Is there justification for alimony payments? A survey of the empirical literature

Bruno Jeandidier, Helen Lim

Bureau
d'économie
théorique
et appliquée
(BETA)
UMR 7522

Documents de travail

« Is there justification for alimony payments? A survey of the empirical literature »

Auteurs

Bruno Jeandidier, Helen Lim

Document de Travail n° 2015 – 30

Décembre 2015

Faculté des sciences économiques et de gestion
Pôle européen de gestion et d'économie (PEGE)
61 avenue de la Forêt Noire
F-67085 Strasbourg Cedex

Secrétariat du BETA
Géraldine Del Fabbro
Tél. : (33) 03 68 85 20 69
Fax : (33) 03 68 85 20 70
g.delfabbro @unistra.fr
www.beta-umr7522.fr

Is there justification for alimony payments? A survey of the empirical literature.

ABSTRACT :

The French civil code relating to divorce makes reference to the economics of marriage in specifying that in fixing alimony payments, judges should take into account the professional choices made by each spouse during the marriage for the sake of the union or for the children. According to the theory, traditional gender role specialisation results in men accumulating market human capital whilst women accumulate family-oriented human capital. Wage data in many countries indeed indicates that men tend to enjoy a marriage wage premium whilst women suffer a wage penalty. A corollary of this is that in the event of divorce, men are not penalised financially whereas women are. This paper analyses the empirical justification for alimony payments. An extensive review of the literature suggests that part of the premium observed for men is explained by a selection effect, and possibly other factors such as the effect of responsibility, or employer bias. In the case of women, it is motherhood and not marriage per se that has a clearly negative impact on wages.

KEYWORDS: Family wage gap, marriage, divorce, compensatory alimony payment.

JEL codes: J12, J16, J31, K36

AUTHORS:

Bruno JEANDIDIER
Chargé de Recherche CNRS
Bureau d'Economie Théorique et Appliquée (BETA, UMR CNRS 7522, Univ. de Strasbourg et Univ. de Lorraine)
Faculté de Droit, Sciences Economiques et Gestion
13, place Carnot
CO 700 26
54035 Nancy cedex

Helen LIM
Chercheuse
Bureau d'Economie Théorique et Appliquée (BETA, UMR CNRS 7522, Univ. de Strasbourg et Univ. de Lorraine)
Faculté de Droit, Sciences Economiques et Gestion
13, place Carnot
CO 700 26
54035 Nancy cedex

Is there justification for alimony payments?
A survey of the empirical literature

Bruno Jeandidier
Helen Lim

BETA, UMR 7522 CNRS and University of Lorraine

In France, the divorce law provides that "a spouse may be required to pay to the other spouse an allowance to compensate, as far as possible, the disparity that the breakdown of the marriage creates in their respective living conditions" (Article 270 of the civil code). Article 271 specifies that in fixing the amount of the compensatory allowance, the judge takes into account "the consequences of the professional choices made by a spouse during the couple's union either for the sake of their children's education (and the time that this responsibility would continue to require), or to promote the career of the other spouse at the expense of his or her own career."[1] The wording of these articles is an explicit reference to the economic theory of marriage. According to the theory, the purpose of marriage is to optimise the couple's resources so as to maximise domestic (family) output. Based on the market wage rate and the respective domestic productivities of the two individuals in the union, this optimisation at the level of the couple results in particular in some specialisation in terms of domestic versus market activity.[2] If the couple separates however, individual investments in each of these sectors is not equally valuable – market-oriented human capital can be valorised without difficulty post-marriage, whereas family-oriented human capital cannot be valorised except in the context of a remarriage. It is this argument which, for economists, constitutes one of the theoretical foundations justifying the legal provision that divorce be accompanied by a compensatory process in favour of the spouse who specialised in domestic activity during the marriage.[3] This is because if the spouse invested him- or herself in domestic responsibilities (hence disinvesting in market activity), it is with the promise of a return on this investment later on (for example, in being able to benefit from the pension of his or her spouse during retirement). The promise being broken by divorce, the return on investment in domestic activity therefore has to be pursued in the form of a compensatory allowance following the dissolution

1 The other parameters taken into consideration are the duration of marriage, age, health status, qualification and employment status, assets and pension rights. These parameters are naturally not unrelated to the more generic parameter "consequences of professional choices" focussed on in the text.

2 To explain the division of labour within the couple, a more sociological approach advances the idea of a negotiation between the spouses in the sharing of household work, considered an undesirable task, under the assumption that relative human capital is decisive in terms of bargaining power (Pollmann-Schult, 2011).

3 For a full theoretical discussion of the economic concept of compensation allowances, see Bourreau-Dubois and Doriat-Duban (2011).

of the marriage.

The question we ask ourselves is therefore whether there is empirical justification for this theoretical reasoning: does marriage –and eventually its inherent consequences, in particular in terms of having and raising children– have in effect an impact on the market-oriented human capital of the individuals within the couple? More precisely, given the gender role specialisation most commonly observed in human societies, do men enjoy a marriage wage premium (higher market-oriented human capital accumulation than would have occurred in the absence of marriage), and do women experience a marriage wage penalty (lower market-oriented human capital accumulation than would otherwise have occurred in the absence of marriage)?

The structure of this paper is as follows. We will first discuss the literature on the marriage wage bonus observed for men, addressing in particular the important issues of selection and specialisation, and the main hypotheses put forward to explain why married men might conceivably earn more than their unmarried counterparts. An attempt will be made to highlight the characteristics of marriage versus cohabitation where the literature allows such a comparison. The discussion will then focus on the issue of the effect of marriage on women's wages, and the intimately related question of the effect of children on mothers' economic outcomes.

1 THE MARRIAGE PREMIUM FOR MEN

Empirical analysis of the marriage premium in its most basic form usually amounts to estimating an equation of the (log of) male wage rates with the inclusion in the specification of an indicator of marital status.[4] All the studies, most of which use data from the United States, find that this indicator is significantly different from zero, which implies that even after taking into account the classical factors contributing to the determination of wage rates[5], married men earn more than unmarried men (Hill, 1979; Nakosteen and Zimmer, 1987; Reed and Harford, 1989; Korenman and Neumark, 1991; Hersch, 1991; Cohen and Haberfeld, 1991; Bellas, 1992; Blackburn and Korenman, 1994; Schoeni, 1995, for 12 western countries; Loh, 1996; Cornwell and Rupert, 1997; Gray, 1997; Gorman, 1999; Hundley, 2000; Hersch and Stratton, 2000; Phipps et al., 2001, for Canada; Chun and Lee, 2001; Datta Gupta and Smith, 2002, for Denmark; Stratton, 2002; Lundberg and Rose, 2002; Cohen, 2002; Hewitt et al., 2002, for Australia; Krashinsky, 2004; Geist, 2006, for fifteen industrialised countries; Dougherty, 2006; Ahituv and Lerman, 2007; Datta Gupta et al., 2007; Bardasi and Taylor, 2008, for Great Britain; Meurs et al., 2010, for France; Rodgers III and Stratton, 2010;

4 In most cases, married men are compared to the reference category of "never married" men, sometimes with the addition of a category for "previously married" (separated or divorced). While older studies tended to include cohabiting individuals in the category of "never married", in the more recent literature, there are instances of a new category termed "unmarried but living as a couple".

5 Age, level of education, work experience, tenure in current employment, hours worked, industry, occupation, geographic region, ethnicity, number of children, etc.

Pollmann-Schult, 2011, for Germany; Petersen et al., 2011, for Norway; Mamum, 2012).

While there remains little debate about the existence of an observed marriage wage premium for men, more recent studies have suggested, either through the use of additional variables and/or more sophisticated estimation techniques, that this premium is lower than that indicated by simple observation of the data, and not necessarily the result of specialisation.

1.1 The selection effect

From very early on, analyses in the domain focussed on the potential problem of selection. The idea is that a portion of the marriage premium observed amongst men could be attributed not to marriage itself but to the fact that the men with the best human capital (and hence higher earning power) are simultaneously the ones more likely to marry, because of some unobservable factors[6] that are positively correlated to both wages and marriage.[7]

The first study giving credence to this hypothesis is perhaps that of Nakosteen and Zimmer (1987). The authors estimate an earnings equation endogenizing marriage, and find that the marriage wage premium is statistically not significantly different from zero.[8] Ten years later, Nakosteen and Zimmer (1997) find that the probability of marriage amongst never-married men is positively and significantly related to the residual in the estimated wage equation of these same men –the implication of this result is that the probability of getting married would be higher for men with higher salaries due to unobserved factors. Cohen and Haberfeld (1991), using data from the US, find that the marriage premium observed in cross-sectional data disappears when they use a longitudinal model, which supports the hypothesis that the observed premium is due to selection based on unobserved factors rather than marriage per se. Similarly, Barg and Beblo (2009), using a non-parametric matching model applied to data from Germany, conclude that the male marriage wage premium is entirely due to selection. Using a very specific sample of men (fathers in the "needy" category of the *Fragile Families and Child Wellbeing Study*), Mincy et al. (2009) also find a marriage premium not statistically different from zero after taking into account the selection effect through the use of a first-difference regression. Gray (1997) shows that for younger generations of men (1980s compared to 1970s), once the selection effect is taken into account, the wage premium is no longer significantly different from zero and the differing result is likely because of the historical development in the form

6 For example, competence, loyalty, honesty, reliability, determination (cited by Bardasi and Taylor 2008), concentration, attention, attendance (cited by Petersen et al. 2011).

7 Ribar (2004) proposes in this regard a summary of econometric methods used in the literature to address the different estimation biases related to the estimation of a wage equation which includes marital status on the righthand side. In addition to the selection effect, some authors question the existence of a possible endogeneity bias of the marriage variable included in the wage equation. The question is often neglected for lack of a good instrumental variable. Pollmann-Schult (2011), using the variable-differencing method, find no evidence of endogeneity in the case of Germany.

8 The methodology used in the study was however subsequently challenged by various researchers, notably Cornwell and Ruppert (1997) and Hersch and Stratton (2000).

of reduced gender role specialisation within couples over that period. Finally, Rodgers III and Stratton (2010) find that the selection effect explains fully the marriage wage premium amongst white men, but not for African Americans.[9]

Chun and Lee (2001), on the other hand, challenge the longitudinal fixed effects models on the basis that these do not properly capture the selection process. The authors use a switching estimation approach similar to that of Nakosteen and Zimmer (1997) but add an instrumental variable for the wife's number of hours of work, and arrive at the opposite conclusion: the selection hypothesis is not validated and the male marriage wage premium does indeed exist.[10] To explain the difference between their results and those established by Nakosteen and Zimmer, the authors suggest that one reason could be the different observation periods in the respective datasets used in the two studies. The results in Ginther and Zavodny (2001) also indicate little or no selection effect in the male marriage premium. The authors compare men whose marriages are soon followed by the birth of a child ("shotgun marriages") with other married men, the hypothesis being that premarital conception is an exogenous factor uncorrelated with individual earnings ability and hence men are randomly selected into shotgun marriages. The results show little difference in the marriage premium between the two groups of men,[11] and the authors conclude that at most 10% of the estimated marriage premium is due to selection. The absence of convincing results supporting a selection effect is also one of the conclusions of Antonovics and Town (2004), which estimates the marriage premium taking into account unobserved individual heterogeneity through the use of a sample of monozygotic twins. The estimation based on intra-pair differences does not result in a smaller marriage premium,[12] but in fact a slightly larger one, thus presenting evidence contrary to the hypothesis of a selection effect. Similar results were produced by Loh (1996) using data on non-twin brothers. However, Krashinsky (2004), using a sample of twins who were in employment for at least the two years preceding the survey, arrived at the opposite conclusion: the marriage premium went from 20% to 0.8% once the unobservable individual characteristics –assumed similar for both twins– are taken into account, thus suggesting a strong selection effect.

