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ABSTRACT

Does Female Breadwinning Make Partnerships Less Healthy or Less Stable?¹

Economists increasingly accept that social norms have powerful effects on human behavior and outcomes. In recent history, one norm widely adhered to in most developed nations has been for men to be the primary breadwinner within mixed-gender households. As women have entered the labor market in greater numbers and gender wage differentials have declined, female breadwinning has become more common in such nations. Has this been accompanied by worse outcomes in non-monetary realms, due to the violation of the male breadwinning norm? This would be evidence that norms act to slow the pace of social evolution. We use household data from two countries to examine whether female breadwinning makes partnerships less healthy or less stable. US data from the late twentieth century shows that female breadwinning is associated with significantly more partnership problems for older couples in cross-sections and for younger couples in fixed-effects specifications. Examining more recent US and Australian data, we find that female breadwinning is associated with a modestly higher dissolution risk and a fall in some measures of reported relationship quality, but mainly for young people in cohabiting partnerships and men in less educated partnerships. We interpret these results to reflect changing social norms, plus relationship market dynamics arising from differences in the ease of access to superior partnership alternatives for women who out-earn their partners. While gender-specific breadwinning norms may be fading with time, economic realities and marriage market dynamics continue to be drivers of behavior and outcomes.

JEL Classification: J12, J16, I31, Z13

Keywords: martial dissolution, happiness, family structure, economics of gender, social norms, earnings differentials

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I. Introduction

Examining histograms of women's share of the earned income in mixed-gender US households, Bertrand, Kamenica and Pan (2015) – hereafter BKP – document a sharp decline in density beyond the 50% mark. They follow this observation with econometric evidence of a negative association between female breadwinning and (a) marital satisfaction and (b) partnership stability. They argue that these results are consistent with US residents' adherence to a norm proscribing that a wife should not earn more than her husband. The implication is that realizing female empowerment in practical terms within the household may create stress – possibly even for women themselves – and that this stress may act as an obstacle to social change.

Yet much has changed in the last fifty years. In 1967, only 46% of married women were employed and they contributed only about 26% of family income. In 2015 the comparable figures were 61% and 37%. Gender wage differences also declined significantly during this time period, with full-time, year round female workers' wages hovering around 60% of comparable male wages in 1967 and 80% in 2015. Consequently, among increasingly prevalent dual-earner households, women earned more than their partners 17.8% of the time in 1987 and 29.3% of the time in 2015. Social norms related to gender, power, and money are adapting to reflect these changes. While almost 50% of respondents to the General Social Survey reported that they thought it was better for men to earn the money and women to keep house in 1986, in 2016 only 27% of adults held that opinion (Allred 2018). As social norms can have both contemporaneous and lasting effects (see Charles et al. 2018), it is of interest to examine the extent to which adherence to traditional norms continues to affect behavior and outcomes within families, despite these changes in outward economic realities.

In this paper, we replicate BKP's analysis using their original data and then using data from the 21st century – specifically, the National Longitudinal Survey of Youth 1997 (NLSY 1997) and the Household, Income and Labour Dynamics in Australia (HILDA) data, drawn beginning in 2001.² We show that BKP's original cross-sectional results using the National Survey of Families and Households (NSFH) are driven by older partnerships, and that their fixed-effects results using the Panel Study of Income Dynamics (PSID) are driven by younger partnerships. With our more recent data we produce raw histograms similar, though less stark, than those shown in BKP, but our econometric results do not mimic their findings either for the US or for Australia. We find a much weaker link between female breadwinning and both marital dissolution and marital quality, with some evidence that female breadwinning is associated with lower satisfaction and higher dissolution chances for young cohabiting couples. Cohabiting men in Australia also report better relationship quality in the cross-section when their wives out-earn them, but more problems in the fixed-effects models identified from transitions into female breadwinning, while women in young cohabiting partnerships in Australia report poorer relationship quality in both cross-sectional and fixed effects specifications. Our results taken together are consistent with a combination of two main forces: (1) a decline over time in the perceived relevance of a male breadwinning norm, and (2) stronger relevance of female breadwinning to relationship quality and partnership stability in situations where the woman has greater access to alternative partners with higher expected incomes.

² Another recent study applying the BKP method to other data is Zinov'yeva and Tverdostup (2018), who conclude using Finnish data that the post-50% drop-off in female income share is mainly a reflection of income convergence for co-working spouses.

II. Replication of BKP

We begin by replicating BKP's results on the impact of female breadwinning on marital dissolution and satisfaction. We run identical models on their original samples and on subsamples of their original data defined by age and education.³ In all models, the focal independent variable is an indicator for whether the woman in the partnership earned more than the man in the recent past (henceforth termed “female breadwinning”), and the suite of control variables includes the natural log of his, her, and household income in that same recently-past period; separate dummy variables identifying female and male single-earner couple households in that same period; his and her age and quadratics thereof; and region/state dummies.⁴

BKP's cross-sectional regressions are run on the NSFH to predict the following outcomes:

1. *HappyMarriage* (contemporaneous), identifying respondents who, in 1987/88 when asked “Taking things all together, how would you describe your marriage?”, reply “Very Happy” (7 on a scale of 1 to 7); female breadwinning in these models is calculated based on reported earnings in 1986.
2. *MarriageTrouble* (over the past year), identifying respondents who in 1987/88, when asked “During the past year, have you ever thought that your marriage might be in trouble?”, reply “Yes”; female breadwinning in these models is calculated based on reported earnings in 1986.

³ We thank BKP for sending us the code that enabled us to perform these replications. Note that we do not intend to replicate all models whose results BKP report in their paper: our concern is only with the models of relationship dissolution and satisfaction as predicted by female breadwinning plus controls.

⁴ The NSFH results include controls for his and her race as well as education and, in the models of outcomes 1 through 3 as listed in the text, a dummy indicating the gender of the respondent. The PSID results include year dummies, one-interview-lagged income measures, and in the specifications we replicate, controls for household composition and couple-specific fixed effects.

