

[1] Because the reference year for the CPS ASEC income questions is the calendar year before the survey, we match CPS ASEC earnings reports from each survey year with DER earnings records from the preceding calendar/tax year (for example, CPS ASEC earnings reports from survey year 2013, which describe earnings from calendar/tax year 2012, are matched with DER earnings records from calendar/tax year 2012). Because the DER does not capture self-employment income that is not taxable under FICA or SECA, we exclude self-employment income from both earnings measures.

baseline sample. The baseline sample contains approximately 180,000 observations of approximately 110,000 couples.[2]

We derive the analytic sample from the baseline sample by excluding observations with imputed or inconsistent earnings data. To start, we exclude observations where a working spouse has imputed survey earnings (28.6 percent of the baseline sample).[3] Next, we exclude observations where a spouse lacks the unique identifier used to link survey records to administrative records (the PIK) (8.3 percent). We also exclude observations of couples where a spouse has a unique identifier but lacks a linked tax record, because we cannot determine the true earnings of these spouses (4.6 percent). Finally, to focus on earnings misreporting that might plausibly be attributed to social-desirability concerns, we exclude observations where a spouse has a gap of more than 100 percent between his or her survey earnings and his or her tax earnings (4.9 percent). After applying these additional sample-selection criteria, the analytic sample includes 53.5 percent of the observations in the baseline sample, with approximately 96,000 observations of approximately 74,000 couples.

With the CPS ASEC person-level sampling weights, which are identical for husbands and wives and can thus be applied to couples, the baseline sample is approximately representative of dual-earner married couples in the U.S. between 2003 and 2013 with both spouses between 25 and 54 years old and not primarily self-employed in the previous calendar year. Our analytic sample, however, excludes 46.5 percent of the observations in the baseline sample. To improve the

[2] The CPS ASEC is a short-panel survey, and some couples appear in the data twice. Throughout the paper, reported sample sizes are rounded according to the Census Bureau's disclosure-avoidance requirements.

[3] The Census Bureau imputes missing earnings in the CPS-ASEC using a hot-deck procedure that assigns each person without reported earnings the earnings of a donor with similar characteristics. Including observations with hot-decked earnings in wage regressions has been shown to cause match bias, a form of attenuation bias, in the coefficients on variables not used to select donors (Bollinger & Hirsch, 2006; Hirsch & Schumacher, 2004). Since the earnings of a person's spouse relative to the person's own earnings are not used to select donors in the Census Bureau's hot-deck procedure, including observations with imputed earnings in our analysis sample would increase the probability that we fail to detect an effect of higher-earning wives on earnings reporting, should such an effect exist.

representativeness of our estimates, we adjust the CPS ASEC sampling weights for the probability that an observation is in the analytic sample, conditional on being in the baseline sample. Specifically, we estimate a logit model predicting the probability that an observation in the baseline sample is also in the analytic sample.[4] We multiply the CPS ASEC sampling weight for each couple by the inverse of their predicted probability of being in the analytic sample.

III. Empirical Approach: Survey Measurement Error as Evidence of Social Norms

We divide the couples in our analytic sample into two groups based on their administrative earnings: "traditional" couples, where the wife earns no more than the husband, and "non-traditional" couples, where the wife earns strictly more than the husband.[5] Approximately one quarter (26 percent) of the couples in our analytic sample are non-traditional. This figure is consistent with the results of previous research on couples with primary-earner wives (Winkler, McBride, & Andrews, 2005).

Our empirical strategy is to compare the error in survey-reported earnings relative to tax records for traditional versus non-traditional couples. We hypothesize the existence of a norm that husbands should earn more than their wives and conceptualize social discomfort with violating this norm as a treatment experienced by non-traditional couples. Consistent with widespread evidence that

[4] The predictor variables are demographic characteristics (age, race, citizenship status, and educational attainment) of the husband and the wife, whether each spouse worked in the last calendar year, the couple's region of residence, whether the couple lived in a metropolitan area, and the year of the couple's CPS-ASEC interview.

[5] It is not obvious whether couples with equal earnings are norm-conforming or norm-violating—that is, it is not obvious whether the norm in question is "a husband should earn more than his wife" or "a wife should not earn more than her husband." In our data, equal-earning couples are less likely to under-report the wife's earnings share than traditional couples, who (as we will see) are less likely to under-report it than non-traditional couples. Since equal-earning couples behave more like traditional than non-traditional couples, we group them with traditional ones in our analysis. This distinction is not empirically important: classifying the fewer than 150 equal-earning couples in the administrative data as non-traditional does not alter our results. For ease of exposition, we refer throughout the paper to a "husband-earns-more" norm rather than a "wife-does-not-earn-more" norm.

survey respondents under-report behaviors perceived as socially undesirable, we ask whether non-traditional couples are more likely than traditional couples to under-report the wife's earnings share. We interpret evidence of differential under-reporting as evidence of a treatment effect and thus of an active husband-earns-more norm.