Rogers III and Stratton (2010) test the impact of a number of usually unobserved factors: cognitive ability (AFQ test), self-esteem, and parental background (employment and education). They

9 According to the authors, the weak selection effect for African-Americans is consistent with the fact that the "pool" of marriageable African American men is restricted.

10 The coefficient on the marriage variable in a simple OLS regression would on the contrary be underestimated.

11 The marriage premium is equivalent, but of a different composition: men in "normal" marriages benefit primarily from a wedding-related bonus (with little additional premium associated with marriage duration), while men in "shotgun marriages" experience a reverse mechanism (no initial wedding bonus and a premium positively correlated with the duration of marriage).

12 If the selection hypothesis holds, and assuming that monozygotic twins have identical or very similar individual ability, an intra-pair comparison of the marriage premium should reveal little or no difference between the twins.

show that while these indicators are generally significantly and positively related to the wage rate (except for parents' education and, for African Americans, self-esteem), they however have little impact on the effect attributed to marriage (and duration of marriage for white males) and therefore contribute little to the understanding of the selection effect. The attitude towards gender roles is not linked to salary levels, and specific competencies such as mathematics, science and mechanics do not alter the impact of marriage. The authors conclude with an argument in favour of an analysis of the impact of individual kindness (which should affect both the salary and the fact of being more marriageable).[13]

On the other hand, estimations using panel data and fixed effects models to correct for unobserved individual heterogeneity tend to produce results with a reduced male marriage premium, thus confirming the existence of a selection effect that biases upwards the estimated coefficient in models that do not correct for such omitted variable(s). There remains however a residual wage premium attributable to marriage itself (Kilbourne et al., 1994; Cornwell and Rupert, 1997; Gray 1997; Korenman and Neumark, 1991; Hersch and Stratton, 2000; Stratton, 2002; Lundberg and Rose, 2002; Dougherty, 2006; Ahituv and Lerman, 2007; Datta Gupta et al., 2007; Bardasi and Taylor, 2008; Loughran and Zissimopoulos, 2009; Rodgers III and Stratton, 2010, only for African Americans; Petersen et al., 2011; Pollmann-Schult, 2011; Mamun 2012; Killewald and Gough, 2013).

Because identification in fixed effects models is dependent on individuals who change marital status during the period of observation, Rodgers III and Straton (2010) attempt to explain the difference between the results from regressions with and without fixed effects by introducing, in a model without fixed effects, status dummy variables for individuals who do not change their marital status (always married, always never married, always separated/divorced). The idea is to capture the wage level effect of these. They show in particular that the white male marriage premium identified in the non-fixed-effects model is primarily due to always-married men, thus explaining the finding that in a fixed effects model (in which always-married men do not contribute to the estimation of the effect) the premium becomes non-significant. Datta Gupta and Smith (2002), using Danish data, find a statistically significant male marriage premium in a random-effects model specification but not in a fixed effects model. Petersen et al. (2011), using comprehensive longitudinal administrative data from Norway, estimate fixed effects regressions that allow analysis at the level of occupation and employer. They show that three quarters of the marriage premium is due to an employment selection effect: married and previously-married men self-select into businesses and occupations that pay more. This conclusion is reinforced by an analysis conducted on a sample restricted to non-married men, which

13 On this issue, the work of Mueller and Plug (2006) show that the male wage rate is negatively related to kindness and positively related to emotional stability and openness to experience, but the analysis does not address the link between these personality traits and the probability of marriage.

shows that the fact of getting married in the future brings a wage premium in the present.[14] Such a premium cannot therefore be attributed to the marriage itself, nor to discrimination by the employer (since the employer cannot know the individual's future marital status), but to job selection behaviour (here again, taking into account fixed effects for a given employer-occupation reduces the premium by three quarters), or eventually perhaps due to productivity in employment.[15] Finally, the authors add an individual fixed effect by mobilizing the longitudinal dimension of their data; this analysis confirms the existence of a very small marriage effect remaining (about 1.6%, compared to the 10% to 12% obtained in a model without fixed effects).

The analysis in Kenny (1983), although somewhat dated, merits mention at least for the way in which the author addresses the issue of selection. The author's hypothesis is that specialisation leads to a wage rate (the rate of return on the investment in human capital) which increases more rapidly amongst married as compared to non-married men.[16] In addition, because of the probable existence of a selection effect, the author proposes not to compare married to unmarried men, but rather to compare two periods relating to the same men—when they were not married and when they were married. The dependent variable in the estimation equation is the difference between the average monthly wage growth rate calculated over the period in which the man is married and the corresponding rate calculated for the period when he was not yet married. After taking into account the difference in mean age between the two periods and the difference in overall wage growth in the US economy between the two periods, the author considers that the coefficient on the constant in the equation captures the effect of marriage. As expected, the estimated coefficient is statistically significant and positive—the marriage premium is estimated at 17% to 20% after ten years of marriage.

Blackburn and Korenman (1994), meanwhile, discuss the historical downward trend of the male marriage premium in the United States (a trend confirmed by Lundberg and Rose, 2002), and highlight several combined effects: a smaller selection effect (overall lower marriage rates make the subgroup of never-married men less specific), and a reduction of the gender role specialisation effect related to the average decline in marriage duration, although this reduction is moderated by the increase in the returns to investment in market work during the years of marriage (consistent with the increased valuation of skills and competencies generally observed elsewhere).

14 Krashinsky (2004) found similar results for US data.

15 In a similar model but using all individuals and not just the non-married, the authors show that, after controlling for fixed effects at the level of occupation-employer, the wage premium today for a marriage tomorrow disappears (completely absorbed by the fixed effects) and only a “treatment effect” remains (current marriage results in behavioral changes favorable to remuneration).

16 Because, according to Kenny (1983), the cost of human capital is less for married men: firstly, because the wife finances a part of that capital, and secondly, the marginal cost of capital decreases with the number of hours worked, and gender role specialisation within couples allows married men to work more hours than unmarried men.

1.2 Marriage and marriage duration

A number of authors have argued that if the effect of selection were paramount, it would be observed upon marriage, yet several studies show that the male marriage premium increases with the duration of marriage (Korenmann and Neumark, 1991; Gray 1997; Loh, 1996; Stratton, 2002; Krashinsky, 2004; Dougherty, 2006; Rodgers III and Stratton, 2010, for white males only; Mamun, 2012). The evidence from these studies therefore give credence to the hypothesis of increased productivity through specialisation, as explanation for the observed male marriage wage premium.

Cornwell and Ruppert (1997), however, do not share this view on the duration of marriage. The authors show that the magnitude of the marriage premium is not related to the duration of marriage (nor the duration of divorce), and therefore that the premium, once corrected for the selection effect, cannot be associated with a specialisation effect. They attribute the observed marriage premium to a "settle down" effect that may take the form, for example, of an increase in labour supply (reduction of leisure) at the time of couple formation. Hersch and Stratton (2000) similarly do not find a significant relationship between the marriage premium and duration of marriage. To explain the difference in their results as compared to previous work in the domain, the authors point to the fact that their data consisted of cohorts of older men (18-59 year olds, as compared to men aged 24-31 years in Gray (1997), for example).

Krashinsky (2004), replicating the specification in Korenmann and Neumark (1991) but with panel data over a longer period, challenges these earlier results. The author shows that in a fixed-effects regression of the earnings equation, the impact of marriage itself is not statistically significant and the fact that the duration of marriage is positive and statistically significant does not necessarily indicate a phenomenon of gradual accumulation of human capital due to marriage. This is because the marriage premium amongst married men (observed in a model without fixed effects) is similar to the premium amongst unmarried men who eventually get married (Dougherty 2006 found a similar result), and this result suggests that it is more an effect of selection rather than specialisation.[17] To test the relevance of the interpretation of the positive coefficient on the marriage variable, Krashinsky performs another regression using the rate of change of wage as an alternative dependent variable. This alternative estimation shows that the fact of being married is not related to the rate of change of wages, whereas the fact of being "soon to be married" is positively related to the rate of change of wages. The interpretation is that the soon-to-be-married are therefore on a wage growth path that is more pronounced than that of the unmarried, and this is a relevant indicator of a selection effect. Testing the idea that unobserved individual characteristics (contributing to maturity) that have an impact on both the wage rate and the probability of marriage are not constant over time, Dougherty

17 This hypothesis is reinforced, according to the author, by the fact that the inclusion in the specification of the results on a skills test significantly reduces the coefficient associated with marriage.

(2006) proposes a specification for identifying the effects of marriage on the wage rate for different periods before and after marriage. He shows that the marriage premium for men (compared to men who never marry) is statistically significant from the fifth year before the wedding and increases until the eighth year following the wedding. The fact that the premium appears before marriage, added to the fact that the author also finds a premium for married women, incites Dougherty, just as in Krashinsky (2004), to cast doubt on the hypothesis of specialisation as an explanation for the observed male marriage wage premium. Using Danish data, Datta Gupta et al. (2007) show that the marriage premium decreases with the duration of marriage, and that the "cohabitation premium" increases (at a decreasing rate) with the duration of cohabitation, but that these relationships actually hide the fact that the duration of paternity is statistically significant and negatively related to wages.[18]

The work of Loughran and Zissimopoulos (2009) confirm this analysis using a difference-in-differences regression to take into account possibly unobserved individual heterogeneity.[19] Their findings show that while there is no effect of marriage (and divorce), there is a statistically significant effect of the duration of marriage. This effect is negative (decrease of 2% per year of marriage), which is a rather original result compared to the rest of the literature. Using the same data, the authors find a statistically significant positive effect of marriage when they employ a standard fixed-effects regression. The authors interpret this difference in their results as arising from the fact that men who marry relatively early enjoy a higher salary growth rate (before and after marriage) compared to men who marry later or never marry.

Ahituv and Lerman (2007), using US longitudinal data over 23 years to analyse the effect of marriage on the number of hours worked and hourly wage rates, provide additional evidence relating to the debate on the existence of a marriage bonus. Controlling for unobserved heterogeneity (that is, the effect of selection), the authors find that the marriage earnings premium emerges via several channels. Firstly, marriage or remarriage represents a transition event and this would have a statistically significant effect on both the wage rate and the number of hours worked.[20] Secondly, marriage duration also has a positive impact, though less so compared to the initial impact of marriage, on labour supply and in particular on wage rates. Thirdly, because marriage positively impacts the number of hours worked and changes to hours worked directly impact accumulated work experience and hence wages, marriage thus also has an indirect effect on wage rates.[21]

18 A conclusion that is not shared by Dougherty (2006), which in contrast shows that taking into account the presence of children (which has a negative effect for children over six years) does not significantly modify the coefficients associated with the variables for time to/during the marriage. The author however does not have a variable for the duration of fatherhood, only a variable for the simple presence of children.