3. *DiscussSeparation* (over the past year), identifying respondents who in 1987/88 indicate they have “During the past year, ... discussed the idea of separating?”; female breadwinning in these models is calculated based on reported earnings in 1986.

4. Marital dissolution (measured at any point after the first interview until the 52- to 88-month interval has passed between the first (1987/88) and second (1992/94) wave of interviews, and only for those interviewed in the second wave); female breadwinning in these models is calculated based on reported earnings in 1986.

BKP’s panel models are run on the PSID to predict the following outcome:⁵

Marital dissolution in the following year as reported in the PSID’s marital history file (a separate file created by PSID administrators containing histories of marriages observed over the span of the survey years) or inferred by the absence of subsequent couple, but not respondent, surveys. Female breadwinning is determined based on earnings reported in the present survey for the prior calendar year. Most specifications also include measures (including the female breadwinning indicator) of income reported in the prior survey wave, earned in the year before that prior wave. Interviews were conducted annually from 1968 through 1997 and biennially from 1999 through 2007.

<Table I here>

Table I shows the results of running these models for the full samples used by BKP and for subsamples of partnerships with older (over 35, born mostly during the Second World War) and younger (under 35, born mostly in the late 1950s) women, and with more educated and less educated partners. We see that in the cross-sectional results using the NSFH, the primary partnerships in which female breadwinning has either a negative effect on marital satisfaction or a positive effect on dissolution are those of highly-educated individuals and those including

⁵ Data related to relationship quality are not available in the PSID, which first measured phenomena akin to satisfaction or happiness in 2016, as part of a “Wellbeing and Daily Life” component.

women over the age of 35. In the fixed-effects models estimated using the PSID, the primary partnerships in which female breadwinning – but only the measure of it lagged by one survey wave – positively impacts partnership dissolution are those containing less-educated and younger women, with female breadwinning in the most recent period insignificant in all models that include the lagged measure. These results are robust to alternative specifications including cubics in each partner’s log earnings and a continuous measure of her share of the couple’s earnings.

While at first glance the difference between the cross-sectional (OLS) and fixed-effects (FE) results may seem counter-intuitive, we see them as broadly consistent with declining relevance of the male breadwinning norm together with the phenomenon of positive assortative matching based on permanent income. This latter force is shown in Binder and Lam (2018) to be capable of generating the sharp drop-off in density above the 50% point in a histogram of female income share, under the assumption that there is a population-wide gender gap in permanent income, an assumption that matches reality for the time period covered in this sample. That young couples transitioning into female breadwinning in the PSID are more likely to separate while young couples with female breadwinners in the NSFH are not may indicate that younger couples are not as stressed by female breadwinning in steady state, due to generational changes in social norms, but that a young woman in a young partnership may perceive a transition into her breadwinning – in a world with higher male than female income on average and within partnerships – as a signal that she could find a higher-earning partner. Her youth and the youth of the partnership make such a prospect more realistic and the separation less personally costly than it would be for an older woman in a partnership of more years’ duration. By contrast, only those partnerships containing older women are impacted by female breadwinning in the NSFH cross-sectional

models due, we conjecture, to the greater importance of the male breadwinning norm for their cohort than for the younger cohort.⁶

The cross-sectional results by education further support this story. In a world with positive assortative matching on income, skill-biased technological change has meant that more educated women are more able than less educated women to be able to find a higher-earning partner if they choose to dissolve their current partnership. Because the woman's access to higher-earning alternative partners is greater in more highly-educated couples, we see the negative effects of female breadwinning mainly for such couples.⁷ In the fixed effects specifications using the PSID, the effect of lagged female breadwinning is a positive and significant predictor of marital dissolution for less educated but not for more educated women, running counter to the mechanisms we suggest. Further investigation reveals that in the PSID and NSFH data, between 33% and 51% of the women in less-educated partnerships who out-earn their partners earn all of the household's income, compared to only 20% of those in more highly educated partnerships. We conjecture that the higher risk of dissolution associated with transitioning to female breadwinning for these less-educated partnerships may arise from more impactful coincident stressors, such as the loss of job and/or health of the man, a conjecture supported by the far higher incidence of poor male health reports in less-educated NSFH partnerships in which women earn all the money (10.36%, compared to 1.8% in highly-educated female-breadwinning partnerships). However, the sub-sample of highly educated couples in the PSID on which the FE

⁶ For completeness, we note that female breadwinning is not a statistically significant predictor of marital dissolution for either younger or older women when estimating OLS rather than fixed-effects models, using the PSID.

⁷ Ong, Yu, and Zhang (2018) provide an alternative story of marriage-matching dynamics as women's incomes have risen in China.

result is identified is small relative to the sample of less educated couples, so the apparent difference in effect significance by education level may be spurious.

III. Extension: US and Australia

We now estimate cross-sectional and fixed-effects models that follow the BKP approach, using more recent data from the US and Australia. For the US, we use the NLSY97, in which after sample restrictions⁸ we have a maximum of 21,395 observations on 5,851 partnerships spanning the years 1998-2013 and supplemented by 2015 relationship data. For Australia, we use the HILDA data (see Watson and Wooden 2012 for a description), in which after sample restrictions⁹ we have a maximum of 43,865 observations on 7,702 partnerships spanning the years 2001-2016. All analyses are conducted separately for married and cohabiting couples, as our prior belief is that partnership dissolution (with potential partnership reformation to follow, potentially with a different partner) is less costly for cohabiters than for married couples. Sample sizes vary with the specification. Sample means by marital status for the most inclusive set of explanatory variables for the full sample are reported in Appendix A for the NLSY97 and in Appendix B for the Hilda data.

<Figure I here>

⁸ We restricted the NLSY97 sample to mixed-gender couples observed in non-overlapping, continuous relationships, who are over the age of 18, were not (if between ages 18 and 23) enrolled in high school or enrolled full-time in school in the prior year, and report age, education, and non-negative wage, salary, and self-employment earnings. The young age of this sample (all respondents were born between 1980 and 1984) makes an upper age restriction unnecessary.