Our main analysis uses a regression-discontinuity approach to compare the earnings reporting of couples just below and just above the equal-earnings threshold. In the presence of a husband-earns-more norm, the treatment—the social discomfort from a primary-earner wife—switches on when a couple crosses the threshold. We thus expect couples where the wife earns slightly more than her husband to behave differently than couples where the wife earns slightly less. In subsequent analyses, we compare the earnings reporting of traditional and non-traditional couples more broadly.

IV. Main Results: Couples with Primary-Earner Wives Are More Likely to Under-Report the Wife's Earnings Share

Descriptive Results

Before turning to regression analysis, we visually examine the relationship between the wife's earnings share in the administrative data and the couple's tendency to under-report the wife's earnings share in the survey. We define the wife's earnings share as the proportion of a couple's total earnings attributable to the wife:

$$WifeShare_c^d = \frac{WifeEarnings_c^d}{WifeEarnings_c^d + HusbandEarnings_c^d}. \quad (1)$$

The subscript c indexes couples. The superscript d distinguishes survey earnings measures ($d = S$) from administrative earnings measures ($d = A$). The variables

$WifeEarnings_c^d$ and $HusbandEarnings_c^d$ are the wife's earnings and the husband's earnings, respectively. We consider the wife's earnings share to be under-reported if it is lower in the survey data than the administrative data: $WifeShare_c^S < WifeShare_c^A$.

We divide the couples in our analytic sample into 50 bins of width 0.02 based on their values of $WifeShare_c^A$. Figure 1 shows the proportion of couples in each bin that under-report the wife's earnings share in the survey data relative to the administrative data.[6] The figure shows a clear jump in the probability of under-reporting at $WifeShare_c^A = 0.5$. Couples just to the right of the equal-earnings threshold are about 16 percentage points more likely to under-report the wife's earnings share than couples just to the left.

Regression Results

We estimate the impact of crossing the equal-earnings threshold on the earnings reporting of couples near the threshold using RD regressions of the form

$$Y_c = \alpha + \beta Nontrad_c^A + f(Nontrad_c^A, WifeShareC_c^A) + \gamma Z_c + \epsilon_c. \quad (2)$$

$WifeShareC_c^A$ is the wife's earnings share in the administrative data, centered on 0.5. Y_c is an indicator for under-reporting the wife's earnings share in the survey data relative to the administrative data. $Nontrad_c^A$ is an indicator for the wife earning strictly more than the husband in the administrative data. $f(\cdot)$ is a polynomial in $WifeShareC_c^A$ and possibly an interaction of this polynomial with

[6] Appendix Figure A1 assesses the possibility that the jump in under-reporting at the equal-earnings threshold in Figure 1 corresponds to a jump in some other characteristic of couples at the threshold. The figure shows the mean value in each bin of each of several characteristics that may be correlated with the wife's earnings share and with the measurement error in the couple's earnings reports: the husband and wife's earnings, age, and indicators for having a college degree. None of these characteristics appear to change discontinuously at the equal-earnings threshold.

$Nontrad_c^A$, chosen to capture the underlying relationship between the outcome Y_c and $WifeShareC_c^A$ (Lee & Lemieux, 2010; Jacob, Zhu, Somers, & Bloom, 2012).

Z_c is a vector of couple characteristics. For both the husband and the wife, Z_c contains age in five-year bins, race (white, black, Hispanic, Asian, or another race), educational attainment (less than high school, high school degree, some college, college degree, or more than college), and a cubic polynomial in the natural log of administrative earnings. For the couple, Z_c contains the members' standard census geography region (Northeast, Midwest, South, or West), residence (i.e., whether they live in a metropolitan area), the natural log of their total administrative earnings, the identity of the couple's CPS ASEC household respondent (husband, wife, or someone else), and the year of its CPS ASEC interview.

We estimate equation (2) on the sample of dual-earner couples where each spouse earns at least 10 percent of the couple's earnings in the administrative data. We prefer this trimmed sample to the full dual-earner sample for two reasons. First, the data are relatively sparse at the upper end of the $WifeShareC_c^A$ range. Second, excluding couples with values of $WifeShareC_c^A$ that are far from the equal-earnings threshold makes it less likely that a misspecification of the underlying relationship between $WifeShareC_c^A$ and Y_c would bias our estimate of the treatment effect near the threshold.[7] Because some couples in the sample are observed twice, we cluster the standard errors by couple.