19 The first difference being that of individual-specific differences between time periods t and $(t-1)$; the authors then take the difference between each of the first differences and its within-person mean across time intervals.

20 The impact of remarriage is not statistically significant on the number of hours of work.

21 From their estimates, the authors simulate the earnings gain of a man at the median who gets married and stays married compared to a man who remains single. They find that 72% of the gain comes from an

1.3 The effect of specialisation

Beyond the question of the existence and the extent of a selection effect, many authors explore the most likely hypothesis for the existence of a male marriage premium net of any selection effects — the specialisation hypothesis. The classic case has the married man specialising in market activity while his wife specialises in the household responsibilities. The man, being exempted from all or part of the domestic responsibilities, can therefore devote more time and intensity to market activity and hence increase his human capital, productivity and consequently wages (Becker, 1985).[22]

Without explicit reference to the assumption of specialisation, Rodgers III and Stratton (2010) test the hypothesis that the increase in human capital related to marriage results from increased training (on the job or formal training) during the marriage, either because married men opt for training in response to their new family responsibilities or because of incentives provided by employers who prefer to invest in the more stable elements of their workforce (the turnover amongst married men being lower than that amongst unmarried men). Their results show that the introduction in the wage equation of a variable for training duration during the marriage confirms a positive and statistically significant effect, but has little impact on the estimated coefficients associated with marriage and marriage duration. The interpretation of this result calls into question the hypothesis that the male marriage premium is due to a marriage-induced increase in productivity. In the particular case of university faculty, however, Bellas (1992), using a simple OLS regression, finds a positive relationship between being married and productivity (as measured by a productivity index based on scientific publications).

In estimations of male wage equations, specialisation is sometimes approximated by the wife's labour force participation or her number of hours of labour market work. The relationship between this variable and the time spent by men on domestic responsibilities is however low, and therefore the poor quality of the proxy may precisely be the reason why the results are not convergent. In Bellas (1992), for example, the male marriage premium for university faculty in the United States is significantly higher in cases where the spouse is not working as compared to cases where both spouses work. Loh (1996) on the other hand finds that the male marriage wage premium does not vary with the labour force participation status of the wife. Bardasi and Taylor (2008) find that the wife's time spent on labour market work has a negative effect on the husband's wage rate, while Gray (1997) finds that the negative effect of the wife's hours of labour market work disappears in the second period of a two-

increase in the wage rate, 16% from an increase in the number of hours worked, with the remaining 12% due to the indirect effect of marriage on wage rates.

22 This hypothesis is strongly supported by Jacquemart (2014), based on qualitative interviews with senior executives in the French public service. Conversely, El Hara and Moreau (2007), using German data, shows that marriage-related specialisation (transition from cohabitation to marriage) is mainly in the form of women who reduce their labour market activity and disproportionately increase their domestic activity (hence, at the cost of their leisure time). For men, the impact of marriage on their labor supply is not statistically significant, with any reduction of leisure being mainly due to an increase in domestic work.

period fixed-effects GLS model. Jacobsen and Rayack (1996) show that the male wage premium associated with the spouse's market work time disappears, or is greatly reduced, when the estimation takes into account endogeneity (in an instrumental variable model) or heterogeneity (in a fixed-effects model). The authors therefore reject the hypothesis of differential specialisation – that is, male productivity varying depending on the labour market involvement of the wife. They validate instead two alternative hypotheses: that of matching (high-wage men tend to marry women who eventually have a low market activity level), and that of interaction (women marrying high-income men are able to reduce their labour supply). The work of Hotchkiss and Moore (1999) show that in endogenizing the labour supply of the wife, the male penalty associated with the market activity of the wife is tangible only for executives. For non-executives, depending on the specification, the male wage penalty disappears or becomes a bonus – the wife's contribution to household income encourages men to take up riskier opportunities that pay more. Killewald and Gough (2013) introduce a dummy for part-time activity of the wife and show that the variable is positively and significantly associated with the male wage rate. However this indicator of specialisation does not completely eliminate the male marriage premium in the case of men without children and whose wives work full time. According to the authors, this result casts doubt on the hypothesis of specialisation, and especially so given that the authors also identify a marriage wage premium (and not a penalty) for women without children whose husbands work full time.

Other studies, in introducing in the wage equation the time spent on domestic activity by men and/or women, show that the hypothesis of specialisation is not really validated. Hersch (1991) and Hersch and Stratton (2000), for example, show that the inclusion of domestic activity time does not significantly alter the estimated effect of marriage, and this result implies that the marriage effect operates via a different channel than that of specialisation. The same authors showed in a 1997 article, using fixed-effects regressions and instrumental variables for a sample of married men and women, that the link between the time men spent on domestic responsibilities and their wage rates was not statistically significant, unlike in the case of women. According to the authors, this gender difference challenges the relevance of the specialisation hypothesis expressed in terms of a difference in effort and thus productivity. Similarly, Loh (1996) shows that the male marriage premium is independent of the number of years of market activity of the spouse, for given levels of education of the spouse. The author further justifies his doubts about the specialisation hypothesis by pointing to the finding that premarital cohabitation has no effect on the male marriage premium, contrary to the a priori implication of the "Beckerian" specialisation hypothesis. Pollmann-Schult (2011) also provides several empirical arguments against the hypothesis of specialisation in the case of West Germany. Firstly, all else equal, marriage does not lead to significant variation in the time spent on domestic activities in the case of men whose wives are not working, and causes an increase in their time spent

on domestic work when the wife is employed outside the home. Secondly, the relationship between the time a man spends on domestic activities and his wage rate is not statistically significant in empirically estimations. Thirdly, the male marriage premium (and cohabitation premium) are significantly higher when the wife is economically inactive.[23] The author concludes that the three results together suggest that the male marriage premium is not the product of specialisation but probably due to the additional consumption needs that marriage gives rise to (cf. Section 1.5).

Chun and Lee (2001) on the contrary, in instrumenting the wife's time spent on market activity (the endogeneity is due to the fact that the market activity choice of the wife depends on the husband's income), conclude that there is a rather strong effect of specialisation. Their estimation results indicate that a man married to an economically inactive woman would have a premium of 31% compared to a non-married man, and only 3% when the wife works full time (40 hours). Similarly, Bardasi and Taylor (2008), using a sample of married British and estimating a fixed-effects regression, find a positive and statistically significant relationship between the number of domestic activities undertaken by the wife and the husband's wage rate.[24] In the same study, the authors also find a negative relationship between the husband's wage rate and the wife's time spent on market activity. However, when the authors control for the endogeneity of the wife's choices relating to household and market work (through the use of an instrumental variable procedure), only the effect of time spent on market activity remains, and is even strengthened, contrary to the initial intuition that women whose husbands have a high wage rate would tend to choose to work less. The authors conclude that the results illustrate the hypothesis of positive matching within couples ("birds of a feather flock together").

Lincoln (2008) estimates that although the annual salary of married men working full time[25] does not vary significantly, all things being equal, regardless of the time spent on domestic work by them or their spouse, a similar analysis of all salaried men (regardless of their market work quotient) shows the expected negative and significant relationship between time spent on domestic activities and salary. Besides the time spent on domestic responsibilities, the nature of such responsibilities could also impact on the degree of specialisation, depending on the timing compatibility of the household and market activities. Noonan (2001), using a fixed-effects regression for married men and women, shows that only "traditionally feminine" domestic tasks have a statistically significant negative impact on the wage rate, with a stronger effect apparent for women as compared to men. This is because traditionally masculine domestic responsibilities such as minor household repairs can be more easily shifted to weekends, whereas traditionally feminine responsibilities such as cooking and child care constantly compete with market work for weekday time. Mamun (2012), estimating the cross effect of

23 The author is careful to verify, via an instrumental variable regression, that the wife's labour supply is not endogenous.

24 The premium increases by 0.9% for each activity undertaken by the wife, with the number of activities varying from 0 to 4.

25 The author makes the assumption that the specialisation effect should be stronger for men working full-time.

marriage/cohabitation by level of education of the partner, gives credence to the hypothesis that the premium to marriage or cohabitation is more likely due to a joint human capital effect than due to gender role specialisation, especially in the context of increased female labour market activity. The author's finding shows that the premium is higher for men in couples (married or not) whose spouses are highly educated and economically active.

1.4 The effect of discrimination

The second most common hypothesis in the literature to explain the observed male marriage premium net of any selection effect is that relating to discrimination by employers. Employers may have a preference for married men because they are themselves married, or because they are of the opinion that married men are more invested professionally (this is a case of signalling–marriage may reveal valuable personal attributes such as honesty, loyalty, determination). In this respect, Korenman and Neumark (1991) show, using corporate-level data, that the male marriage premium is more due to the fact that married men are better rated by their superiors as compared to unmarried men and are hence promoted to higher levels (earning higher salaries), rather than that married men earn higher salaries than non-married men at a given job level. Pollmann-Schult (2011), using German data, finds that the premium to marriage or cohabitation is not statistically significant amongst the self-employed, giving credence to the hypothesis of employer discrimination in favour of married men. Correll et al (2007), using a laboratory experimental approach, show that in the recruitment process in the U.S., men benefit significantly from a fatherhood wage premium whereas mothers do not. Compared to a man with the same characteristics but without children, a father is perceived as someone who is more committed, and both his probability of being hired as well as the offered starting salary are higher.[26] Hewitt et al (2002), using quantile regressions on Australian data, show that the observed male marriage premium is not perceived for men whose income is in the top decile. The specialisation hypothesis, like that of the hypothesis of selection, would therefore not be relevant for this category of employees. The authors propose the explanation that the very high salaries enjoyed by men in the top income decile follow a logic of "occupational rent" that is completely independent of the marital status of individuals.

Jacobsen and Rayack (1996) however reject the hypothesis of employer discrimination given that they observe a male marriage premium in their OLS model applied to a sample of self-employed men. The findings in Loh (1996) cast doubts on the specialisation hypothesis, an implication of which is that the marriage premium should be applicable for both salaried and self-employed men. The

26 The difference in the probability of being hired however is just significant at the 10% threshold and is not confirmed by field experiments conducted by the same authors. In the field experiment, the success rate in landing an interview following an application submitted in response to a job offer is not significantly different between fathers and men without children.

author's estimation results indicate that the self-employed face a negative marriage premium (that is, a penalty) even after taking into account the effect of selection on this particular group of economically active men. Petersen et al. (2011) distinguish between animus discrimination, which is based on social norms without objective justification, and statistical discrimination, which is based on proven statistical differences. The latter arises out of the observation that it is too costly to measure individual productivity, it may be rational for employers to rely on average productivity indicators by social groups – for example, the fact that married men are on average more productive than non-married men may be used as justification for offering a higher pay to a married man relative to non-married man. The historical development towards greater gender equality (decline of marriage and of specialisation within couples) should reduce the first form of discrimination, but not the second. The authors' analysis shows, firstly, that with a fixed-effects estimation at the level of "occupation- firm", the bulk (75%) of the observed unconditional marriage premium is explained by a selection effect – married men choose occupations and firms that pay more. For a given occupation and firm, the salary difference between married and non-married is minimal. Furthermore, the residual marriage wage premium has not evolved over the three time periods analysed, from 1979 to 1996, periods over which there has been important development in gender equality, which refutes the hypothesis of animus discrimination.