⁹ We restricted the HILDA sample to mixed-gender couples observed in non-overlapping, continuous relationships, who were between the ages of 18 and 64/62 for men/women respectively, were not enrolled full-time in school, and report age, education, immigrant status, city status, household composition and non-negative wage, salary, and self-employment earnings. We note that Kidd (2017) performed a contemporaneous analysis using the HILDA data of the impact of female breadwinning on outcomes in Australia.

Figure I (Panel A: US; Panel B: Australia) plots histograms of female income share in the first observation of all couples in each data set, by marital status. Figure I shows that in these newer data, the sharp drop-off after the 0.5 mark is still perceptible, though less pronounced than in BKP's data – particularly for cohabiting couples. These results suggest that at least in these newer data, some of the drop-off is explained by more pronounced specialization of labor in more committed partnerships.

III.A. Dissolution: US and Australia

We measure the effect of female breadwinning on partnership dissolution in several different ways, each of which is necessarily estimated on a subtly different sample. Most of the couple-year observations can be used when dissolution is measured in the year following the income report and female breadwinning calculated from that income report is the sole measure of female breadwinning in the model. When lagged measures of female breadwinning are included (as in most of BKP's PSID regressions), only couples observed for two consecutive years enter the sample. Finally, when we look at dissolution over the five years following the income report (to mimic BKP's NSFH analysis), we drop successive years of observation of the couple that occur within the target five-year window, but use future reports about the relationship's trajectory from both partners even beyond that window to identify partnership dissolutions retrospectively.¹⁰ We run both cross-sectional and fixed-effects models including the focal dummy for female breadwinning plus controls that are comparable to those included in the original BKP models.

¹⁰ Like BKP, we do not classify marriages we observe ending with the death of a spouse as dissolutions. We cannot, however, distinguish between cohabitations that end in separation and those that end in a death.

<Table II here>

Table II shows the coefficient estimates for the female breadwinning indicators using the simplest BKP specification. US results are reported in the top half of the table; Australian results in the bottom half. The first six columns provide results for cohabiting couples and the latter four columns results for married couples. Within each partnership type we first present models of dissolution looking one year forward and then models of dissolution looking five years forward. We include female breadwinning indicators based on income from the year prior to the current survey wave, and in some specifications – labelled “lagged” in the table – from the year prior to the previous survey wave. Models of dissolution one year forward including only the current (and not the lagged) measure of female breadwinning are also reported for cohabiting couples, given the substantial reduction in sample size when these (on average) relatively short-lived relationships are required to have lasted two or more years.¹¹

Table II shows that in the more recent and younger US sample there is no significant relation between female breadwinning and marital dissolution, but there is some evidence of a positive association between female breadwinning and the near-term dissolution of cohabiting relationships in both OLS and FE models. These results are robust to alternative specifications, including cubics in his and her log earned income and additional covariates even beyond those captured by BKP (controls for the respondent’s disability and educational enrolment status, household composition (7 indicators), urbanicity (2 indicators), and measures of relationship duration, including for married couples a dummy variable indicating whether they had cohabited

¹¹ Forty percent of the cohabiting sample is lost by requiring information on lagged income, versus only twenty percent of the married sample. The coefficient on female breadwinning is not significant in the married sample when including only the current measure.

prior to marriage and the length of any such cohabitation). The only specification in which the coefficient on the indicator of female breadwinning becomes less statistically significant is that which controls for her share of household income. In these specifications, the continuous measure of her income share has a positive sign but is not generally significant, even at the 10% level. The indicator of female breadwinning is not significant in specifications using a five-year time horizon.

Results for Australia, shown in the bottom half of Table II, demonstrate still less evidence of a significant relation between female breadwinning and dissolution. This relation is never significant for cohabiting couples. For married couples, in some OLS models using a five-year time horizon there is a weak positive relation; in some FE models including both current and lagged income measures there is a negative relation. Neither of these results is robust to an array of alternative specifications including cubics in his and her log earned income, a continuous measure of her relative share of income, and the addition of a host of additional control variables including seven household composition variables, dummy variables for his and her disability and educational enrolment status, two dummy variables for urbanicity, and measures of relationship duration, including for married couples a dummy variable indicating whether they had cohabited prior to marriage and the length of any such cohabitation.

Based on these results, we conclude that in general, social norms that are violated by female breadwinning are less important to people born more recently than to those in the original BKP sample. We interpret our statistically significant results for cohabiters in the US as consistent with the story sketched above of market dynamics, whereby women in less committed relationships are more likely to seek alternative partners when they out-earn their partner,

particularly but not exclusively when transitioning into that state. In Australia unlike in most US states, cohabiting (known as “de facto partnership”) is recognized formally in family law, the tax code, social security and other institutions, a form of social normalization of the idea that cohabiters are in fact committed to one another, which may help to explain the lack of parallel results for the Australian sample.

III.B. Relationship quality: US and Australia

Our satisfaction measures for the NLSY97 are all recorded on a scale of 0 to 10 (rescaled as necessary so that higher values indicate higher relationship quality), and are based on answers of the responding household head only (partners are not interviewed). These measures, the questions on which they are based, and the waves during which the data were collected are indicated below, where ‘P’ stands for “this spouse/partner”:

Close: “How close do you feel towards P?” Waves 2000-2008.

Partcare: “How much do you feel that P cares about you?” Waves 2000-2008.

NoConflict: “Overall what is your relationship like with P? … how would you rate your relationship with P?” Waves 2000-2008. Answer scale reverse-coded such that 0 is ‘a lot of conflict’ and 10 is ‘no conflict’.

Commit: "How committed would you say you are to P, all things considered?" Waves 2005-2008.

For the HILDA, we have responses from both partners. These measures, the questions on which they are based, their answer scales, and the waves during which the data were collected are indicated below:

Partner: “Please indicate … how satisfied or dissatisfied you currently are with … your relationship with your partner.” Scale: 0-10. All waves.

Love: “How much do you love your spouse/partner?” Scale: 1-5. Waves 2003, 2006, 2009, 2012, and 2016.