The coefficient of primary interest is β, which gives the effect of crossing the equal-earnings threshold on the probability that the wife's earnings share is under-reported. The estimate of β is not sensitive to our choice of $f(\cdot)$ (see columns 1–4 of Table 1) and does not change appreciably when we add the control variables in Z_c (columns 5–6). Our preferred specification includes the control variables, a

[7] An alternative approach would be to estimate a local linear regression. Given that the estimate of β from equation (2) is not sensitive to our choice of functional form (Table 1), we are comfortable proceeding with parametric estimation.

quadratic function of the wife's earnings share, and an interaction of this function with the non-traditional indicator (column 6).[8] The estimate of β from this specification suggests that compared with couples just below the equal-earnings threshold, couples just above the threshold are 15.9 percentage points more likely to under-report the wife's earnings share.

V. Additional Results: The Earnings Reporting of Wives versus Husbands

Whose Earnings Are Misreported?

We have seen that CPS ASEC survey respondents are more likely to under-report the wife's share of a couple's earnings when the wife out-earns her husband. Since the wife's earnings share is a function of just two variables, the husband's earnings and those of the wife, this result suggests that one or both of the following is true: (1) respondents are less likely to over-report the earnings of non-traditional wives than those of traditional wives, and/or (2) respondents are more likely to over-report the earnings of non-traditional husbands than those of traditional husbands.[9]

Figure 2 shows the individual-level earnings reporting of the husbands and wives whose joint behavior gives rise to couple-level reporting shown in Figure 1. Specifically, Figure 2 shows the proportion of wives and the proportion of husbands

[8] To find the simplest specification that captures the relationship between the wife's earnings share and the probability of under-reporting apart from the jump at the equal-earnings threshold, columns 1–4 of Table 1 augment equation (2) with a set of indicators for 0.02-width bins of the wife's earnings share. These bin indicators provide a flexible representation of the underlying relationship, as shown in Figure 1. When we cannot reject that the coefficients on the bin indicators are jointly equal to zero in a given specification, as occurs with the quadratic specification in column 4 of Table 1, we conclude that the specification (minus the bin indicators) adequately captures the relationship (Lee & Lemieux, 2010; Jacob, Zhu, Somers, & Bloom, 2012).

[9] More precisely, it must be true that the probability of $\frac{WifeEarnings_c^S}{WifeEarnings_c^A} < \frac{HusbandEarnings_c^S}{HusbandEarnings_c^A}$ is greater for non-traditional couples than traditional couples. It is thus technically possible that the earnings of non-traditional wives (husbands) are more (less) likely to be over-reported in absolute terms but less (more) likely to be over-reported in relative terms. This scenario turns out to be empirically unsupported.

in each $WifeShare_c^A$ bin whose earnings are over-reported in the survey data relative to the administrative data. Consistent with our finding that couples to the left of the equal-earnings threshold are more likely than couples to the right to under-report the wife's earnings share, we observe a rise around the threshold in the probability that the husband's earnings are over-reported and a corresponding fall in the probability that the wife's earnings are over-reported. Away from the threshold, among couples in the trimmed analytic sample (the sample with $0.1 \leq WifeShare_c^A \leq 0.9$), the probability of over-reporting is relatively flat.

The patterns in Figure 2 suggest that earnings reports for both husbands and wives contribute to the under-reporting of non-traditional wives' earnings relative to their husbands' earnings. However, couples on opposite sides of the equal-earnings threshold differ along several dimensions that may influence measurement error in survey-earnings reporting, including the absolute income level of both husbands and wives (Figure A1).[10] To compare the reporting behavior of traditional and non-traditional spouses, net of observable differences in demographic characteristics and income levels, we stratify the trimmed analytic sample by sex and estimate sex-specific regressions of the form

$$Y_i = \alpha + \beta Nontrad_i^A + \delta WifeShareC_i^A + \gamma Z_i + \epsilon_i. \qquad (3)$$

The subscript *i* indexes individual husbands or wives, and the other variables are as defined in equation (2). The vector Z_i in equation (3) includes the full set of income and demographic control variables from equation (2). We include $WifeShareC_i^A$ to allow for the possibility that over-reporting generally trends upward or downward with increases in the wife's earnings share. Estimates from models that

[10] An earlier version of this work presents the mean value of each control variable for both traditional and non-traditional couples (Murray-Close & Heggeness, 2018).

omit or control more flexibly for $WifeShareC_i^A$ are available in Appendix Table A1.

