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MARRIAGE AND WORK:

AN ANALYSIS FOR FRENCH COUPLES IN THE LAST DECADE ♣

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Abstract

This paper investigates the occurrence of couple households where the wife is the main or sole earner. There is huge economic literature on lone parents but, to our knowledge, no economic paper deals with the situation of female breadwinners in couple households. This issue is relevant for policy purposes. We find that in one every six couple-households the wife was the sole or the main earner in France in year 2002. It is the purpose of our study to shed some light on these phenomena. We provide some descriptive and exploratory analysis of the determinants of the labour market states of spouses, accounting for positive assortative mating as well as for changing macroeconomic conditions. We find that, on one hand, female breadwinners and wife-higher-earnings couples are significantly more likely to occur when both spouses are low-educated, but, on the other hand, the probability of wife-higher-earnings is also significantly higher for the highest educated. This suggests some dichotomization of wives that earn more than their husbands: they are either low-educated women with a low-educated husband or high-educated women. On the other hand, female breadwinners are predominantly low-educated women.

Keywords : Marriage, work behaviour, household economics.
Classification JEL : D1, J12, J21

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1. Introduction

The number of dual-earners has been steadily increasing over time in OECD countries. It was, for example, equal to 50% of married couples in Australia in 2001 and 59% in the USA in the same year (Drago et al., 2004, Bureau of Labor, 2004). According to our estimates, over 57% of couples, whether married or not, were dual-earners in France in 2001 -this figure has increased from less than 52% in 1990. About 24% of American dual-earners wives earned more than their husband (Bureau of Labor, 2004). The number of female breadwinners was quite remarkable also in Australia at about the same time (Drago et al., 2004). The proportion of wives earning more than their husband among French dual-earners was 22%, according to our estimates.

There is no economic literature on female breadwinners. There is huge literature on lone parents but, to our knowledge, no economic paper deals with the situation of female breadwinners in couple-households. Only non-economists have looked into this issue. In the United States, two popular best-sellers investigate the occurrence of female breadwinners. Minetor (2002), a female-breadwinner herself, carries out a series of interviews with a number of American female breadwinners and their husbands. The author draws her sample by contacting associations of female managers and career women in the United States. Her book suggests that sometimes female-breadwinner households are just due to the hazard but other times they come out from a deliberate choice of the two spouses to let the wife make her career first. In this last case, the husbands interviewed are often stay home men, happy to care for their children, while in other cases they are unemployed people unsuccessful at finding a job. A similar methodological approach, based on a series of interviews with female breadwinners and their husbands, is taken by Pappenheim and Graves (2005) that draw their sample using personal contacts and words of mouth. The female breadwinners pictured in their book are often top career women whose husband's business failed. Both books find a great deal of stress and conflict between spouses in female-breadwinner households, which arises, at least partly, from the lack of recognition by society of the existence of households like theirs, as the stereotype remains that of men being the sole or the main earner. Some of the households interviewed, for example, do not talk about their situation with neighbours and relatives as they feel they would be dispraised. Unhappy female breadwinners feel resentful to their husbands for not having taken a conventional male breadwinner role and unhappy

husbands make low job search efforts. To sum up, the happiest female-breadwinner couples look like those where female breadwinnership was chosen by the spouses.

The subject of female breadwinnership has been brought up by psychologists and sociologists. Drago et al. (2004) look at the existence and persistence of situations of female breadwinnership in Australia, using data drawn from a panel dataset. The authors conclude that when the wives' earning dominance arises from economic factors, husbands tend to have low socio-economic status, a poor labour market position and low family commitment; when it is associated with gender equity principles of spouses, spouses' characteristics are more often positive. Brennan et al. (2001) draw a "representative" sample of female-breadwinner couples to investigate the impact of earnings dominance on the quality of spouses' marital role. They conclude that there is no impact of changes in wives' earnings on marital role quality, but they find that the reverse is true for men. However, their sample is quite small and the response rate my not be independent of marriage quality.

From the point of view of economists, the policy implications of female breadwinnership may be more relevant than the happiness of spouses. Most OECD countries have developed policies to increase the participation rates of women in an attempt to limit the size of the pension burden and to deal with the aging population. While single women tend to have similar labour market participation rates than men, married women have much lower participation rates in all OECD countries (see, for example, OECD, 2001). Considerable attention has been paid to the design of new policies that may encourage work by married women and remove obstacles to the labour market participation of "mothers". The literature shows, for example, that joint taxation and tax credits discourage labour market participation of secondary earners (Apps, 2006, Apps and Rees, 2005, Stancanelli, 2004). Husbands might be affected by these possible distortionary incentives too, especially in the cases under study here. Individual taxation of spouses has been introduced in a number of OECD countries, but not yet France. Further to this, many policies are still designed with an implicit reference to male- breadwinner situation that are not any longer the norm.