1.5 The hypothesis of behaviour change resulting from greater sense of responsibility

The third hypothesis is that a married man changes his behaviour, towards a greater investment in market activity, in response to his sense of responsibility for his family's standard of living in the present and the future. Using a random-effects model, Astone et al. (2010) show that for men, there is a positive relationship between the transition to marriage without children (the pure effect of marriage) and the likelihood of becoming economically active. The same relationship is established between marriage and the number of hours of work. Secondly, fatherhood is positively associated with work effort only for non-married men, and especially so for younger men (no fatherhood effect for men over 30 years). For married men, fatherhood has no impact except when it occurs at a relatively young age (25-29 years), but in this case the effect is limited and negative. The authors interpret these differences by age and marital status as a possible effect of unplanned parenthood, since the positive effect is highest for the young unmarried.

Behaviour change can also operate through a compensating wage mechanism, independently of specialisation, whereby married men (or fathers) accept jobs that offer less advantageous working conditions but that are better paid. According to Reed and Harford (1989), the marriage premium does not reflect a difference in productivity but rather a difference in tastes in that marriage is a proxy for the demand for "family" (in the same way that education is a proxy for the demand for cultural capital,

for example). The (costly) demand for children in particular pushes a person to choose better paid but less pleasant jobs, and reduces the demand for leisure. Hersch (1991) shows for example that the introduction of variables for working conditions in the wage equation estimated by OLS without fixed effects reduces by one-third the coefficient on the marriage variable. Gorman (1999) shows that married men are more likely than never-married men to voluntarily leave a job for another job, and have a lower probability of losing a job or of leaving voluntarily in the absence of an alternative job. These observations illustrate the least risky behaviour of married men with respect to employment and wage gains (which are more likely associated with voluntary departures for another job). However, the author shows that compared to non-married men who do not change jobs, the annual salary gain of married men who do change jobs is not, all else equal, significantly different, whereas the marriage premium (on the annual wage change) is important and very significant for married men who do not change jobs. Pollmann-Schult (2011), however, show that this hypothesis of compensating wage is not validated in their data from Germany: marriage and cohabitation are not significantly related to the rate of transition of men towards better paid jobs with less favourable working conditions. The author finds that marriage and cohabitation are only positively related to the rate of transition to better paying jobs, with the caveat that this conclusion emerges out of an estimation using a database that does not contain all the characteristics describing working conditions.

This hypothesis of responsibility is similar to that expressed in terms of social norms by which the scrutiny of of family and friends encourages married men to invest more in their professional activity (Ashwin and Isupova, 2014). Pollmann-Schult (2011) provides indirect support for the hypothesis that the observed male marriage wage premium reflects a response to increased family consumption needs. The author finds that, all else equal, married or cohabiting men are less satisfied with their income than men not living in a couple. In Ashwin and Isupova (2014), the authors use qualitative data from Russia with the aim of moving beyond the hypothesis of specialisation towards identifying three other mechanisms contributing to the observed male marriage bonus: the pressure exerted by the wife with respect to household revenue independently of eventual specialisation[27], the intrinsic motivation of men to be the "male breadwinner", and the wife's influence in preventing the husband from engaging in harmful behaviours (for example, drinking and gambling). The authors also reject the selection hypothesis – their qualitative data indicate that individual traits have little if any role in explaining both earning capacity and marriageability. It is rather the institution of marriage that motivates the development of earning capacity: during the premarital period, the anticipation of marriage and family life motivate men to invest in marketable human capital so as to be "marriageable".

27 The wife could contribute indirectly to an increase in the market human capital of her husband, for example by exploiting her own social networks to help him in his job search, or by contributing to the positive image of the husband in social exchanges with the husband's supervisor, or by funding his vocational training.

More specifically, the new feeling of responsibility that comes with fatherhood could in theory translate into a positive wage effect (a "fatherhood premium"), but this possibility is not clearly established in the data. It is estimated to be positive and statistically significant by Lundberg and Rose (2000, 2002) using random- and fixed-effects regressions,[28] as well as by Hodges and Budig (2010) using a fixed effect regression, and by Meurs et al (2010). However, several studies in contrary find a statistically insignificant effect associated with the number of children, using a fixed-effects specification (Datta Gupta and Smith, 2002; Stratton, 2002; Ahituv and Lerman, 2007), or a specification without fixed effects (Phipps et al., 2001; Lincoln 2008). Some studies do identify a fatherhood premium, but only in the presence of young children (Hersch and Stratton, 2000; Bardasi and Taylor, 2008), or uniquely for the first child and the second only (Lundberg et Rose, 2002), or only for white men (Hill, 1979 ; Cohen 2002), or only in the case of salaried men and not the self-employed (Hundley 2000; Pollmann-Schult, 2011). Lundberg and Rose (2002) likewise show that the fatherhood wage premium and the hours worked vary by the gender of the child –they are significantly higher following the birth of a boy as compared to a girl (especially for the later cohort of men born after 1950). As this effect is not observed for mothers on the one hand, and given statistical evidence that the birth of a boy relative to a girl reduces the likelihood of divorce, the authors suggest that the time spent by the father with his son increases the value of marriage and family life for him and thus contributes to increasing his commitment to the labour market. Glauber (2008) finds that the fatherhood premium shows up only for married men, with the premium increasing in the number of children. The same study also finds evidence of differences by race, as the premium is estimated to be lower for African-American men compared to white men. Like Glauber (2008), Killewald and Gough (2013) show that the fatherhood effect is not proven for unmarried men, but it is for married men with at least two children. Furthermore, a married man with at least two children enjoys a 5% wage premium compared to a married man without children, thus suggesting the existence of a paternity premium in addition to the male marriage premium. Killewald (2013) also shows that the fatherhood wage premium of married men does not exist when the child does not live with the father or when the child is not his biological offspring. These results strengthen the hypothesis that men's behaviour change associated with paternity falls within a social norm of "masculine identity". Finally, Loughran and Zissimopoulos (2009), using a specification that takes into account unobserved heterogeneity that

28 To elaborate, Lundberg and Rose (2000) estimate the impact of the arrival of a first child on wages and the labour supply of the couple by distinguishing between situations where the wife interrupts or not her labour market activity following this first birth. In the case of an interruption, the estimates of the authors confirm the hypothesis of specialisation –the husband's labour supply and wage rates increase, while the wife's wages decrease. In cases where the mother's labour market activity is not interrupted, however, there is no wage decrease for the mothers but the fathers' wages do still rise, and the number of hours worked decreased for both spouses. The results thus more likely corroborate an explanation of adaptive behavior rather than a pure effect of increasing specialisation.

varies over time, find that fatherhood has no significant effect on the male wage rate.

1.6 Marriage and cohabitation

Traditionally, most studies in the field distinguished between married men, divorced men and never-married men, with the last category lumping together both single men and men who live with a spouse outside of marriage. Widowers, often in very small numbers, are either excluded from the analysis, or mixed in with the divorced. Schoeni (1995), however, shows how the failure to distinguish between the separate categories constitutes a model misspecification: a specification based on five categories–married, divorced, separated, widowed, never married– leads to a significantly increased value for the estimated coefficient associated with the variable "married", as compared to a specification with only two categories (married versus unmarried).

More recent work in the field seek to distinguish between the effect of marriage and the effect of couple-hood by comparing married men to unmarried men living with a partner. The central hypothesis is that, compared to marriage, cohabitation would result in a smaller wage premium due to the fact that it is a less stable and less cooperative form of union with less legal responsibility, perhaps less pressure exerted by the wife, fewer tax benefits, less protection in the event of separation or the death of a spouse, and consequently less pronounced gender role specialisation during the union (El Lahra and Moreau, 2007).

Some studies have found, after taking into account the selection effect, a lower premium for men living in unmarried couples as compared to married men. Datta Gupta and Smith (2002), analysing data from Denmark using a random effects model, find that the estimated premium for cohabitants is lower. Loh (1996) posits that the cohabitation premium (the magnitude of which is less than that for marriage) is probably temporary in that premarital cohabitation has no statistically significant effect on the marriage premium for married men. According to Cohen (2002), the decline in the male marriage premium observed in the last quarter of the twentieth century in the United States can be explained in part[29] by the development of cohabitation as an alternative to marriage; the marriage premium is indeed higher when cohabiting men are excluded from the category of the never-married. Similarly, Mamun (2012) shows that, subject to an endogeneity bias[30], the cohabitation premium is on the one hand statistically significant only for cohabitations ending in marriage and, secondly, it is not linked to the duration of cohabitation. Datta Gupta et al. (2007), using Danish data, show that a model specification which does not distinguish cohabitants from the single-and-never-married results in a null estimated marriage bonus after correction for possible selection effects, while a detailed specification (married, cohabiting, divorced/separated, previously cohabiting, never in a

29 The other important factor is the increase in female labour force participation over the period, which reduces gender role specialisation within the couple, and hence the male marriage premium.

30 Given that the outcome of cohabitation may not be independent of the male wage.

couple) permits the identification of a statistically significant premium for couple-hood (slightly higher for marriage, after taking into account the duration of couple-hood). Finally, Killewald and Gough (2013) identify a cohabitation premium that is weaker than the marriage premium for men without children, and show that the gap would be higher for fathers given that only married men benefit from a statistically significant fatherhood premium (from two children onwards).

Stratton (2002) on the contrary estimated that cohabitation, whether considered in terms of simple status or the duration of, would not be the source of a statistically significant wage premium, unlike in the case of marriage where the duration is positively and significantly associated with the male wage. The author points out, however, on the basis of an alternative estimation, that long-term cohabitation could be considered similar to marriage, at least from the wage premium point of view. Barg and Beblo (2009), using the method of matching in their analyses of data from Germany, show that the male cohabitation premium (lower than that for marriage) arises solely out of a selection effect that is similar to that in the case of marriage (although marriage also encourages greater gender role specialisation). Estimation results in Bardasi and Taylor (2008), on British data, lead to the conclusion of an absence of a wage premium for cohabitation once unobserved individual heterogeneity is taken into account by use of a fixed effects model. This result is corroborated by Pollmann-Schult (2011) for German data, and Dougherty (2006) for the United States.

2 THE IMPACT OF MARRIAGE ON WOMEN

In contrast to the empirical literature on the impact of marriage on men's economic outcomes, there is no broad consensus on the sign or even the existence of an effect of marriage on women's wages. Empirical analyses that focus on estimating the impact of marriage on women's wages have produced mixed, even contradictory, results. Amongst the studies that have identified a marriage wage effect for women, there is some evidence that a marriage wage penalty exists for older cohorts of women, but not for the younger cohorts. Avellar & Smock (2003), controlling for the number of children, find that young women in 1975-1985 in the U.S. faced a marriage wage penalty whereas the younger cohort of women in 1986-1998 enjoyed a marriage premium. This result is consistent with the evidence in Blau and Beller (1988), based on data from the US Current Population Surveys for the period 1971-1981, where after adjusting for gender differences in hours and weeks worked, the female-male earnings ratio significantly increased over the 1970s. The diminishing gender wage gap, whether due to reduced gender role specialisation in the more recent decades or other reasons such as less gender discrimination in the labour market, would contribute towards reducing the marriage wage penalty for women.[31] Other studies that have also found a negative marriage impact on women's wages are Budig & England (2001), and Loughran & Zissimopoulos (2009).