We consider two related outcomes: first, whether the husband or wife's earnings are over-reported in the survey data relative to the administrative data; and second, the difference between the husband's or wife's survey and administrative earnings. In the first case, we estimate linear probability models where Y_i is an indicator for over-reporting. In the second, we estimate OLS models where Y_i is the natural log of the husband's or wife's survey earnings. Because Z_i includes the natural log of the person's administrative earnings, the estimates of β from this second set of models can be interpreted as the effect of non-traditional status on the difference between the person's survey and administrative earnings, conditional on the other covariates.

Table 2 shows estimates of β from equation (3). Columns 1 and 2 show estimates of the effect of non-traditional status on the probability that survey earnings are over-reported relative to administrative earnings. These estimates show that the survey earnings of non-traditional wives are 5.1 percentage points less likely to be over-reported than those of traditional wives, while the survey earnings of non-traditional husbands are 5.8 percentage points more likely to be over-reported than those of traditional husbands.

Columns 3 and 4 show estimates of the effect of non-traditional status on the difference between survey and administrative earnings. These estimates show that the survey earnings of non-traditional wives are 1.1 percent lower than those of traditional wives with the same administrative earnings, while the survey earnings of non-traditional husbands are 1.1 percent higher than those of traditional husbands with the same administrative earnings. Taken together, the estimates in Table 2 are consistent with the idea that survey respondents misreport or minimize violations of a husband-earns-more norm.

We are interested in the gap between survey and administrative earnings primarily as a measure of social norms rather than as a measure of data quality. For users of survey data, however, it should be reassuring that the effect of non-traditional status is small. A 1-percent increase in the survey earnings of a minority of husbands seems unlikely to cause large distortions in estimates of key population parameters like average earnings or the gender wage gap. The same is true of a 1-percent decrease in the survey earnings of their wives. Thus, it appears that measurement error in the CPS ASEC allows us to learn about gendered norms in marriage with minimal harm to other research using the same earnings data.

Does It Matter Who Answers the Survey?

As noted above, the earnings of each couple in the CPS ASEC survey are reported by a single household respondent. The household respondent is an individual 15 years of age or over who either owns or rents the housing unit.[11] The respondent may be the husband, the wife, or another adult who lives with them. The estimates presented up to this point controlled for the identity of the household respondent, but they assumed that husbands and wives react in the same way to non-traditional marital earnings. There are at least two reasons to think that this assumption might be wrong.

First, men may be more invested than women in traditional gender roles. Pooled data from the 2002–2012 samples of the General Social Survey show that among men and women between the ages of 25 and 54 during the period covered by our study, 26 percent of women but just 15 percent of men strongly disagreed that "it is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family."[12]

[11] For more information, see https://www.census.gov/programs-surveys/cps/technical-documentation/methodology.html.

[12] Authors' calculations based on weighted data, $N = 4{,}416$, p-value from Wald test of equal percentages < 0.001.

Second, men and women may differ in their knowledge of each other's earnings. Previous studies with data from the Current Population Survey and the Panel Study of Income Dynamics found that proxy-reported wages were lower on average than self-reported wages and that the difference was larger for men than for women (Reynolds & Wenger, 2012; Lee & Lee, 2012). These patterns suggest that the gendered effect of non-traditional status on earnings reporting may vary with the identity of the household survey respondent.

To determine whether husband survey respondents react differently than wife survey respondents when wives out-earn their husbands, we stratify the trimmed analytic sample by the identity of the earner and the identity of the survey respondent. We drop observations where the survey respondent is neither the husband nor the wife. We then estimate equation (3) for each of the following groups: wife earners described by wife survey respondents, wife earners described by husband survey respondents, husband earners described by wife survey respondents, and husband earners described by husband survey respondents.

Table 3 shows the estimates of β from these regressions. Both husband survey respondents and wife survey respondents appear to contribute to the pattern observed in the preceding analysis: both are more likely to over-report the earnings of non-traditional husbands than those of traditional husbands and less likely to over-report the earnings of non-traditional wives than those of traditional wives.

The estimates in Table 3 are not entirely consistent with the prediction that husband survey respondents react more strongly than wife survey respondents to violations of the husband-earns-more norm. As expected, the (negative) effect of non-traditional status on the probability of over-reporting the wife's earnings is stronger among husband survey respondents than wife survey respondents. Contrary to our expectations, however, the (positive) effect of non-traditional status on the probability of over-reporting the husband's earnings is stronger among wife survey respondents than husband survey respondents. Furthermore, while the effect

of non-traditional status on the difference between survey and administrative earnings is statistically significant when both husbands and wives report their spouse's earnings, it is not statistically significant when either husbands or wives report their own earnings.