Policy makers should also be concerned with the possible poverty risk faced by households where women are the sole earner. When this type of situation arises from adverse circumstances that hit the husband rather than from a common decision, (low-educated) female breadwinners may not bring enough income home to satisfy the needs of their household. If female breadwinnership situations have a negative impact on husbands' psychological well-being, which could be especially true for low-educated and/or more

traditional couples, this could lead to difficult situations, possible violent, and in any case tend to reduce husbands' search intensity and work probability. Policies targeted at publicizing the occurrence of female breadwinnership situations as "non-exceptional" cases may help turn down the stress from these couples.

One may expect that the number of households where the wife is the sole or the main earner will continue to increase. Education levels of women have been increasing in all OECD countries and this may contribute to reinforce this trend. It is no longer possible for economists and policy makers to ignore the existence of women that are the sole or main breadwinner in the household. The aim of this study is to shed more light on the determinants of situations where the wife is the sole or the main earner. Do they reflect increased education levels of women and possibly narrowing gender wage gaps or rather a deterioration of employment and earnings of men? Pencavel (1998) relates the increasing education rates of American women to the increase in the number of dual-earners. Positive assortative mating is bound to drive up dual activity rates, but does it have an impact on the occurrence of female breadwinnership and wife-higher-earning situations? To our knowledge, none of these issues has been dealt with in the early literature on household behaviour or in the huge female labour supply literature. Therefore, no attempt is made here to survey this literature[1]. The structure of the paper is the following. First, given the empirical stress of the study, the data are described. Next to this, descriptive analysis of spouses' characteristics and of a typology of households types, defined with respect to spouses' labour market employment, is provided. Then, econometric models of the occurrence of, respectively, female breadwinners and wives-higher-earnings are estimated, assuming, for simplification, a unitary decisionary framework at the household level. The last section concludes the paper.

2. The data

The sample for analysis is drawn from the French Labor Force Surveys (LFS) of years 1990 to 2002. The LFS series was broken in 2003 to comply with harmonization requirements of the European statistical offices. The new LFS are carried out on a continuous basis and the

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[1] The reader may look at Sofer (2004) for a review of the household literature and Donni and Moreau (2007) for an application of the collective model to French couples. Stancanelli (2006) also provides a quick overview of some of the French literature.

survey questions have been changed. In particular questions on employment and unemployment are not comparable to the earlier surveys.

The LFS surveys up to 2002 were carried once a year, in March, and had a rotating sample structure which enables us to construct a longitudinal sample. Around 60,000 households were interviewed each year in March, with a third of the sample being replaced each year. It follows that households stayed in the sample for at most three years. All household members were interviewed. For our analysis, we first, select from each survey year, a sample of individuals with the following characteristics:

a) they reported to be either "household head" or spouse of the head;

b) they were aged between 16 and 65;

c) they were not doing their military service;

d) they were either formally married or living together.

Next, records for husbands and wives were linked together using the household identifier. Observations for which either the "husband" or the "wife" were not in the survey were dropped from the sample. This leads to a sample of roughly 35,000 couples for each of the years considered. Finally, observations relating to the different years were pooled together over time to construct the sample for analysis, which contains almost 471,000 couples. We built in the data an indicator to track the same couple over time.

The main features of this survey are common to most OECD LFS data. Interviews are carried out by personal interview at the house of the respondents. Information on various items is therefore subjective and not drawn from administrative files. The labour market status occupied at the time of carrying out the survey is asked and earnings refer to current gross monthly earnings. Questions on earnings are only asked to dependent workers. The earnings of the self-employed are not surveyed. No information is collected on other household income.

Educational level variables are increasing in education level, level 6 corresponding to at most compulsory education. The basis for the education dummies is the highest level, equal to university or higher degrees. We have information in the dataset on the socio-economic profession of individuals at two-digits and one-digit level of classification (see Annex to the paper). This was available also for individuals currently out of work but that had some work experience in the past. To proxy positive assortative mating we use three variables: a dummy for whether spouses enjoy the same education level; a dummy for whether they belong to the same socio-economic profession; and a variable measuring their age difference. We expect

smaller age differences to be an indicator of positive assortative mating. We also use an interaction variable of same education level and low education level to capture the situation of spouses being both low-educated, as this variable may have an opposite impact on household labour market behaviour than for the case were spouses are both medium or high educated people.