NoProblem: “How many problems are there in your relationship?” Scale: 1-5. Waves 2003, 2006, 2009, 2012, and 2016. Answer scale reverse-coded such that 0 is ‘a lot of problems’ and 10 is ‘no problems’.

Needs: “How well does your spouse meet your needs?” Scale: 1-5. Waves 2003, 2006, 2009, 2012, and 2016.

Expect: “To what extent has your relationship met your original expectations?” Scale: 1-5. Waves 2003, 2006, 2009, 2012, and 2016.

Using the newer US and Australian data, we again run both cross-sectional (OLS) and fixed-effects (FE) models, and include the focal dummy for female breadwinning in the year prior to the survey, plus controls that are as similar as possible to those included in the original BKP model. As we did with the dissolution models, we run an array of other specifications, reporting only the simplest BKP specification and discussing results that are robust across specifications. We tabulate the results from models that treat the above relationship quality measures as continuous variables, but for comparison we also discuss in the text the results from modelling – as BKP do – binary indicators of relationship quality, with (in most cases) responses taking the best possible value coded as 1, and all other responses coded as 0.¹² Tables III and IV show the results for the US and Australia, respectively.

¹² In order to obtain a roughly even split of observations into the “0” and “1” categories, dummy measures for NoConflict in the NLSY97 data were constructed by assigning the value “1” to the top 2 or the top 4 values, rather

<Table III here>

Table III shows a lack of relation overall between female breadwinning and our measures of relationship health for the young US cohort, with the exception being the measure of commitment. Female breadwinning is negatively and significantly related to this measure for cohabiting couples in OLS models and marginally so for married couples in the FE specification. When we model our relationship quality measures as binary indicators rather than continuous variables (results available upon request), we again see only scattered effects. Out of 60 specifications, female breadwinning was significant in only six. The strongest effect, economically speaking, is a positive association with partner care for married couples in FE models. A reduction in closeness is observed in some OLS models, especially for cohabiting couples. These results lend further credibility to the market-dynamics mechanism proposed above whereby female breadwinning, particularly in cohabiting couples, signals that the woman may be able to find a higher-earning partner: a state of the world in which commitment, closeness, or feelings of being cared for in the current partnership may weaken.

<Table IV here>

Table IV shows that for married couples (bottom panel) there is no significant relation in OLS or FE specifications between female breadwinning and our continuous measures of relationship quality in the Australian data. When we use a binary measure of relationship quality, the only robust effect is that married men report fewer problems when transitioning into female breadwinning arrangements. The top panel of Table IV shows that there is likewise no

than only the top value, of the original answer scale. The dummy measure for Partner in the Hilda data was similarly constructed by assigning the value “1” to the top 2 values of the original answer scale.

significant association between female breadwinning and relationship quality as perceived by cohabiting women, but that cohabiting men report more love, and that their needs and expectations are better met, when they are out-earned in the cross-sectional models. Yet in the FE specifications, cohabiting men report significantly more problems and that their needs are less well met when the couple transitions into female breadwinning, results that persist when we use binary measures of relationship quality. These results for cohabiting men are the exception to an overall lack of importance of the male breadwinning norm in these recent Australian data.

IV. Robustness

To further dissect these results, we ran a series of sensitivity checks using both the NLSY97 and the HILDA data, described briefly here. Full results for all specifications are available upon request from the authors.

We first re-ran our models on a sub-sample of the HILDA that was close in age to the couples in our NLSY97 sample: specifically, we selected those Australia-residing couples in which at least one partner was born in 1978 or later (all those in the NLSY97 sample were born between 1980 and 84). We find that in cohabiting relationships in Australia that satisfy this age restriction, men report more problems and less meeting of their needs when the couple transitions into female breadwinning, as is the case for the full sample. The women in these young cohabiting partnerships also report a range of negative signals of relationship quality when they are in, or transition into, a state of female breadwinning. Female breadwinning is associated with women in young cohabiting relationships in Australia reporting less satisfaction with their partner in both OLS and FE models; less meeting of expectations in the cross-section; and more problems when transitioning. Despite this, and mirroring the full sample, we find no evidence of higher

dissolution risk for these young cohabiters. Married couples in Australia that satisfy the age restriction above report being less satisfied with their partners, and married women report less love of their partner, when the prior year featured female breadwinning, but we see no significant change in relationship satisfaction in the FE models. We do find some evidence of higher five-year dissolution rates in OLS but not FE specifications for couples where these younger women earn more than their partners.

We conclude from the above results that compared to our full-sample results, female breadwinning is more negatively associated with relationship quality for young partnerships in Australia, and in the largest number of dimensions for young cohabiting women. Breaking down the NLSY97 results by gender of the respondent, we find that in the US it is women, not men, whose responses drive the aggregate negative association of female breadwinning with commitment shown in Table III. Coupled with the evidence from the young Australian sample, this leads us to further conjecture that the relationship quality effects we observe in our younger samples may originate primarily in the mind of the woman. These findings support our prior hypothesis that female breadwinning in younger partnerships may serve as a signal to the woman that she could do better on the market for partners.

Our second set of sensitivity checks separated the samples by level of education, an approach motivated by prior findings that behavior within mixed-gender couples that may relate to gender norms can differ markedly by education level (e.g., Foster and Stratton 2017). We define less educated couples in the US to be couples in which neither partner has more than a high school education. We define less educated couples in Australia to be couples in which the woman has no more than a high school education and the man has no more than a vocational education.

In the NLSY97, more highly educated married couples report feeling their partner cares more when the partnership transitions into female breadwinning. Otherwise, results on marital quality measures for more highly educated couples are not robustly statistically or economically significant. However, more highly educated cohabiting partnerships that feature female breadwinning are statistically more likely to dissolve. For more highly educated cohabiting couples in Australia, we find female breadwinning to be associated with men reporting more love for their partners in OLS models and women reporting more satisfaction with the relationship in FE models, while women in more highly educated married partnerships featuring female breadwinning report slightly less satisfaction with their partners, in both OLS and FE models. No robust significant effects are seen on partnership dissolution for more highly-educated Australian couples.