We can only speculate about why non-traditional husband and wife survey respondents distort the earnings of their spouses more than their own earnings. One possible reason is that social norms interact with knowledge. When a wife out-earns her husband, both the husband and the wife may be uncomfortable—or believe that an interviewer will be uncomfortable—with their violation of the husband-earns-more norm. Accordingly, they may be tempted to inflate their reports of the husband's earnings and deflate their reports of the wife's. At the same time, both the husband and the wife may wish to provide accurate responses to the survey. To the extent that the desire for norm conformity conflicts with the desire for accurate reporting, accurate reporting may win out more often when respondents are fairly certain of the answer to a survey question (as they are likely to be when reporting their own earnings) than when they are less certain (as they may be when reporting their spouse's earnings).

VI. Conclusions

Annual earnings are an essential measure of economic well-being in society; however, our empirical results suggest that gender norms and social-desirability concerns bias survey-reported wage and salary earnings. When married couples violate the norm that husbands out-earn their wives, survey respondents reporting the couples' earnings appear to minimize the violation by inflating the earnings of the secondary-earner husbands and deflating the earnings of the primary-earner wives. This pattern persists when controlling for an array of demographic characteristics and the "true" (administrative) earnings of the spouses. It persists

regardless of whether the survey respondent for the couple is the husband or the wife. One lesson from these findings is that survey reports of even seemingly objective, clearly measurable economic outcomes suffer from measurement error due not just to gaps in respondents' knowledge of the outcome but also to gaps between their beliefs or values and the circumstances they are asked to describe.

Our findings show that the impact of gender on survey measurement cannot be reduced to the gender of survey subjects alone. Survey responses about a given survey subject may depend not just on the characteristics of the subject him- or herself but also on the characteristics of other household members and societal and cultural norms. Our results suggest that survey respondents (consciously or unconsciously) compare the earnings of husbands with the earnings of wives and that they report the earnings of both spouses differently when the comparison favors the wife. In this way, the reported earnings of husbands depend on their own earnings relative to the earnings of their wives, and vice versa.

We provide a clear example where a social norm that economists care about directly influences the data that they use to study it. Specifically, we provide evidence that social-desirability bias and gendered norms influence self-reported earnings data when wives earn more. While we do not find large differences on the intensive margin, having a grasp on the role these distortions may play in our general understanding of economic phenomena via their influence on the household-survey data used to produce economic statistics, research, and evaluation is important and should continue to be studied.

This could potentially have profound effects on the methods for conducting empirical studies. As economic researchers, we should be concerned with not only *if* the variable exists in the data but *how* the data is reported, *by whom*, and *for what purpose*. As our field advances into the 21st century, we should embrace the plethora of big data at our fingertips to help us uncover some of these once-unknown artifacts of the data that we rely on to tell us economic truths about the

world we live in. This is just as true for gender economics as it is for other major economic fields.

Figures and Tables

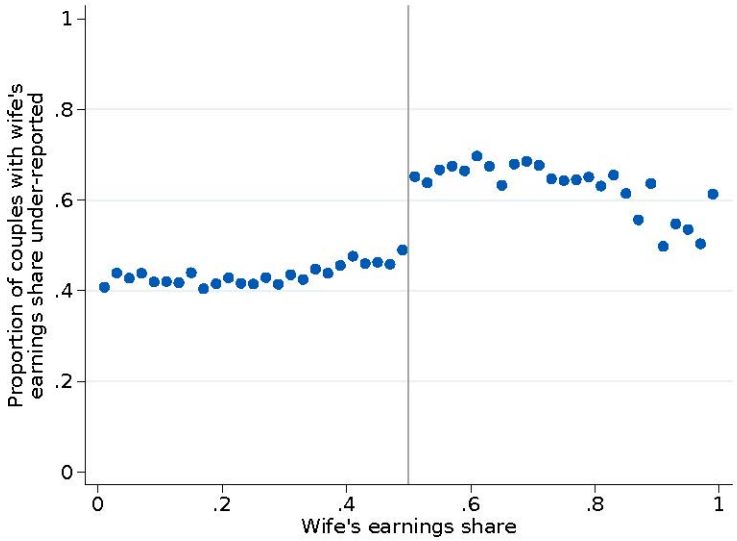

FIGURE 1. RELATIONSHIP BETWEEN WIFE'S EARNINGS SHARE AND PROBABILITY THAT WIFE'S EARNINGS SHARE IS UNDER-REPORTED

Notes: Wife's earnings share = wife's earnings / (wife's earnings + husband's earnings). The wife's earnings share is under-reported in the survey data if it is lower in the survey data than the administrative data. Each plotted point represents the proportion of couples with the wife's earnings share under-reported in a bin of width 0.02 centered on the value of the wife's earnings share given on the horizontal axis. The sample is dual-earner couples, where each spouse is between 25 and 54 years old and not self-employed. It contains approximately 96,000 observations of approximately 74,000 couples. The Disclosure Review Board release number is DRB-B0065-CED-20190710.