We have constructed a variable giving the number of dependent children living at home and a dummy for the presence of any small children of less than three years old in the household. We draw the line at three years as children aged three to five are admitted into maternal school in France, which is free of charge and unconstrained, as it is available to all children. Maternal schools open their doors at 8h15, or sometime earlier, and close at 18h00, or sometimes even later. All children go to maternal school in France.

Local labour market conditions are captured by the region of residence and the size of the area of residence dummies. Small cities include rural neighbourhoods or urban neighbourhoods with less than 20,000 inhabitants; large cities are those with more than 200,000 inhabitants. Paris stands on its own. The basis for these dummies are medium size cities with a population of 20,000 to 200,000 inhabitants.

3. Descriptive analysis of spouses characteristics and couples' typology

The main economic activities of the two spouses, within each couple, are compared in Tables 1a and 1b, respectively, for 1990 and 2002. We see that the number of dual-earners has increased by 6% over the period considered: from 52% of the population of couples in 1990 to 58% in 2002. The proportion of couples where both spouses are unemployed has remained constant at about 0.6%, while couples of retirees and other inactive couples have slightly increased (+ 0.3 each).

Next, we compare the educational levels of the two spouses in Tables 2a and 2b, respectively for 1990 and 2002. About 47% of the partners had the same education level in 1990, against 40% in 2002. The proportion of couples where both spouses are low-educated has almost halved (going from 28% to 15%), while that of the highest educated spouses has doubled, rising from 3% to 6%. This follows the trends in increasing education levels of the population.

Positive assortative mating has slightly decreased according to the narrower definition (see Table 3) but it has remained unchanged, on a wider criterion. Tables 4a and 4b compare the socio-economic professional classes of husbands and wives, respectively in 1990 and 2002. Endogamy of high-qualified professional (class 3) has increased the most, concerning almost

5% of the couples in 2002 against 3% in 1990. Endogamy of classes 1 (farmers) and 2 (handcrafters, shopkeepers and business owners) has, on the other hand, decreased.

In Table 5, the gross monthly salaries of the two spouses in salaried dual-earners couples – wage information is only available for salaried workers in the LFS- are compared by means of gender wage ratios computed for each couple. To get a measure of the "negotiating power" of spouses we look at their gross monthly salaries, without adjusting for hours of work. This has the additional advantage of being free from measurement error in hours (but not in salaries). As salaries are also self-reported we discard from the analysis salaries corresponding to an hourly wage of less than half the minimum wage[2].

Let us now distinguish couple-households by their labour market participation as follows:

- Dual-earners, where both spouses are at work;
- Male-breadwinner couples, where he works but she does not;
- Female-breadwinner couples, where she works but he does not;
- Out-of-work couples, where both spouses are out of work.

Here we draw the line at being employed, so that out-of-work situations include unemployment as well as inactivity. While there is less concern with defining employment, the border line between inactivity and unemployment is sometimes harder to draw (see, for example, Jones and Riddel, 2006). In particular, at times of high unemployment some individuals and especially (married) women may opt for defining themselves as "housewives" rather than unemployed. Non-employment includes, in addition to unemployment and housework, also education, sickness, retirement or early retirement.

We further split dual-earners into the following two categories, according to spouses' earnings dominance:

- "Normal" dual-earners, where the husband earns more than his wife;
- Higher-earnings wives, where she earns the same or more income than he does.

Earnings dominance is based here on actual current gross monthly earnings. Hours of work and potential earnings are not considered.

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[2] Some people in the sample report hourly earnings below the minimum wage. Cross-checking observations with unusually low earnings against an indicator of unreliable survey responses provided in the survey, we could not find any correlation between the two. We could not find any evidence that individuals reporting less than the hourly minimum wage were misreporting their wages. Moreover, in France, in jobs like babysitting, workers may happen to earn less than the hourly minimum wage. The standard contract for these household employees distinguishes between "active" and "passive" hours of work, where "active" hours of work amount to 2/3 of the actual working time and they are the ones actually paid for by the employers. For these reasons, we have resolved to draw the line at half the hourly minimum wage and drop those observations earning less than this from our sample.