In the NLSY97, we see less reported commitment and a marginally higher likelihood of dissolution for less educated cohabiting couples in the presence of female breadwinning, but otherwise no significant results. By contrast, less educated cohabiting men in Australia report less love for their partner, less satisfaction with the relationship, and that their needs are being less well met, when their partnership transitions into female breadwinning. Women in less-educated married couples in Australia report fewer relationship problems when in or transitioning into a state of female breadwinning, while for married men we see no significant results. There is no consistent evidence of a relation between female breadwinning and dissolution of either cohabiting or married partnerships in Australia for less educated couples.

We conclude based on these results by education that female breadwinning is generally inconsequential, and sometimes positive, for more highly educated couples in our more recent

data, with the exception of a modestly higher dissolution risk for US cohabiters. Our results further show that in the US, it is less-educated couples who drive the lower commitment reported in cohabitations featuring female breadwinning. We see these results as consistent with our prior hypothesis that the importance of a male breadwinning norm has declined over time, but with the caveat that this shift is happening more in the minds of highly educated people. This conjecture is further supported by the evidence in Australia that men in less educated partnerships are more likely to feel relationship stress in association with female breadwinning, though this may also be due – just as in the original BKP results – to transitions into female breadwinning being a consequence of other more serious problems, such as the man’s job loss and/or health shocks that he suffers, causing his partner to become the primary earner. More research is needed to fully understand this intriguing result.

V. Conclusion

We find that the effects of female breadwinning on partnership dissolution and relationship quality found in Bertrand, Kamenica and Pan (2015) are concentrated in older partnerships and those in which women are more able to access higher-earning alternative partners. In more recent data, female breadwinning is less impactful overall, and its limited effects are concentrated in cohabiting partnerships where the cost of switching partners is lower, and in the reports of relationship quality by men in less-educated Australian couples. Surprisingly, despite the lower relationship quality in some Australian cohabitations featuring female breadwinning, partnership dissolution in that country seems unaffected, a finding that warrants further investigation.

Our results are subject to limitations necessitated by the constraints of the data sets available as well as the possibility of reporting errors. Specifically, as noted by Murray-Close and Heggeness (2018), it may be that men's errors when reporting their income are larger and more positive than women's. If this is true, then female share should be higher in at least some households than what we observe in our data. If those same households would have had lower satisfaction or higher dissolution, were female share to have been higher – i.e., if women's under-reporting of their income or men's over-reporting of theirs is protective of the marriage – then if effects are not homogeneous, our estimates may be attenuated. Specifically, if there is effect heterogeneity such that it is women in those households that would be more negatively affected by high female income share who most severely under-report their income compared to the man's, then our estimates may be biased toward zero.

Overall, we interpret our results as reflecting a decline over time in the importance of the male breadwinning norm, particularly for more highly educated couples, together with the continued relevance of partner-market dynamics in a world in which the average man earns more than his partner. With cohabitations becoming increasingly common, the market dynamics to which cohabiters are particularly sensitive will be relevant to a larger and larger fraction of adults. Future work might track partnerships that form after a female-breadwinning partnership dissolves in order to further examine these dynamics.

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Table I
Replicating BKP

	Dissolution	NSFH Results (OLS)			PSID Results (FE)	
		Marriage Happy	Marriage Trouble	Discuss Separation	Dissolution (a)	Dissolution (b)
Full Sample:						
Wife Earns More	0.0623** (0.0246)	-0.0679*** (0.0262)	0.0818*** (0.0243)	0.0684*** (0.0190)	0.0031 (0.0023)	0.0035 (0.0024)
Lagged Wife Earns More					0.0050** (0.0025)	0.0077*** (0.0026)
Number of Observations	3,439	7,659	7,520	7,507	72,169	69,454
Number of Fixed Effects					7,893	6,425
More Educated Sample:						
Wife Earns More	0.1193*** (0.0374)	-0.0846* (0.0432)	0.0875** (0.0415)	0.0910*** (0.0319)		-0.0006 (0.0041)
Lagged Wife Earns More						0.0042 (0.0048)
Number of Observations	1,195	2,540	2,498	2,492		8,248
Number of Fixed Effects						748
Less Educated Sample:						
Wife Earns More	-0.0053 (0.0432)	-0.0389 (0.0467)	0.0536 (0.0417)	0.0250 (0.0286)		0.0024 (0.0029)
Lagged Wife Earns More						0.0094*** (0.0033)
Number of Observations	1,266	2,993	2,934	2,929		48,496
Number of Fixed Effects						4,131
Older Sample:						
Wife Earns More	0.0798** (0.0318)	-0.0653* (0.0392)	0.1077*** (0.0348)	0.1010*** (0.0269)		0.0038 (0.0027)
Lagged Wife Earns More						0.0015 (0.0028)
Number of Observations	1,724	3,869	3,798	3,791		40,362
Number of Fixed Effects						4,047
Younger Sample:						
Wife Earns More	0.0384 (0.0399)	-0.0803** (0.0328)	0.0424 (0.0329)	0.0242 (0.0266)		0.0025 (0.0046)
Lagged Wife Earns More						0.0152*** (0.0050)
Number of Observations	1,715	3,790	3,722	3,716		28,695
Number of Fixed Effects						4,254

- (a) Note these standard errors have been adjusted to correct for singleton observations and are somewhat smaller than those reported by BKP.
- (b) Singleton observations are dropped and each partner's age has been adjusted to that first reported and incremented by wave to address the inconsistent age reporting in the PSID. The sample is then selected based on this age. In the case of the NSFH, "More Educated" means both partners have some college or more, "Less Educated" means neither partner has more than a high school degree, "Older" means the wife is at least age 35, and "Younger" means the wife is less than age 35.
- In the case of the PSID, "More Educated" means both partners have some college or more, "Less Educated" means neither partner has more than a high school degree, "Older" means the wife is at least age 35, and "Younger" means the wife is less than age 35.
- All specifications include the log of her earnings, the log of his earnings, the log of household earnings, dummy variables identifying households in which she earns all or none of the household income, and quadratics in each partner's age. The PSID specifications also include lagged values of all the income variables.
- The NSFH specifications include controls for region (3) and each partner's education (4) and race (3). In the case of the satisfaction measures a dummy for the respondent's gender is also included.
- The PSID specifications include 33 year dummies and 56 region dummies.
- Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table II
Relationship Dissolution