Source: Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from survey years 2003 to 2013 linked to Social Security Detailed Earning Records (DER) from tax years 2002 to 2012.

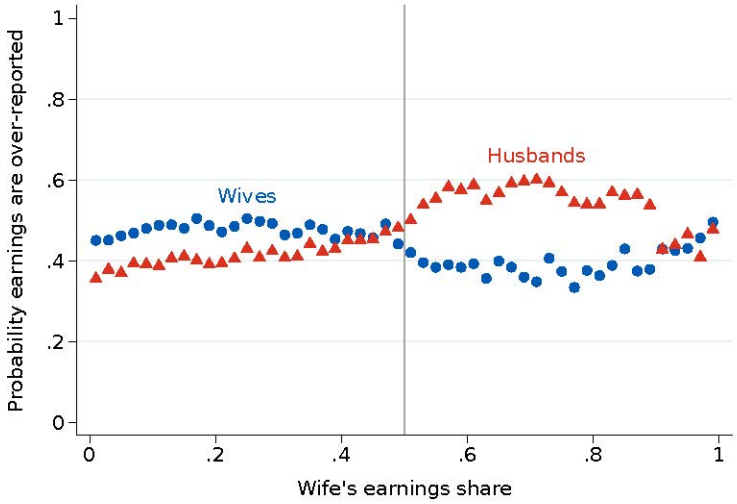

FIGURE 2. RELATIONSHIP BETWEEN WIFE'S EARNINGS SHARE AND PROBABILITY THAT HUSBAND'S AND WIFE'S EARNINGS ARE OVER-REPORTED

Notes: Wife's earnings share = wife's earnings / (wife's earnings + husband's earnings). Earnings are over-reported if they are higher in the survey data than the administrative data. Each plotted point represents the proportion of husbands or wives whose earnings are over-reported in a bin of width 0.02 centered on the value of the wife's earnings share given on the horizontal axis. The sample is dual-earner couples, where each spouse is between 25 and 54 years old and not self-employed. It contains approximately 96,000 observations of approximately 74,000 couples. The Disclosure Review Board release number is DRB-B0065-CED-20190710.

Source: Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from survey years 2003 to 2013 linked to Social Security Detailed Earning Records (DER) from tax years 2002 to 2012.

TABLE 1. REGRESSION ESTIMATES: EFFECT OF COUPLE'S NON-TRADITIONAL EARNINGS ON PROBABILITY THAT WIFE'S EARNINGS SHARE IS UNDER-REPORTED

	(1)	(2)	(3)	(4)	(5)	(6)
Non-traditional indicator	0.161	0.162	0.164	0.158	0.157	0.159
	(0.015)	(0.015)	(0.016)	(0.018)	(0.011)	(0.012)
Additional regressors						
Wife's earnings share bin indicators	Yes	Yes	Yes	Yes	No	No
Wife's earnings share - 0.5	Yes	Yes	Yes	Yes	Yes	Yes
(Wife's earnings share - 0.5) x Non-traditional	No	Yes	No	Yes	Yes	Yes
(Wife's earnings share - 0.5)^2	No	No	Yes	Yes	Yes	Yes
(Wife's earnings share - 0.5)^2 x Non-traditional	No	No	No	Yes	Yes	Yes
Control variables	No	No	No	No	No	Yes
Observations (couple-years)	88,500	88,500	88,500	88,500	88,500	88,500
p-value (bin coefficients = 0)	0.000	0.019	0.006	0.468	--	--

Note: The table shows estimates of the coefficient β from equation (2). A couple has non-traditional earnings if the wife earns strictly more than the husband in the administrative data. The wife's earnings share is computed from the administrative data as follows: wife's earnings share = wife's earnings / (wife's earnings + husband's earnings). The wife's earnings share is under-reported if it is lower in the survey data than the administrative data. The bin indicators correspond to 38 0.02-width bins based on the wife's earnings share (10 of 50 possible bins are excluded because they comprise couples who are excluded from the estimation sample, and an additional bin is excluded on each side of the equal-earnings threshold to avoid collinearity). The control variables are the husband's and wife's age, race, and educational attainment; cubic functions of the husband's and wife's log-earnings; the couple's log-earnings; the couple's region of residence; its residential status in a metropolitan or non-metropolitan area; the identity of its CPS ASEC household respondent; and the year of its CPS ASEC interview. The sample is dual-earner couples, where each spouse is between 25 and 54 years old, not primarily self-employed, and earns at least 10 percent of the couple's total earnings. The *p*-value is from a test of the hypothesis that the coefficients on bin indicators are jointly equal to zero. The Disclosure Review Board release number is DRB-B0065-CED-20190710.