Descriptive statistics, respectively, for all couples, all dual-earners, wife-higher-earnings and male and female breadwinners are shown in Tables 6, 7 and 8. These statistics are based on the pooled dataset going from 1990 to 2002 and they are not sample weighted[3]. It appears that dual-earners spouses are on average two-years younger than the average in the sample of couples (Table 6). They are also more likely to be higher educated -level 6 being the lowest, which corresponds to compulsory education- more likely to be French and to belong to the same socio-economic professional class. Almost 18% of dual-earners spouses belong to the same socio-economic professional class while 13% of the couples sampled are in this situation- this on the basis of the two-digit classification of socio-economic occupations. Dual-earners are on average slightly less likely to have small children of less than three years. Spouses' total income from work is larger on average for dual-earners couples than in the sample, but this does not take income taxation into account[4]. Sample sizes are very large: we have 251,000 dual-earners in the thirteen years sample.

If we look at dual-earners couples where she earns the same or more than him, we have 35,000 couples (Table 7). In these couples, wives are on average much more likely to be higher educated: 23% of women have high secondary school education against 14% of the pool of dual-earners wives and 10% of the sample. Average education levels of men are comparable to those of any other dual-earners men. But the husband in these couples earns just slightly more (less than 100 euros more, on a gross monthly basis) than the average wife in the sample does, while their "high-earnings" wives earn about as much as the average husband in the sample does!

Table 8 provides descriptive statistics for couples where the husband is a breadwinner, i.e. he works and she does not, including cases when she is unemployed. Wives in male-breadwinner couples are on average much more likely to be low-educated women: 43% of them have at most compulsory education against 36% of wives in our sample and 25% of wives in dual-earners couples. They are also less likely to be French: 87% of them are French against 91% for the sample and 95% among dual-earners couples. A larger proportion of male-breadwinner couples have small children of less than three years than it is the case for dual-earners: 19% of them have pre-school children of less than 3 years old, against 12% of the sample and 10% of dual-earners couples. They also have on average more children (1.7)

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[3] Sample weighted descriptives are very close figures because of the large sample coverage.

[4] The system of taxation is very favourable to a sole-earner household in France.

than couples in the sample (1.3). The two spouses are less likely to belong to the same socio-professional class, which is to a certain extent explained by the fact that "permanently" out of work spouses will be classified among non-professionals. The average earnings of husbands are not higher than the sample average.

If we look next at couples where the wife is the breadwinner, a striking fact is that on average wives and husbands are much older that in the sample: her average age is 46 and his is 50, against, respectively, 41 and 53 for the sample. The average age difference of spouses is also larger and equal to almost four years against over two years for the sample. For the older couples, female breadwinnership is likely to have come out as the husband has retired or early-retired. Wives are on average less educated than in the sample: 44% of them have at most the compulsory education level while the same figure is 36% for the sample. The same applies to their husbands: 46% of them have at most compulsory education level while low-educated men represent 33% of the sample for analysis. This may be due to a composition effect: female-breadwinnership is associated with older-age of spouses while education levels have been increasing over time so that older generation are less educated than younger ones. They are also less likely to have small children and any children in general, which also maybe due to composition effects. Female-breadwinner couples are less likely to be married and slightly more likely to live in Paris than the average sample couple. Women's monthly gross salaries are in line with the sample average.

The evolution of the different types of couples over time is given in Table 9. Interestingly, the proportion of couples where she earns more than him increases from a mere 3% in 1990 to over 9% in 2002. Male-breadwinner couples become less common, going from 30% of the sample in 1990 to 23% in 2002, while female-breadwinners go up slightly, from over 5% in 1990 to over 7% in 2002. Some of the female-breawinners situations may be the result of the husband having taken retirement, but restricting age to below 55 for both spouses does not affect substantially the occurrence of female breadwwiners, suggesting that husband's retirement is not the sole reason for this. On the other hand, we have no information in the LFS surveys on the health status of individuals, while it is well possible that some of these husbands are sick and/or affected by permanent incapacity.

To get some idea of persistence in a given state, we look at transitions from one state to the other over time. We look at transitions from 2000 to 2001 (and 1990 to 1991) in Table 10 and from 2000 to 2002 (and 1990 to 1992) in Table 11. Matrices of transitions are conditional on attrition, as transitions can only be observed for couples that stay in the sample over,

respectively, two-year and three-year periods. Now, the Labour Force survey systematically keeps only one third of the observations in the sample for at most three years period, as a third of the observations is replaced each year. In addition to this, some individuals may "choose" or simply "happen" not to participate into following interviews in spite of what are the survey designers "wishes", because they have for example moved house in the meanwhile. To the extent that "moving houses" or "refusing to participate into later survey interviews" is related to labour market transitions this may bias the estimated transition rates.