<u>US Sample</u>	Cohabiting						Married			
	OLS	FE	OLS	FE	OLS	FE	OLS	FE	OLS	FE
	One year forward		One year forward		Five years forward		One year forward		Five years forward	
Woman Earns More	0.0119 (0.0123)	0.0295* (0.0152)	0.0414** (0.0181)	0.0563*** (0.0218)	-0.0050 (0.0244)	0.0054 (0.0088)	0.0098 (0.0081)	0.0063 (0.0088)	0.0185 (0.0127)	-0.0091 (0.0103)
Lagged Woman Earns More			0.0139 (0.0190)	0.0199 (0.0230)			-0.0113 (0.0073)	-0.0102 (0.0073)		
Jt p-value			0.0266	0.0345			0.2618	0.3048		
Number of Observations	7,433	5,743	3,437	2,763	4,021	2,202	10,287	9,633	7,320	6,418
Number of Fixed Effects		1,690		846		673		2,120		1,503
<u>Australian Sample</u>										
	Cohabiting						Married			
	OLS	FE	OLS	FE	OLS	FE	OLS	FE	OLS	FE
	One year forward		One year forward		Five years forward		One year forward		Five years forward	
Woman Earns More	0.0005 (0.0083)	-0.0120 (0.0097)	-0.0008 (0.0106)	-0.0032 (0.0122)	0.0096 (0.0172)	0.0021 (0.0060)	-0.0001 (0.0031)	-0.0048 (0.0031)	0.0089* (0.0049)	0.0047 (0.0042)
Lagged Woman Earns More			0.0045 (0.0105)	-0.0131 (0.0103)			0.0026 (0.0032)	0.0006 (0.0036)		
Jt p-value			0.9032	0.4447			0.6619	0.2969		
Number of Observations	9,875	8,599	6,041	5,312	4,590	3,403	24,521	23,891	17,232	16,291
Number of Fixed Effects		2,078		1,260		842		3,639		2,509

All specifications include the log of her earnings, the log of his earnings, the log of household earnings, dummy variables identifying households in which she earns all or none of the household earnings, and quadratics in each partner's age. All FE specifications exclude singleton observations.

All specifications with lagged Wife Earns More include lags of the log of her earnings, the log of his earnings, the log of household earnings, and the dummy variables identifying households in which she earns all or none of household earnings.

All the Australian specifications include controls for state (7), year (13) and each partner's education (7), aboriginal and immigration status (3).

All the US specifications include controls for region (4), year (13), and each partner's education (5), ethnicity, and race (3).

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table III
Relationship Quality in the US

<u>Respondent's Response</u>	Cohabiting							
	OLS Close	FE Close	OLS Partcare	FE Partcare	OLS NoConflict	FE NoConflict	OLS Commit	FE Commit
Woman Earns More	-0.0488 (0.0704)	0.0476 (0.0893)	-0.0232 (0.0630)	-0.0609 (0.0762)	-0.0977 (0.1398)	0.1293 (0.1885)	-0.1872** (0.0953)	-0.1279 (0.1778)
Number of Observations	3,901	2,760	3,904	2,764	3,906	2,770	2,357	1,568
Number of Fixed Effects		951		952		954		611
<u>Respondent's Response</u>	Married							
	OLS Close	FE Close	OLS Partcare	FE Partcare	OLS NoConflict	FE NoConflict	OLS Commit	FE Commit
Woman Earns More	0.0051 (0.0684)	-0.0022 (0.0598)	0.0336 (0.0552)	-0.0239 (0.0518)	-0.0563 (0.1352)	-0.1979 (0.1496)	0.0235 (0.0593)	-0.1229* (0.0685)
Number of Observations	5,972	5,378	5,972	5,379	5,970	5,377	4,440	3,872
Number of Fixed Effects		1,486		1,487		1,486		1,313

All specifications include the log of her earnings, the log of his earnings, the log of household earnings, dummy variables identifying households in which she earns all or none of the household earnings, and quadratics in each partner's age. FE specifications exclude singletons.

All the US specifications include controls for region (4), year (13), and each partner's education (5), ethnicity, and race (3).

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table IV
Relationship Quality in Australia

		Cohabiting									
		OLS	FE	OLS	FE	OLS	FE	OLS	FE	OLS	FE
		Partner	Partner	Love	Love	No-Problem	No-Problem	Needs	Needs	Expect	Expect
His Response											
Woman Earns More		0.0904 (0.0697)	0.0558 (0.0632)	0.0561* (0.0328)	-0.0199 (0.0577)	0.0230 (0.0574)	-0.1728* (0.0911)	0.0784* (0.0462)	-0.1501* (0.0788)	0.0845* (0.0469)	-0.0806 (0.0792)
Number of:											
Observations		9,521	8,227	2,978	1,446	2,978	1,450	2,978	1,450	2,976	1,448
Fixed Effects				2,015	555		558		558		556
Her Response											
Woman Earns More		-0.0242 (0.0754)	-0.0333 (0.0676)	0.0438 (0.0372)	0.0116 (0.0617)	0.0127 (0.0628)	-0.0700 (0.1004)	0.0085 (0.0491)	0.0217 (0.0679)	-0.0405 (0.0515)	0.0210 (0.0826)
Number of:											
Observations		9,755	8,440	3,103	1,506	3,105	1,508	3,105	1,508	3,102	1,505
Fixed Effects				2,052	581		582		582		580
		Married									
		OLS	FE	OLS	FE	OLS	FE	OLS	FE	OLS	FE
		Partner	Partner	Love	Love	No-Problem	No-Problem	Needs	Needs	Expect	Expect
His Response											
Woman Earns More		-0.0595 (0.0532)	-0.0195 (0.0361)	0.0136 (0.0240)	0.0225 (0.0253)	-0.0123 (0.0404)	-0.0189 (0.0254)	0.0215 (0.0340)	0.0098 (0.0335)	-0.0031 (0.0333)	0.0301 (0.0330)
Number of:											
Observations		30,493	29,608	9,490	7,958	9,488	7,964	9,484	7,958	9,476	7,950
Fixed Effects				4,150	2,544		2,547		2,546		2,543
Her Response											
Woman Earns More		-0.0882 (0.0556)	-0.0309 (0.0358)	-0.0150 (0.0284)	0.0203 (0.0266)	0.0324 (0.0400)	0.0544 (0.0457)	-0.0385 (0.0372)	0.0399 (0.0347)	-0.0281 (0.0370)	-0.0113 (0.0361)