31 Avellar and Smock (2003) use fixed-effects models to address the issue of possible bias due to individual heterogeneity, whilst Blau and Beller (1988) use the Heckman method of correcting for selectivity bias.

In contrast to these studies that find a marriage penalty for women, there are a number of others which find no impact of marriage on women's wages: Gronau (1988), Hersch (1991), Korenman & Neumark (1992), and Krashinsky (2004) for US data, Duvivier & Narcy (2014) for French data, Hewitt, Western & Baxter (2002) for Australian data. There are in addition many that find that marriage is positively related to women's wages, just as in the case of men (Avellar & Smock, 2003, for younger cohorts of women in the U.S.; Blau & Beller, 1988; Neumark & Korenman, 1994; Waldfogel, 1997; Glauber, 2007; Killewald & Gough, 2013; Petersen, Penner & Høgsnes, 2010, for Norwegian data). It should however be noted that in this last category, the estimation models in general include many factors, and in particular the presence or number of children and information such as work experience and job characteristics, as additional explanatory variables. The positive marriage effect estimated in these studies is thus the "pure" or net effect of marriage after accounting for these other factors that are likely to also have an impact on women's wages.

The great variability in the results pertaining to the marriage impact on women's wages is also present in cross-country studies. Geist (2006), analysing data for fifteen developed countries,[32] estimated the same models (conditional on human capital indicators and household structure variables) for men and women separately, and found that married men consistently had a wage premium, albeit of different magnitudes, but married women had lower, the same, or higher wages than unmarried women, depending on the country. One possible explanation for this variation in the evidence relating to women is cross-country differences in the determinants of gender-role specialisation. As earlier explained in the case of men,[33] gender role specialisation traditionally results in men being able to invest themselves more intensively in labour market work, thus leading to increases in their human capital formation, productivity, and wages. For women, specialisation works in the opposite direction, as women traditionally bear the bulk of housework and child care responsibilities at the expense of their labour market involvement. The determinants of gender role specialisation can be classified into three broad categories. Firstly, the extent to which there is specialisation depends on individual values –whether the husband and wife have traditional or progressive attitudes towards gender roles determines the extent of specialisation in household chores, if any. Secondly, the household and social circumstances are also important –whether the couple is married or cohabiting reflects as well as impacts the level of commitment and effort put into the couple-hood and child-rearing. In this context, the existence of a family network to complement the couple's domestic responsibilities can help to balance the gender roles especially in the presence of children. Finally, the institutional context within which the couple find themselves can also have an impact –effective social policies for childcare support and work-family balance initiatives, for example, reduce the burden of domestic work and

32 Austria, Belgium, Canada, Germany, Hungary, Ireland, Israel, Italy, Luxembourg, Mexico, the Netherlands, Russia, Sweden, the United Kingdom, the United States.

33 Section 1.2 above.

could steer a couple towards less gender role specialisation. Given the important cross-country differences in all these aspects, if gender role specialisation is behind the observed wage premiums or penalties, then we can reasonably expect to observe important differences in these premiums or penalties across countries.

Some researchers, for example, Light (2004), have found a marriage bonus for women in the form of access to another working adult's financial resources.[34] Given the female-male wage disparity that has been the object of much study in the literature on labour supply and wages, however, it is not surprising that on average women can be expected to enjoy such a bonus upon marriage. In addition, given economies of scale resulting from the formation of a family unit, in terms of housing and other basic living costs, it is also natural to observe a marriage bonus in the form of increased family resources per capita. The more challenging research question is whether there is a bonus or a penalty on individual earnings or wages as a result of the important family status transition into marriage.

Before entering into the detailed empirical evidence in the literature relating to this question, it is perhaps useful to distinguish between wages, which are the payment per unit of work input (hours, weeks, etc.), and earnings, which is the wage rate multiplied by the number of units of work input.[35] Earnings can be lower as a result of a reduced wage rate for an unchanged number of hours of work, or because of a smaller number of work hours at a given wage rate, or because of a reduction in both wage rate and number of hours of work.[36] Women may face a marriage earnings penalty if they work fewer weeks a year, or fewer hours per week, because of household responsibilities. It is thus necessary to distinguish between the effect of marriage on female labour supply (and hence the effect on income earnings for a given wage rate) as opposed to the effect on female wage rates. Women who stop working following marriage, or work reduced hours, suffer a loss in earnings because of a labour supply effect –fewer hours worked equals lower earnings. In addition, their wage rate may also suffer, for example due to a loss in human capital resulting from the weakened attachment to the labour force, or to a loss of tenure in the company or the economic sector. Gronau (1988), for example, found no evidence of a marriage wage premium nor penalty for women, but did find that being married and having children both increase a woman's tendency to leave the labour force. Since departure from the labour force implies a penalty on labour earnings, and potentially also a penalty on future wage rates due to a loss of human capital, the results from the study are equally relevant in the discussion. The two dimensions are addressed in the literature, with some studies focussing on wages, some on earnings, and some on a variable incorporating both elements[37].

34 The author found that “total family income per adult equivalent” increased upon marriage for women but not for men.

35 In the discussion that follows, the reasoning is valid regardless of the choice of unit of work input. The term “hours” will hence be adopted as the generic case, for ease of expression.

36 Another possibility is obviously that of a disproportionately greater reduction in one of the variables in conjunction with a less important increase in the other.

37 For example, Coverman (1983) estimates a model with the weekly wage as the dependent variable, where

2.1 Women: Wife and Mother

As early as in Hill (1979), and as recently as in Killewald & Gough (2010), a number of researchers have highlighted that in the case of women, more so than for men, there is a critical need to distinguish between the effect of marriage and that of children. A failure to do so may be one explanation for the great variability in the estimation results pertaining to women. As highlighted in Killewald & Gough (2010), there are two major family status transitions that men and women potentially undergo and the two need to be addressed: one is getting married (marital status transition), and the other is going from being childless to being a parent (parental status transition), though obviously not necessarily in that order.

Family status transitions

		Parental status	
		Parent	Childless
Marital status	Married	A	B
	Unmarried	C	D

Traditionally, studies have focussed on the marriage wage premium for men (comparing AB to CD) and on the motherhood wage penalty for women (AC versus BD), although marital status has often been included as an additional control in the analyses for women. Killewald & Gough (2010) attempt to disentangle the effects of the two family status transitions for women. Using a modified Heckman selection methodology to correct for the possible effect of selection,[38] the authors find that women enjoy a wage premium both in the case of marriage and cohabitation, and this positive impact is likely due to a selection effect rather than a causal effect of couple-hood. The results also show that women however face a substantial penalty upon transition into motherhood. In a later paper, Killewald & Gough (2013), using the same data from the 1979 cohort of the US National Longitudinal Survey of Youth, present evidence on the theory of within-household specialisation that is often cited as an explanation of men's marriage wage premium. The authors find that childless men and women both enjoy a marriage wage premium. Children however have a different impact on the hourly wages of their two parents, with fathers enjoying a "fatherhood premium" whereas mothers face a penalty. In the case of people with children, marriage augments the fatherhood premium but has no impact on the

the weekly wage is derived by dividing the individual's yearly total job earnings by the number of weeks per year that the individual worked. The term "weekly wage" in this case thus refers to weekly earnings.

38 As in the case for men, selection could theoretically result in a positive bias on the estimated marriage coefficient for women, since the idea is that some unobserved factor or factors may make a person both a higher wage earner and more marriagable in some intrinsic way. Unlike in the case of men, however, there is also the possibility that selection could work in the opposite direction for women: women who have a low wage potential could be more likely to marry so as to be able to enjoy the financial benefits in the form of their husband's income. In this case, there would be an attentuation bias in the estimated marriage coefficient in women's wage equations.

motherhood penalty. That is, at least in the case of women, the results appear to refute the specialisation hypothesis, since on the one hand marriage is associated with a wage premium for both men and women in the absence of children, and when children are present, marriage does not augment the wage penalty that mothers face. The results from these two studies therefore point to the relevance of focussing on the motherhood wage impact in the case of women, rather than on the impact of marriage per se.

Kuhhirt & Ludwig (2012), using data from Germany for the period 1985-2007, had the valuable opportunity to compare initially childless women who became mothers during the observation period, to women who remained childless, and found evidence of a wage penalty specifically due to motherhood. Waldfogel (1997), like Killewald & Gough (2010), considered the effects of two distinct family status variables –marital status and motherhood– on women's earnings. Across difference models, pooled OLS and fixed-effects models, the author consistently finds a positive coefficient on the variable for "married" and negative coefficients on the variables for children (one versus two or more). Craig & Mullan (2010), analysing data from five developed countries[39], find that parents have higher and less gender-equal workloads than non-parents in all cases, with the difference being most pronounced in the US and Australia. The authors highlight that there are "two intertwined equity issues at stake: disparities between those with dependents and those without and disparities between men and women within households". Within couples, women have traditionally borne a disproportionate share of the burden of household chores and child-rearing. In addition, women faced, and in many countries still face, gender discrimination in the workforce. Social developments in most developed countries in recent decades have resulted in reducing gender inequality in the labour market, but gender role specialisation within the household faces more inertia. Studies have found that men do not vary much their time allocation between paid and unpaid work following the birth of their children; women in the same situation however are observed to significantly shift towards more unpaid (household) work.[40] Indeed, some researchers go so far as to state that "it is the care responsibilities that are paramount; if men have the primary responsibility for care, they too suffer disadvantage in the workplace, and conversely, if women avoid it, they can compete more equally with men in the public sphere." (Folbre 2007, cited in Craig & Mullan 2010, p. 1345).

The motherhood wage penalty is estimated in various forms in the literature, with some studies focusing on the simple presence or absence of children, while other studies try to capture the effect of each additional child or a threshold number of children (e.g. "more than two"). For example, Angrist & Evans (1998), using US Census Public Use Micro Samples 1980 and 1990, find that after controlling for the endogeneity of marital status and children, having more than two children reduced women's number of weeks worked in a year, and the number of hours per week worked, and hence the

39 US, Australia, Italy, France, Denmark.

40 See for example, Angrist & Evans (1998), Craig & Mullan (2010), Killewald & Gough (2013).

annual labour income earned. The same estimation showed no significant corresponding effect on husbands' labour income, and in addition finds a larger negative effect of children on women's earnings in the 1990 census data as compared to the 1980 data.[41] Avellar & Smock (2003), controlling for unobserved heterogeneity and human capital variables, find that each additional child has a negative effect of between 1% and 3.8% on women's wages.[42] Budig & England (2001), controlling for job characteristics, estimate a wage penalty of 4% per child. Anderson et al. (2003), using data from the National Longitudinal Survey of Labor Market Experience of Young Women (NLSYW), find a 3% wage penalty for mothers with one child and 5.5% for mothers with two or more children. Glauber (2007), using both OLS and fixed-effects models, finds a non-linear motherhood wage penalty: mothers with 1, 2, 3, ≥4 children face a wage penalty of zero to 2%, 6–8%, 9–12%, and 6–9%, respectively. Kuhhirt & Ludwig (2012) find that after controlling for human capital and job characteristics, the wage penalty due to motherhood in Germany is 6%. Petersen et al. (2010), using data from Norway for the period 1990–1996, find a small wage penalty of 0.6% for mothers with one child and 1.4% for mothers with two or more children. Whilst the exact magnitude of the motherhood penalty varies across studies, what is important to note is the consistent finding of a statistically significant motherhood wage penalty within the range of roughly 1% and 4% per child.