In 2000, "normal" dual-earners - where he earns more than she does- represented 49% of the sample. One year later, in 2001, 41% of couples were still "normal" dual-earners, while 3% had moved to the male-breadwinner model and another 3% to the wife-higher-earnings one (see Table 10). Two years later, in 2002, 40% of couples were still dual-earners, 4% had moved to the male bread-winner state and over 3% to the wife-higher-earnings state.

If we then take couples that were in the male-breadwinner state, these were 24% of all couples in 2000(see Table 10), 18% of all couples were still male-breadwinner one year later and 16% two years later (see Table 11), while, respectively 4 and 5% had moved to dual-earners one and two years later. As far as female-breadwinner couples, representing 7% of all couples in 2000, a total of 1% made a transition to the state of dual-earners and another 1% to that of both-out-of-work, while over 4% of all couples stayed on in "female-breadwinnership" over the period considered.

Wife-higher-earnings couples are over 7% of the sample in 2000 and almost 9% in 2001 and 2002. About 2% of all couples move from higher-earnings-wife state to "normal" dual-earners, while 3% of couples do the opposite transition.

The least mobile state seems to be that where both spouses are out of work. One might have liked to see more transitions out of this state.

4. An exploratory model of couples' labour market states

We assume a simple unitary framework under which husband and wife maximize one couples' utility function and take joint decisions concerning their labour market states. Their labour supply decisions depend on a combination of spouses' characteristics and couples' characteristics as well as on the state of the labour market. The advantage of taking a simple unitary framework, ie assuming a single utility function for the couple, is that we do not have to model the complex negotiation process within the household. An obstacle to specifying a more structural model is also the absence of any information on non-labour income in the data. Besides, the neoclassical maximization set up tends to imply that different outcomes are

the result of choice. This may not necessarily be true, as some outcomes may be constrained. For example, a spouse may only work to make end meets and not out of "pure" choice; or vice versa a spouse maybe out of work while searching for a job. Taking an exploratory reduced form approach, we do not impose any a priori on the data. This allows us to specify a naïve model of spouses' labour market situations. We consider four possible combinations of labour market states of husband and wife:

- They both work: dual-earners (EE)
- Only the man works, the wife is out of work: male breadwinner couples (MB)
- Only the wife works, her husband is out of work: female breadwinner couples (FB)
- They are both out of work (OO).

The probability of observing a couple in a given combination of labour market states for husband and wife will be the outcome of a number of factors going from spouses' joint decisions to the situation of the labour market and spouses' and couple's socio-economic characteristics. To get some insights into the determinants of the (static) probability of occupying any of these states, we specify two sets of reduced form models. First, we specify a multinomial logit model of the probability that a couple is found in one of the following labour market states:

- Dual-earners couples (EE)
- male breadwinner couples (MB)
- female breadwinner couples (FB)
- couples where both spouses are out of work (OO).

The underlying hypothesis is that the probabilities of occupying any of these states are unordered and independent from each other. Let the base for these probabilities be the occurrence of a dual-earners couple, which is the most common situation. The model is specified as follows, having assumed that the errors follow a closed form logistic distribution:

$$1) \begin{cases} \Pr(y = EE) = 1/(1 + e^{X\beta(\text{MB})} + e^{X\beta(\text{FB})} + e^{X\beta(\text{OO})}) \\ \Pr(y = MB) = e^{X\beta(\text{MB})}/(1 + e^{X\beta(\text{MB})} + e^{X\beta(\text{FB})} + e^{X\beta(\text{OO})}) \\ \Pr(y = FB) = e^{X\beta(\text{FB})}/(1 + e^{X\beta(\text{MB})} + e^{X\beta(\text{FB})} + e^{X\beta(\text{OO})}) \\ \Pr(y = OO) = e^{X\beta(OO)}/(1 + e^{X\beta(\text{MB})} + e^{X\beta(\text{FB})} + e^{X\beta(\text{OO})}) \end{cases}$$

Each probability is estimated relative to the base:

$$2) \begin{cases} \Pr(y=MB)/\Pr(y=EE) = e^{X\beta(\text{MB})} \\ \Pr(y=FB)/\Pr(y=EE) = e^{X\beta(\text{FB})} \\ \Pr(y=OO)/\Pr(y=EE) = e^{X\beta(OO)} \end{cases}$$