Source: Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from survey years 2003 to 2013 linked to Social Security Detailed Earning Records (DER) from tax years 2002 to 2012.

TABLE 2. REGRESSION ESTIMATES: EFFECT OF COUPLE'S NON-TRADITIONAL EARNINGS ON EARNINGS REPORTING OF HUSBANDS AND WIVES

	Outcome: Indicator for survey earnings > administrative earnings		Outcome: Natural log of survey earnings	
	Wives	Husbands	Wives	Husbands
Non-traditional indicator	-0.051	0.058	-0.011	0.011
	(0.009)	(0.009)	(0.004)	(0.004)
Observations (couple-years)	88,500	88,500	88,500	88,500

Note: The table shows estimates of the coefficient β from equation (3). A couple has non-traditional earnings if the wife earns strictly more than the husband in the administrative data. All models control for the husband's and wife's age, race, and educational attainment; cubic functions of the husband's and wife's log-earnings; the couple's log-earnings; the wife's earnings share; the couple's region of residence; its residential status in a metropolitan or non-metropolitan area; the identity of its CPS ASEC household respondent; and the year of its CPS ASEC interview. The sample is dual-earner couples, where each spouse is between 25 and 54 years old, not primarily self-employed, and earns at least 10 percent of the couple's total earnings. Standard errors are clustered by couple. The Disclosure Review Board release number is DRB-B0065-CED-20190710.

Source: Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from survey years 2003 to 2013 linked to Social Security Detailed Earning Records (DER) from tax years 2002 to 2012.

TABLE 3. REGRESSION ESTIMATES: EFFECT OF COUPLE'S NON-TRADITIONAL EARNINGS ON EARNINGS REPORTING OF HUSBANDS AND WIVES, BY IDENTITY OF SURVEY RESPONDENT

	Wife earners		Husband earners	
	Wife survey respondents	Husband survey respondents	Wife survey respondents	Husband survey respondents
Outcome: indicator for survey earnings > administrative earnings				
Non-traditional indicator	-0.028	-0.078	0.074	0.044
	(0.009)	(0.010)	(0.009)	(0.010)
Outcome: natural log of survey earnings				
Non-traditional indicator	-0.008	-0.015	0.017	0.002
	(0.005)	(0.006)	(0.005)	(0.006)
Observations (couple-years)	49,000	38,000	49,000	38,000

Note: The table shows estimates of the coefficient β from equation (3). A couple has non-traditional earnings if the wife earns strictly more than the husband in the administrative data. All models control for the husband's and wife's age, race, and educational attainment; cubic functions of the husband's and wife's log-earnings; the couple's log-earnings; the wife's earnings share; the couple's region of residence; its residential status in a metropolitan or non-metropolitan area; and the year of its CPS ASEC interview. The sample is dual-earner couples, where each spouse is between 25 and 54 years old, not primarily self-employed, and earns at least 10 percent of the couple's total earnings. Standard errors are clustered by couple. The Disclosure Review Board release number is DRB-B0065-CED-20190710.

Source: Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from survey years 2003 to 2013 linked to Social Security Detailed Earning Records (DER) from tax years 2002 to 2012.