2.2 Mechanisms by which children impact mothers' wages

In light of the evidence that some form of motherhood earnings or wage penalty exists, it is interesting to explore the possible mechanisms by which children may negatively impact the wages of their mothers. A number of mechanisms can be identified: (a) less time and effort available for paid market work because of child care and household work constraints, (b) less labour market experience and lower human capital accumulation due to career breaks (in the form of maternity leave, or job departure for child care reasons) or time constraints imposed by family responsibilities (i.e. lack of availability for training opportunities), (c) selection into lower paid jobs with more flexible working conditions, (d) lower motivation or career orientation after the birth of children, and finally, (e) discrimination by employers, in the form of lower wages in anticipation of future maternity and child care leave demands, or lower wage growth.

On the first mechanism, Keene & Reynolds (2005), using data from the 1992 US National Study of the Changing Workforce to address the issue of negative family-to-work spillover, find that

41 This last point is in contrast to the results in Avellar and Smock (2003), which found that more recent cohorts of women seem to face less of a marriage wage penalty compared to older cohorts. The difference arises out of the fact that Avellar and Smock (2003) focus on the marriage wage penalty, whereas Angrist & Evans (1998) focus on the earnings penalty related to motherhood. These two studies taken together illustrate the importance of distinguishing between marriage and motherhood in analyses of the "family gap" in pay.

42 Variation across the different estimation models used – pooled ordinary least squares and fixed-effects.

women are twice as likely as men to report that family demands negatively affected their job performance. Anderson et al. (2003), in addition to finding a negative wage effect for mothers, report that the penalty is most pronounced for medium-skilled mothers, who face the most rigid working hours on average.[43] Coverman (1983), using the 1977 Quality of Employment Survey of 1515 respondents, found that time spent on domestic work had a negative impact on wages in the case of both men and women, supporting the hypothesis that gender role specialisation within households is an important factor in explaining women's (mothers') observed lower market wages. In the same vein, Hersch (1991b), using original data collected in Oregon, US, in 1986, found that after controlling for the direct impact of household responsibilities on women's wages, the number of children no longer has a negative effect. This last result supports the argument that it is not children per se but rather the added household responsibilities that come with having children, that negatively impact mothers' wages. Kuhhirt & Ludwig (2012), using finer distinctions for household responsibilities, find that women in Germany faced a wage penalty of 1% for each hour of housework per day and 0.3% for each hour of child care per day.

As for mechanism (b), Keene & Reynolds (2005) present evidence that women reported making more adjustments, as compared to men, in terms of refusing overtime and turning down job assignments due to family constraints. A number of other studies also attempt to control for human capital variables in their wage regressions – for example, Avellar & Smock (2003) and Kuhhirt & Ludwig (2012). The latter study finds that each year of maternity leave or homemaker status translated into a 4% to 5% wage penalty for women in Germany. In the case of France, Duvivier & Narcy (2014), using data from the "Families and Employers Survey" of 2004–2005, determine that child-related career interruptions explain part of the observed wage penalty that mothers face. Meurs et al. (2010), using the same dataset for France, found that children do not have a direct impact on women's hourly wages, but do have a statistically significant negative impact via women's departure from the labour force due to child-related responsibilities (one year out of the labour force reduces mothers' hourly wage by between 2.1% and 2.5%, and this is in addition to the lost returns of 1.7% to work experience and 0.9% to tenure).

The other indirect negative impact of children on mothers' wages is via flexible labour arrangements such as part-time work. In the case of France, Meurs et al. (2010) present evidence that part-time work is twice more prevalent amongst mothers as it is amongst childless women. The same study finds none of these impacts for the separate wage regressions on the data for men. Besides part-time work, mothers could also sort into companies or sectors that offer more flexible work

43 This result is also relevant to the possibility that mothers have lower wages because they self-select into jobs that have more flexible working hours or working conditions (mechanism (c) above), such jobs being in general lower paid. Anderson et al. (2003), for example, present evidence that mothers trade higher earnings for jobs with more flexible working conditions.

arrangements, and such companies in general offer lower wages or lower wage growth. Beblo et al. (2009), using an administrative data set from Germany and employing a unique method of matching mothers who return to full-time employment with non-mothers within the same establishment who exhibit similar characteristics, find that the wage penalty for a first birth is 19%.[44] In an alternative estimation in which mothers are matched with non-mothers of similar characteristics but across establishments, the authors find that the corresponding penalty is much larger, at 26%. The results therefore suggest that selection into lower-wage establishments is an important factor in explaining part of the observed motherhood wage penalty. Gangl and Ziefle (2009), using panel data from Britain, Germany and the US for women in grouped birth cohorts from 1955 to 1964, found that the motherhood wage penalty ranged from 9% to 18% per child, with the most pronounced effect faced by mothers in Germany. Incorporating labour market mechanisms in their estimations, the authors find that career breaks and mobility into jobs with more flexible working conditions fully account for the motherhood wage penalty in Britain and the US. In Germany, however, the penalties due to these labour market behaviour by mothers did not fully explain observed wage differentials, leading the authors to speculate the existence of relatively more statistical discrimination against mothers in the German labour market as compared to the other countries.[45]

The issue of employer discrimination against mothers, although possibly indicated by the existence of a residual wage penalty even after accounting for various labour market mechanisms that could explain wage differentials, has not been a focus of much study in the empirical literature. There is however an interesting paper by Correll et al. (2007), on the results of their laboratory experiment and audit study of actual employers in the United States. The authors found in the laboratory experiment that mothers tended to be penalised on a host of measures such as perceived competence and recommended starting salary, whereas men with children were not only not penalised but in some instances benefited from their fatherhood status. The audit study of actual employers further revealed evidence of discrimination against mothers but not fathers in the real world job market.

Regardless of the source of the observed wage penalty that mothers face in the labour market, the empirical analyses in this domain of research in general find that accounting for these mechanisms greatly reduces the observed unconditional wage gap, and in some cases eliminates it altogether. For example, Hersch (1991b) found that the number of children was positively related to wages for women, just as it is for men, once household responsibilities are included as controls. Kuhhirt &

44 Mostly due to intervening wage growth enjoyed by the non-mothers who did not have an interruption in employment.

45 The German data used in Gangl and Ziefle (2009), and in the earlier-cited Kuhhirt & Ludwig (2012), is from the German Socio-Economic Panel, whereas that used in Beblo et al. (2009) is an administrative data set of all employees in Germany liable to social security. The different sources of data and the different statistical methodologies used in the three studies preclude direct comparison of the results for Germany. That said, the basic result across studies is that there exists a significant motherhood wage penalty, and this common conclusion contributes to confidence in the robustness of the general findings on the issue.

Ludwig (2012) also found that including various controls in the form of employment breaks and family responsibilities such as housework greatly reduced the motherhood wage penalty in Germany (from between 14% and 24% in models with few explanatory variables, to 6% in their full model).[46] Petersen et al. (2010) similarly found that the relatively small motherhood wage penalty (between 0.6% and 1.4%) they observed in their data for Norway was mostly due to sorting on occupations. That is, mothers selecting into occupations that pay less, most likely so as to benefit from greater flexibility in working hours or conditions. In the case of France, Duvivier and Narcy (2014) found that the motherhood wage gap disappears once controls are included for reduced labour supply of mothers, child-related career interruptions, less access to management positions, and adjustments in working conditions.

While these studies shed valuable light on the sources of the motherhood wage penalty observed in the data, it remains that the empirical evidence overall indicates that mothers suffer a wage penalty in the labour market. Whether this penalty is due to child-related responsibilities or breaks in employment, the evidence shows that these factors negatively impact the wages, earnings or career of women with children. Econometric studies that include as controls variables such as housework, employment breaks or other labour market mechanisms in many cases arrive at a conclusion of no remaining residual wage gap. These results cannot however be interpreted as evidence of the absence of a motherhood wage penalty, since the explanatory variables included in the wage regressions are precisely variables that are relevant only to mothers.[47] The real take-home following a review of the results from these studies therefore is that those variables included in the wage regressions point to the mechanisms by which mothers face a wage or earnings penalty, and the finding of a zero residual wage gap suggests that other possible explanations such as employer discrimination, for example, are not relevant in the context analysed.

2.3 Some comments on the motherhood wage penalty

To conclude this review of the evidence relating to the motherhood wage penalty, a number of important points are worthy of mention. The first is that the motherhood wage penalty, where it exists, varies depending on the individual characteristics of the mother –in particular, race, education, socioeconomic status. Angrist & Evans (1998), for example, find the negative impact of children on mother's labour supply and income particularly more pronounced amongst poorer and less educated women; amongst college-educated women and women whose husbands have high wages, the effect is small or absent. Shirley & Wallace (2004), using data from the 1996 Indiana Quality of Employment

46 Results consistent with those in Gangl and Ziefle (2009).

47 They may also be relevant to fathers, in families where the traditional roles are reversed and it is the woman who is dominant in the labour market and the man in the household responsibilities. These cases however remain relatively rare, even in developed countries where societal values on gender roles are deemed progressive.

Survey, find significant differences between working-class and non-working-class women, with regards to the effects of domestic work. For example, time spent on domestic work has a larger negative impact on non-working class women's earnings as compared to working-class women. Glauber (2007) finds that the motherhood wage penalty in the U.S. is larger for white mothers than for African American and Hispanic mothers. Pal & Waldfogel (2014), using data from the US March Current Population Surveys 1978 to 2008, also find that the motherhood wage penalty differed depending on women's race and educational attainment. Budig and Hodges (2010), using data from the 1979 to 2004 waves of the US NLSY, find that while there exists a significant motherhood earnings penalty across the earnings distribution, it is women at the low-wage end that face the largest penalty proportionately.