Number of:

Observations	30,946	30,075	9,621	8,090	9,639	8,110	9,639	8,111	9,623	8,084
Fixed Effects		4,215		2,586		2,590		2,590		2,590

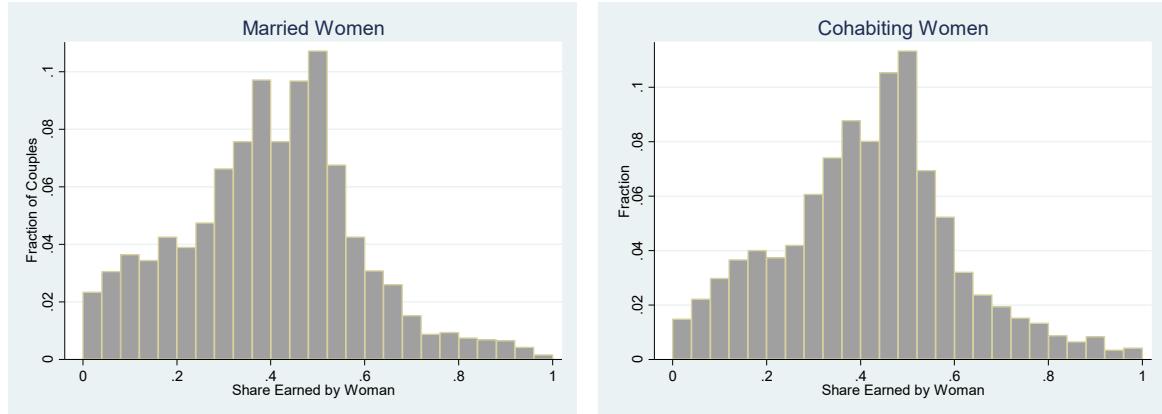
All specifications include the log of her earnings, the log of his earnings, the log of household earnings, dummy variables identifying households in which she earns all or none of the household earnings, and quadratics in each partner's age. FE specifications exclude singleton observations.

All the Australian specifications include controls for state (7), year (13) and each partner's education (7), aboriginal and immigration status (3).

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

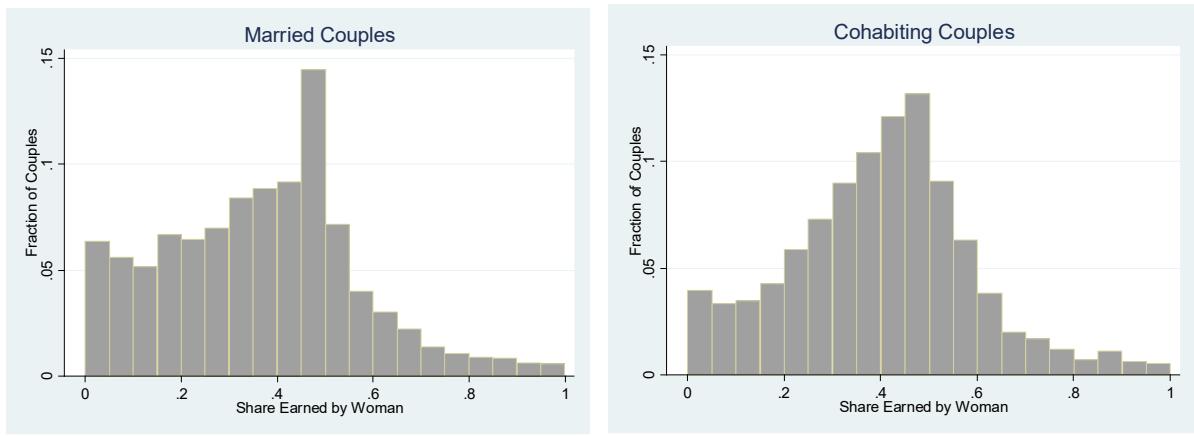
Figure I
Distribution of Relative Income

Panel A: United States



The data are from the 1997-2013 waves of the NLSY97 data. The sample includes married or cohabiting mixed-gender couples where the man and woman both earn positive income, the respondent is not enrolled full-time in college, and both partners are between 18 and 58 years of age. For each couple, we use the observation from the first year that the couple is in the panel. Each bar captures a 0.04 relative income bin. Data captures 3078 married couples and 2623 cohabiting couples.

Panel B: Australia



The data are from the 2001-2016 waves of the HILDA data. The sample includes married or cohabiting mixed-gender couples where the man and woman both earn positive income, are not enrolled full-time in school (age 18-23), and are between 18 and 63 (65 for men) years of age. For each couple, we use the observation from the first year that the couple is in the panel. Each bar captures a 0.04 relative income bin. Data captures 4515 married couples and 3094 cohabiting couples.