Appendix

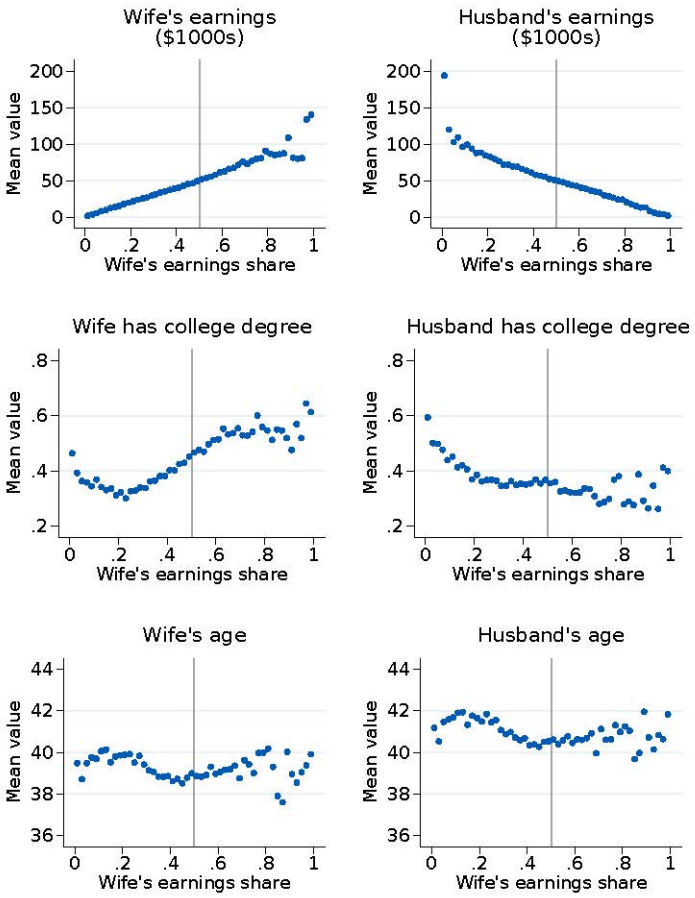

FIGURE A1. RELATIONSHIP BETWEEN WIFE'S EARNINGS SHARE AND OTHER COUPLE CHARACTERISTICS

Notes: The wife's earnings share is computed from the administrative data as follows: wife's earnings share = wife's earnings / (wife's earnings + husband's earnings). Each plotted point represents the mean value of the specified couple characteristic in a bin of width 0.02 centered on the value of the wife's earnings share given on the horizontal axis. The sample is dual-earner couples, where each spouse is between 25 and 54 years old and not self-employed. It contains approximately 96,000 of approximately 74,000 couples. The Disclosure Review Board release number is DRB-B0065-CED-20190710.

Source: Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from survey years 2003 to 2013 linked to Social Security Detailed Earning Records (DER) from tax years 2002 to 2012.

TABLE A1. REGRESSION ESTIMATES: EFFECT OF COUPLE'S NON-TRADITIONAL EARNINGS ON EARNINGS REPORTING OF HUSBANDS AND WIVES, VARYING CONTROLS FOR WIFE'S EARNINGS SHARE

	(1)	(2)	(3)	(4)
Wives				
Outcome: indicator for survey earnings > administrative earnings				
Non-traditional indicator	-0.056	-0.051	-0.049	-0.046
	(0.007)	(0.009)	(0.009)	(0.010)
Outcome: natural log of survey earnings				
Non-traditional indicator	-0.014	-0.011	-0.011	-0.010
	(0.004)	(0.004)	(0.004)	(0.005)
Husbands				
Outcome: indicator for survey earnings > administrative earnings				
Non-traditional indicator, husbands	0.069	0.058	0.055	0.040
Outcome: natural log of survey earnings	(0.007)	(0.009)	(0.009)	(0.010)
Non-traditional indicator	0.023	0.011	0.009	0.003
	(0.003)	(0.004)	(0.004)	(0.005)
Additional regressors				
Wife's earnings share – 0.5	No	Yes	Yes	Yes
(Wife's earnings share – 0.5)^2	No	No	Yes	Yes
(Wife's earnings share – 0.5)^3	No	No	No	Yes
Control variables	Yes	Yes	Yes	Yes
Observations (couple-years)	88,500	88,500	88,500	88,500

Note: The table shows estimates of the coefficient β from equation (3) (column 2) and from analogous models omitting the wife's earning share (column 1) and adding quadratic and cubic functions of the wife's earnings share (columns 3 and 4). A couple has non-traditional earnings if the wife earns strictly more than the husband in the administrative data. The wife's earnings share is computed from the administrative data as follows: wife's earnings share = wife's earnings / (wife's earnings + husband's earnings). The control variables are the husband's and wife's age, race, and educational attainment; cubic functions of the husband's and wife's log-earnings; the couple's log-earnings; the couple's region of residence; its residential status in a metropolitan or non-metropolitan area; the identity of its CPS ASEC household respondent; and the year of its CPS ASEC interview. The sample is dual-earner couples, where each spouse is between 25 and 54 years old, not primarily self-employed, and earns at least 10 percent of the couple's total earnings. Standard errors are clustered by couple. The Disclosure Review Board release number is DRB-B0065-CED-20190710.

Source: Current Population Survey Annual Social and Economic Supplements (CPS ASEC) from survey years 2003 to 2013 linked to Social Security Detailed Earning Records (DER) from tax years 2002 to 2012.

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