Another issue worth highlighting is the importance of the societal or institutional context within which parents find themselves. The review of the literature shows evidence of small or insignificant motherhood wage penalties in the Scandinavian countries—Datta Gupta & Smith (2002), analysing data for Denmark, 1980-1995, Albrecht & Vroman (1999), for data from Sweden, early 1990s, and Petersen et al. (2010), for Norwegian data from 1990-1996— as compared to the results from the United States and elsewhere. The question is whether this consistency in the results from the Scandinavian countries is due to the strong institutional childcare support structure available in these countries, or perhaps the cultural norms relating to gender equality. Further comparative analyses would be needed to shed light on these finer points of study. The question of institutional context is however not new. Rosenfeld & Kalleberg (1991), for example, analysing data from nine developed countries[48], find evidence of greater gender equality in countries offering more support for children and employed mothers. Gornick et al. (1998) analyses data from fourteen industrialised countries[49] and finds that "child penalties" (as defined by regression-adjusted estimates of the decrease in mothers' post-birth employment probability) were greatest in those countries with the least-developed public policies aimed at supporting the employment of mothers with young children. More recently, Anderson et al. (2003) also present evidence suggesting that social policies may indeed explain the observed difference. The authors' finding that the wage penalty is most pronounced for medium-skilled mothers who face the most rigid working hours supports the hypothesis of the importance of institutional support for child care. Sigle-Rushton and Waldfogel (2007), in comparing the earnings of women with children and women without, by level of education and in eight developed countries[50], also find a distinct geographical variation in outcomes, with mothers in Nordic countries facing the smallest penalties as compared to mothers in Continental Europe and Canada and the US. A very

48 US, Canada, Australia, Great Britain, Japan, W. Germany, Sweden, Norway, Denmark.

49 Finland, Denmark, Sweden, Belgium, France, Norway, Luxembourg, Germany, Italy, Canada, Netherlands, UK, Australia, US.

50 Germany, Netherlands, United Kingdom, Canada, United States, Norway, Sweden and Finland.

recent paper, Pal & Waldfogel (2014), addresses the observed cross-Atlantic difference in the motherhood wage penalty, and posits that one source of the difference lies in the different emphasis placed on social policies helping mothers to reconcile work and family demands.

Similar to the question of societal and institutional framework, there is evidence that the motherhood wage penalty is also dependent on the sector to which mothers belong, whether private or public. Duvivier and Narcy (2014) estimate that mothers of two or more children who work in the private sector in France suffer a much larger wage penalty than their counterparts in the public sector. In particular, child-related career interruptions have a much large negative impact on mothers in the private sector as compared to those in the public sector. The public sector in France, as in most countries, is documented to have more generous working conditions and benefits, particularly with regards to family. The authors' findings thus contribute to the discussion of the importance of contextual factors, in this case the sector of employment, in explaining the wage penalty that mothers are observed to suffer.

A final issue worth mention relates to the econometric problem of endogeneity. Browning (1992), in reviewing the empirical literature on the effect of children on female labour supply, finds that studies which use instrumental variables techniques to address the potential problem of fertility being endogenous in female labour supply equations[51] often conclude that children have no effect on female labour supply (with a few even finding a positive effect). The unanswered question is whether these studies reviewed in Browning (1992) correctly reveal that children do not indeed negatively impact mothers' wages, or whether the studies suffer from a problem of weak instruments that result in insignificant coefficient estimates. To address the problem of fertility being endogenous in female labour supply equations, for example, Angrist & Evans (1998) use as instruments for the probability of having a third child the sex-mix of the first two children,[52] and find that having a third child does reduce female labour supply ("worked for pay", "weeks worked", "hours per week") and labour income (by about 27% for all women, and 21% for the subset of married women). Their findings indicate that IV estimates are smaller than OLS estimates, suggesting that endogeneity is indeed a problem in OLS estimation. Korenman & Neumark (1992) also use the technique of instrumental variables to address the possible problem of endogeneity, and find that model specifications that include controls for experience and tenure are likely to underestimate the direct effects of children on wages, "because the lower experience and tenure associated with marriage and motherhood may arise as an endogenous response to lower wages". Neumark & Korenman (1994), using panel data on sisters extracted from the National Longitudinal Survey of Young Women, find that after correcting for

51 Fertility and labour supply are likely to be jointly determined, i.e. fertility may be endogenous in female labour supply equations, resulting in OLS estimates that exaggerate the causal effect of fertility on female labour supply. The preferred solution in such cases is the use of instrumental variables estimation techniques.

52 The idea being that since most parents prefer a mixed sibling-sex composition, if the first two children are of the same sex, the parents are significantly more likely to go on to have a third child.

possible endogeneity and heterogeneity bias, there is a positive marriage effect (i.e. a marriage premium rather than a penalty) for the white women in their sample. Their findings suggest caution when faced with results from simple OLS estimations of wage equations for women that indicate a marriage wage penalty. In other words, the choice of both model specification and the estimation technique used have an impact on the results obtained, which may in part explain the significant variation in the estimation results across the studies reviewed in this paper.

Conclusion

The question we address in this paper is whether compensatory allowance, as conceived by the French Civil Code and in particular from the point of view of the consequences of the career choices made by spouses during their marriage, is based on facts established and documented in the literature.

The question is translated differently for men and women. In the case of men, the issue is cast in terms of the question: does it pay to get married? On the surface, the answer would appear to be yes, since statistically the wage rates of married men are higher than that of unmarried men. But when one scratches below the surface, one finds that the answer is not that clear. Indeed, the extensive international empirical literature over the past forty years which has sought to study the marriage wage premium observed for men has converged (albeit without a complete consensus) to some doubt about the very existence of such a premium. Firstly, many empirical studies have shown that the observed male marriage wage premium is the result of a selection effect: much of the observed premium can be explained by the fact that men who are more likely to marry are also those who have a greater probability of receiving high wages. The observed wage differential between married men and unmarried men is therefore not due to marriage itself, but to some unobserved differences in characteristics between the two groups. Secondly, taking into account the possibility of a selection effect, other empirical studies show that any residual wage premium is not clearly explained by the standard mechanism of specialisation within couples. Yet for economists, this mechanism is a fairly central argument justifying the economic coherence of a man and woman's choices relating to their life as a couple. Thirdly, the search for alternative explanations beyond the traditional propositions of selection or specialisation appears still hesitant —the hypothesis of positive prejudice on the part of employers towards married men remains controversial, and the handful of studies testing the hypothesis of behavioural changes resulting from an increased sense of responsibility following marriage or the birth of a child still suffer problems in their econometric specifications.

In the case of women, the question of compensatory allowance generally translates into the question: does it cost to get married? Again, on the surface, the answer would seem to be yes, since statistically the wage rates of married women are lower than that of unmarried women. However, as

for men, the international empirical literature brings many nuances to this observation. Firstly, there is no real consensus in the literature on the existence of a marriage penalty, with some studies even finding evidence of a marriage wage premium for certain categories of married women. Secondly, unlike the labour supply of men which is relatively insensitive to family status transitions into marriage and fatherhood, the labour supply of women has been established to be very sensitive to motherhood in particular. The question of the impact of couple life on women must therefore be assessed as much or even more in terms of labour supply than simply human capital accumulation or wage rates as in the case of men. On this point, the literature is quite unanimous in recognising that women, married or not, face a significant penalty due to motherhood, and this via various channels — career interruptions, choice of more family-friendly lower-paid jobs, reduction in the number of hours worked, reduced career motivation... all of which ultimately result in a penalty on wage rates.

Overall, we can without great risk advance the idea that if marriage pays in the case of men, it probably does not pay as much as a superficial observation of the statistics would suggest. In addition, what male marriage premium there is is probably due not only to "(...) the professional choices made by one spouse [the wife] during the couple's union (...) to promote the career of the other spouse at the expense of his or her own career." In conclusion therefore, we recommend to family court judges, overwhelmed by the mass disputes that divorce cases often present, not to dwell on trying to identify this marriage premium so as to distribute it between the spouses in calculations of the compensatory allowance, but rather to invest in identifying and measuring the wage penalty suffered by women because of "(...) the professional choices made (...) for the education of their children and the time that she will continue to devote to the task". The justification for this recommendation is simple. Unlike the continuing disaccord in the empirical literature concerning the male marriage premium, there is a widespread consensus surrounding the empirical evidence on the relationship between women's wage rates and fertility: women suffer a non-negligible motherhood wage penalty.

This research was conducted with financial support from the French Agence Nationale de la Recherche *(ANR), in the context of the "COMPRES" research project.*

References

Ahituv A., Lerman R. I. (2007), "How do marital status, labor supply and wage rates interact?" *Demography* 44(3):623–647.

Albrecht, J. W., Vroman, S. B. (1999). "Career interruptions and subsequent earnings: A re-examination using Swedish data." *Journal of Human Resources* 34:294–311.

Anderson, D.J., Binder, M., Krause, K. (2003) "The motherhood wage penalty revisited: Experience, heterogeneity, work effort and work-schedule flexibility." *Industrial and Labor Relations Review* 56:273–294.

Angrist, J., Evans, W. (1998) "Children and their parents' labor supply: Evidence from exogenous variation in family size." *American Economic Review* 88(3):450–477.

Antonovics K., Town R. (2004), "Are all the good men married? Uncovering the sources of the marital wage premium." *American Economic Review* 94(2):317–321.

Ashwin S., Isupova O. (2014), "Behind Every Great Man: The Male Marriage Wage Premium Examined Qualitatively." *Journal of Marriage and Family* 76:37–55.

Astone N. M., Dariotis J. K., Sonenstein F. L., Pleck J. H., Hynes K. (2010), "Men's work efforts and the transition to fatherhood." *Journal of Family and Economic Issues* 31:3–13.

Avellar, S., Smock, P.J. (2003) "Has the price of motherhood declined over time? Across-cohort comparison of the motherhood wage penalty." *Journal of Marriage and Family* 65:597–607.

Bardasi E., Taylor M. (2008), "Marriage and Wages: A Test of the specialisation." *Economica* 75(299): 569–591.

Barg K., Beblo M. S. (2009), "Does Marriage pay more than Cohabitation?" *Journal of Economic Studies* 36(6):552–570.

Beblo, M., Bender, S., Wolf, E. (2009) "Establishment-level wage effects of entering motherhood." *Oxford Economic Papers* 61(suppl 1): i11–i34.

Becker G. S. (1985), "Human Capital, Effort and the Sexual Division of Labor." *Journal of Labor Economics* 3(1):S33–S58.

Bellas M. (1992), "The Effects of Marital Status and Wives' Employment on the Salaries of Faculty Men: The (House) Wife Bonus." *Gender and Society* 6:609–622.

Blackburn Mc., Korenman S. (1994), "The Declining Marital-Status Earnings Differential." *Journal of Population Economics* 7(3):249–270.

Blau, F.D. Beller, A.H. (1988) "Trends in earnings differences by gender, 1971-1981." *Industrial and Labor Relations Review* 41(4):513–529.

Bourreau-Dubois C., Doriat-Duban M. (2011), « Analyse économique de la prestation compensatoire : entre logique redistributive et logique réparatrice », *Economie publique* 26-27, pp. 193–218.

Browning, M. (1992) "Children and Household Economic Behavior." *Journal of Economic Literature* 30(3):1434–1475.

Budig M., England P. (2001) "The wage penalty for motherhood." *American Sociological Review* 66:204–225.

Budig, M., Hodges, M. (2010) "Differences in disadvantage: variation in the motherhood penalty across white women's earnings distribution." *American Sociological Review* 75(5):705–728.

Chun H., Lee I. (2001), "Why do Married Men Earn More: Productivity or Marriage Selection?" *Economic Inquiry* 39(2):307–319.

Cohen Y., Haberfeld Y. (1991), "Why do married men earn more than unmarried men?" *Social Science Research* 20:29-44.

Cohen P. (2002), "Cohabitation and the declining marriage premium for men." *Work and Occupations* 29:346–363.

Cornwell C., Rupert P. (1997), "Unobservable individual effects, marriage, and the earnings of young men." *Economic Inquiry* 35(2):285–294.