Appendix Table A
NLSY97 Sample Statistics

	Married Couples	Cohabiting Couples		
	<u>Mean</u>	<u>Std. Dev.</u>	<u>Mean</u>	<u>Std. Dev.</u>
<u>Wage & Salary & Self-Employment Income</u>				
Woman earns more	0.254	0.435	0.334	0.472
His real earned income (000's 2016\$)	45.368	35.029	31.044	29.485
Her real earned income (000's 2016\$)	23.401	23.546	19.615	21.039
Couple's real earned income (000's 2016\$)	68.768	44.766	50.658	40.897
He has no earned income	0.040	0.197	0.093	0.290
She has no earned income	0.228	0.420	0.213	0.410
Her share of couple's earned income	0.330	0.265	0.386	0.300
Respondent is a woman	0.559	0.497	0.521	0.500
<u>His Characteristics</u>				
Age	28.217	4.238	26.899	4.781
Hispanic	0.222	0.416	0.241	0.428
Black	0.127	0.333	0.209	0.406
Other Race	0.103	0.304	0.128	0.334
Race is Missing	0.066	0.249	0.078	0.268
Enrolled full-time	0.017	0.131	0.013	0.113
His education (base case: less than high school)				
High School	0.592	0.491	0.567	0.496
Some College	0.046	0.209	0.052	0.222
AA Degree	0.119	0.324	0.066	0.248
BA Degree	0.083	0.276	0.035	0.183
Grad Degree	0.012	0.111	0.006	0.074
He is disabled	0.005	0.071	0.006	0.079
<u>Her Characteristics</u>				
Age	26.658	3.701	25.174	4.116
Hispanic	0.234	0.423	0.244	0.430
Black	0.111	0.314	0.177	0.381
Other Race	0.107	0.309	0.134	0.341
Race is Missing	0.057	0.232	0.078	0.268
Enrolled full-time	0.027	0.161	0.026	0.158
Her education (base case: less than high school)				
High School	0.558	0.497	0.568	0.495
Some College	0.058	0.233	0.068	0.251
AA Degree	0.145	0.352	0.086	0.281
BA Degree	0.086	0.281	0.035	0.185
Grad Degree	0.017	0.130	0.006	0.078

She is disabled	0.010	0.097	0.013	0.113
<u>Household Characteristics</u>				
Number of children age 0-2	0.376	0.532	0.299	0.509
Number of children age 3-5	0.423	0.599	0.337	0.556
Number of children age 6-9	0.334	0.599	0.291	0.569
Number of children age 10-14	0.133	0.409	0.123	0.394
Number of children age 15-17	0.014	0.121	0.011	0.111
Number of other dependents	0.155	0.538	0.197	0.579
Number of other adults	0.234	0.709	0.365	0.853
Resides in (base case: an urban area)				
a city	0.326	0.469	0.400	0.490
a rural area	0.237	0.425	0.177	0.382
Ever cohabited in relationship	0.465	0.499	1.000	0.000
Months married to date (with this partner)	48.801	35.247		
Months cohabiting to date (with this partner)	12.645	19.236	37.920	29.716
Number of Observations	13,962		7433	

Dummy variables to control for wave and region are also included in the analysis.
Data from the 1997-2013 waves of the NLSY97, supplemented with relationship data from 2015.

Appendix Table B
Hilda Sample Statistics

	Married Couples	Cohabiting Couples		
	<u>Mean</u>	<u>Std. Dev.</u>	<u>Mean</u>	<u>Std. Dev.</u>
<u>Wage & Salary & Self-Employment Income</u>				
Woman earns more	0.239	0.427	0.270	0.444
His real earned income (000's 2016 AU\$)	85.400	72.878	66.751	52.660
Her real earned income (000's 2016 AU\$)	39.798	42.488	40.127	35.232
Couple's real earned income (000's 2016 AU\$)	125.199	88.032	106.878	69.868
He has no earned income	0.041	0.198	0.037	0.189
She has no earned income	0.189	0.391	0.160	0.367
Her share of couple's earned income	0.368	0.193	0.406	0.181
<u>His Characteristics</u>				
Age	44.468	10.065	35.847	11.123
Immigrant from northern Europe or an English speaking country	0.115	0.320	0.113	0.316
Immigrant from another country	0.130	0.336	0.043	0.203
Of aboriginal descent	0.010	0.098	0.034	0.181
Enrolled full-time	0.011	0.103	0.033	0.177
His education (base case: 12 years)				
Post-Bach	0.072	0.259	0.037	0.190
BA/Honors	0.068	0.252	0.043	0.202
Diploma	0.173	0.378	0.123	0.328
Cert III/IV	0.106	0.308	0.075	0.263
11 Years	0.101	0.302	0.154	0.361
10 Years	0.042	0.201	0.065	0.246
<= 9 Years	0.127	0.332	0.169	0.375
He is disabled	0.100	0.300	0.090	0.286
<u>Her Characteristics</u>				
Age	42.187	9.729	33.644	10.659
Immigrant from northern Europe or an English speaking country	0.095	0.293	0.098	0.297
Immigrant from another country	0.141	0.348	0.054	0.226
Of aboriginal descent	0.011	0.105	0.038	0.192
Enrolled full-time	0.018	0.133	0.045	0.208
Her education (base case: 12 years)				
Post-Bach	0.050	0.218	0.048	0.214
BA/Honors	0.091	0.287	0.051	0.220
Diploma	0.202	0.402	0.190	0.393
Cert III/IV	0.109	0.312	0.088	0.284
11 Years	0.144	0.351	0.176	0.381
10 Years	0.067	0.251	0.066	0.248

<= 9 Years	0.185	0.388	0.165	0.371
She is disabled	0.108	0.311	0.104	0.305
<u>Household Characteristics</u>				
Number of children age 0-4	0.381	0.685	0.287	0.594
Number of children age 5-9	0.338	0.641	0.183	0.494
Number of children age 10-14	0.331	0.639	0.156	0.464
Number of other dependents	0.264	0.574	0.076	0.308
Number of other adults	0.238	0.589	0.194	0.596
A child is disabled.	0.053	0.224	0.040	0.196
Another HH member is disabled.	0.047	0.212	0.034	0.182
Resides in (base case: an urban area)				
a city	0.675	0.468	0.650	0.477
a rural area	0.126	0.332	0.106	0.307
Ever cohabited in relationship	0.578	0.494	1.000	0.000
Years married to date (with this partner)	15.249	11.000		
Years cohabiting to date (with this partner)	1.658	2.491	4.968	5.568
Number of Observations	33,053		10,812	

Dummy variables to control for wave and state are also included in the analysis.
Data from the 2000-2016 waves of HILDA.