Correll, S.J., Benard, S., Paik, I. (2007) "Getting a job: Is there a motherhood penalty?" *American Journal of Sociology* 112:1297–1338.

Coverman, S. (1983) "Gender, domestic labor time, and wage inequality." *American Sociological Review* 48:623–637.

Craig, L., Mullan, K. (2010) "Parenthood, Gender and Work-Family Time in the United States, Australia, Italy, France, and Denmark." *Journal of Marriage and Family* 72(5):1344–1361.

Datta Gupta N., Smith N. (2002) "Children and Career Interruptions: The Family Gap in Denmark" *Economica* 69(276):609–629.

Datta Gupta N., Smith N., Stratton L. S. (2007) "Is marriage poisonous? Are relationships taxing? An analysis of the male marital wage differential in Denmark", *Southern Economic Journal* 74:412–433.

Dougherty C. (2006), "The Marriage Earnings Premium as a Distributed Fixed Effect." *Journal of Human Resources* 41:433–443.

Duvivier, C., Narcy, M. (2014) "The motherhood wage penalty and its determinants: a public-private comparison." Centre d'études de l'emploi, Working Paper no. 172, July 2014.

El Lahga A., Moreau N. (2007) "The effects of marriage on couples' allocation of time between market and non-market hours?", *IZA discussion paper*, 12, 2619, 48 p.

Gangl, M., Ziefle, A. (2009) "Motherhood, Labor Force Behavior, and Women's Careers: An Empirical Assessment of the Wage Penalty for Motherhood in Britain, Germany, and the United States." *Demography* 46(2):341–369.

Geist C. (2006), "Payoff or Penalty? A Comparison of the Marriage Wage Differential for Men and Women across 15 Nations", Luxembourg Income Study Working Paper Series, Working Paper No. 446, August 2006.

Ginther D. K., Zavodny, M. (2001), "Is the male marriage premium due to selection? The effect of shotgun weddings on the return to marriage" *Journal of Population Economics* 14:313–328.

Glauber, R. (2007) "Marriage and the motherhood wage penalty among African Americans, Hispanics, and Whites." *Journal of Marriage and Family* 69:951–961.

Glauber R. (2008), "Race and Gender in Families and at Work: The Fatherhood Wage Premium" *Gender & Society* 22:8–30.

Gorman E. H. (1999), "Bringing Home the Bacon: Marital Allocation of Income-Earning Responsibility, Job Shifts, and Men's Wages" *Journal of Marriage and the Family* 61:110–122.

Gornick, J.C., Meyers, M.K., Ross, K.E. (1998) "Public policies and the employment of mothers: A cross-national study." *Social Science Quarterly* 79:35–54.

Gray J. S. (1997) "The fall in men's return to marriage. Declining Productivity Effects or Changing Selection?" *Journal of Human Resources* 32(3):481–504.

Gronau, R. (1988) "Sex-related wage differentials and women's interrupted careers – the chicken or the egg." *Journal of Labor Economics* 6(3):277–301.

Hersch, J. (1991a) “Male-Female Differences in Hourly Wages: The Role of Human Capital, Working Conditions, and Housework.” *Industrial and Labor Relations Review* 44(4):746–759.

Hersch, J. (1991b) “The Impact of Nonmarket Work on Market Wages.” *The American Economic Review* 81(2):157–160.

Hersch, J., Stratton, L. S. (1997) “Housework, fixed effects, and wages of married workers.” *Journal of Human Resources* 32:285–307.

Hersch, J., Stratton, L.S. (2000) “Household specialisation and the male marriage wage premium.” *Industrial and Labor Relations Review* 54(1):78–94.

Hewitt, B. Western, M., Baxter, J. (2002) “Marriage and Money: The Impact of Marriage on Men's and Women's Earnings.” In: The Australian Sociological Association Conference 2002, Brisbane, QUT, July 2002.

Hill, M. (1979) “The Wage Effects of Marital Status and Children.” *Journal of Human Resources* 14:579–594.

Hodges M. J., Budig M. J. (2010) “Who gets the Daddy Bonus? Organizational Hegemonic Masculinity and the Impact of Fatherhood on Earnings”, *Gender and Society*, 24(6), pp. 717-745.

Hotchkiss, J. L., Moore, R. E. (1999) “On the Evidence of a Working Spouse Penalty in the Managerial Labor Market.” *Industrial and Labor Relations Review* 52(3):410–423.

Hundley, G. (2000) “Male/Female Earnings Differences in Self-Employment: The Effects of Marriage, Children, and the Household Division of Labor.” *Industrial and Labor Relations Review* 54(1):95-114.

Jacobsen J. P., Rayack W. L. (1996) “Do Men Whose Wives Work Really Earn Less?” *American Economic Review* 86(2):268–273.

Jacquemart, A. (2014) « J’ai une femme exceptionnelle. Carrières des hommes hauts fonctionnaires et arrangements conjugaux », Connaissance de l’emploi, 114, 4 p.

Keene, J.R., Raynolds, J.R. (2005) “The job costs of family demands – Gender differences in negative family-to-work spillover.” *Journal of Family Issues* 26(3):275–299.

Kenny, L. (1983) “The accumulation of human capital during marriage by males.” *Economic Inquiry* 21:223–231.

Kilbourne B., England P., Beron K. (1994) “Effects of Individual, Occupational, and Industrial Characteristics on Earnings: Intersections of Race and Gender.” *Social Forces* 72(4):1149–1176.

Killewald A., Gough M. (2010) “Estimating the impact of marriage on women's wages.” Extended abstract prepared for the 2010 Annual Meeting of the Population Association of America and presented in Poster Session 3.

Killewald A., Gough M. (2013) “Does specialisation Explain Marriage Penalties and Premiums?” *American Sociological Review* 78(3):477–502.

Killewald A. (2013) “A Reconsideration of the Fatherhood Premium: Marriage, Coresidence, Biology, and Fathers’ Wages”, *American Sociological Review,* 78(1), pp. 96–116.

Korenman S., Neumark D. (1991) “Does marriage really make men more productive?” *Journal of Human Resources* 26:282–307.

Korenman, S., Neumark, D. (1992) “Marriage, Motherhood, and Wages.” *Journal of Human Resources* 27(2):233–255.

Krashinsky H. A. (2004) “Do Marital Status and Computer Usage Really Change the Wage Structure?” *Journal of Human Resources* 39(3):774–791.

Kuhhirt, M., Ludwig, V. (2012) “Domestic work and the wage penalty for motherhood in West Germany.” *Journal of Marriage and Family* 74:186–200.

Light, A. (2004) “Gender differences in the marriage and cohabitation income premium.” *Demography* 41:263–284.

Lincoln A. E. (2008) “Gender, Productivity, and the Marital Wage Premium.” *Journal of Marriage and Family* 70:806–814.

Loh E., S. (1996) “Productivity Differences and the Marriage Wage Premium for White Males.” *Journal of Human Resources* 31(3):566–589.

Loughran D. S., Zissimopoulos J. M. (2009) “Why Wait? The Effect of Marriage and Childbearing on the Wages of Men and Women.” *Journal of Human Resources* 44:326–349.

Lundberg S., Rose E. (2000) “Parenthood and the earnings of married men and women”, *Labour Economics*, 1(6), pp. 689-710.

Lundberg S., Rose E. (2002) “The effects of sons and daughters on men’s labor supply and wages”, *Review of Economics and Statistics*, 84 (2), pp. 251-68.

Mamum A. (2012) “Cohabitation Premium in Men’s Earnings: Testing the Joint Human Capital Hypothesis.” *Journal of Family and Economic Issues* 33:53–68.

Meurs D., Pailhé A., Ponthieux S. (2010) “Child-related Career Interruptions and the Gender Wage Gap in France.” *Annals of Economics and Statistics / Annales d’Économie et de Statistique* 99/100: 15–46.

Mincy R., Hill J., Sinkewicz M. (2009) “Marriage: Cause and mere Indicator of Future Earnings Growth?” *Journal of Policy Analysis and Management* 28(3):417–439.

Mueller G., Plug G. (2006) “Estimating the Effect of Personality on Male and Female Earnings.” *Industrial and Labor Relations Review* 60(1):3–22.

Nakosteen R. A., Zimmer M. A. (1987) “Marital status and earnings of young men: A model with endogenous selection.” *Journal of Human Resources* 22:248–268.

Nakosteen R. A., Zimmer M. A. (1997) “Men, Money, and Marriage: Are High Earners More Prone Than Low Earners to Marry?” *Social Science Quarterly* 78(1):66–82.

Neumark, D., Korenman, S. (1994) “Sources of Bias in Women's Wage Equations: Results Using Sibling Data.” *Journal of Human Resources* 29(2):379–405.

Noonan M. C. (2001) “The Impact of Domestic Work on Men’s and Women’s Wages.” *Journal of Marriage and Family* 63(4):1134–1145.

Pal, I., Waldfogel, J. (2014) “Re-Visiting the Family Gap in Pay in the United States.” Mimeo, Columbia University, 5 August 2014.

Petersen, T., Penner, A.M., Høgsnes, G. (2010) “The Within-Job Motherhood Wage Penalty in Norway, 1979-1996.” *Journal of Marriage and Family* 72(5):1274–1288.

Petersen T. Penner A. M., Hogsnes G. (2011) “The Male Marital Wage Premium: Sorting vs. Differential Pay.” *Industrial and Labor Relations Review* 64(2):283–304.

Phipps S., Burton P., Lethbridge L. (2001) “In and out of the labour market: long term income consequences of child related interruptions in women's paid work.” *Canadian Journal of Economics* 34(2):411–429.

Pollmann-Schult M. (2011) “Marriage and Earnings: Why Do Married Men Earn More than Single Men?” *European Sociological Review* 27(2):147–163.

Reed R. W., Harford K. (1989) “The marriage premium and compensating wage differentials.” *Journal of Population Economics* 2:237–265.

Ribar D. C. (2004) “What Do Social Scientists Know About the Benefits of Marriage? A Review of Quantitative Methodologies.” IZA Discussion Paper, 998, 90 p.

Rodgers III W. M., Stratton L. S. (2010) “Male Marital Wage Differentials: Training, Personnel Characteristics, and fixed effects.” *Economic Inquiry* 48(3):722–742.

Rosenfeld, R., Kalleberg, A. (1991) “Gender inequality in the labor market – a cross-national perspective.” *Acta Sociologica* 34:207–225.

Schoeni R. F. (1995) “Marital Status and Earnings in Developed Countries.” *Journal of Population Economics* 8(4):351–59.

Shirley, C., & Wallace, M. (2004) “Domestic work, family characteristics, and earnings: Reexamining gender and class differences.” *Sociological Quarterly* 45:663–690.

Sigle-Rushton, W. and Waldfogel, J. (2007) “Motherhood and Women’s Earnings in Anglo-American, Continental European, and Nordic Countries.” *Feminist Economics* 13(2):55–91.

Stratton L. (2002) “Examining the Wage Differential for Married and Cohabiting Men.” *Economic Inquiry* 40(2):199–212.

Waldfogel, J. (1997) “The Effect of Children on Women’s Wages.” *American Sociological Review* 62:209–217.