Next to this, we specify a bivariate probit model of the probability that a couple is a dual-earners couple and that she earns the same or more than he does. As mentioned earlier, we concentrate on monthly earnings as information on hours is bound to be less reliable[5]. The potential earnings of each spouse are exogenous and determined ex-ante. This seems a valid assumption. The probability that some wives earn more than their husbands will be determined by wives' and husbands' characteristics. We assume that the matching of spouses, ie the process of marriage formation, is exogenous and determined ex-ante, as conventional in the literature on the labour market choices of spouses.

$$F_{it} = x_{it}\beta + e_{it}$$
$$3) \quad A_{ti} = m_{it}\delta + \eta_{it}$$
$$e \sim N(0,\vartheta), \eta \sim N(0,1), corr(e\eta) = \xi$$

where F is the probability of observing both spouses in-work at time t and A is the probability that she earns more or the same gross monthly salary than he does. The vectors x and m contain here the same covariates. We assume that the errors are normally distributed and allow for correlation, ξ, of the two equations as the same (unobserved or observed) spouses and couple's characteristics may drive both relationships.

Under this set up, the log-likelihood for observation i is the following:

$$\ln \Phi((x_{it}'\beta + \xi e_{it})/(\sqrt{1-\zeta^2}))\varphi(e_{it}) \quad \text{if F=1 and A=1}$$
$$11) \quad \ln \Phi(m_i\delta) \qquad\qquad\qquad \text{if F=0 and A=1}$$
$$\ln \Phi(x_i\beta) \qquad\qquad\qquad \text{if F=1 and A=0}$$

We consider four sets of regressors:
- demographic and socio-economic characteristics of the wife;
- couples' characteristics ;
- characteristics of the local labour market;

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[5] Descriptive analysis of hourly rates, suggests, however, that also on the basis of hourly wage rates, about a quarter of wives in dual-earners couples earn the same or more than their husbands.

- year variation, to control for changes in the macroeconomic situation or possibly in the yearly surveys (though no major change took place in this sense, at least to our knowledge).

The first set of variables attempts to control for the fact that the couple's joint labour market participation has been found to follow closely wives' behaviour, according to our preliminary descriptive analysis. One could not control simultaneously for husband's and wife's variables given their likely strong correlation. We control for age, birth cohort and educational level of the wife.

Couple's specific characteristics are dummies for the number of children and the presence of young pre-school children (three years in France[6]); the age difference between the two spouses (age of the husband minus that of the wife); a dummy for equal education level and the same interacted with low education level; a dummy for spouses belonging to the same socio-economic professional class[7]. The variable measuring age differences is meant to capture some dimension of positive assortative mating, as proxied by closer age of the two spouses.

We assume that marriage formation is exogenous to labour market participation, as standard in the economics literature.

Results of estimation are given, respectively, in Table 12 and 13. On the basis of the results of estimation of the multinomial logit model we find that the probability of occupying any state other than that of being a dual-earners couple decreases significantly with the age of the wife. The cohort of women born just after second world war are less likely to be female-breadwinners or part of a couple where both spouses are out of work. Wives born between 1955 and 1965 are significantly more likely to be found in a "both-out-of-work" couple than younger or older cohorts wives. This corroborates other findings for France that the baby-boom generation of the 1960s faced more severe labour market problems. Couples with lower-educated wives are much less likely to be dual-earners: low-educated wives increase significantly the probability of either MB or FB or OO states. This negative effect is even stronger for couples where both spouses have low education levels.

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[6] Almost the totality of children of three years and older are enrolled in education in France. Although this is not compulsory for children between 3 and 5 years, a place is guaranteed for parents that want to benefit from the system. Most French children go to "ecole maternelle", school, when they are three.

[7] Here it should be noticed that also unemployed people and those for whom no information was available on professional skills were given a socio-economic professional class, labelled "person without any profession" (see Annex). About 30% of women and 4% of men were in this situation in 1990. These figures are somewhat smaller for 2002. The proportion of spouses belonging to the same socio-economic professional class and being in this situation is roughly 10% at both points in time.

Unmarried couples are less likely to occupy the MB state, relative to dual-earnership, which is very plausible. The opposite holds true for FB and OO couples, that are significantly more likely to be not married, relative to dual-earners couples.

MB, FB and OO couples are all less likely to live in the region of Paris than dual-earners, while they are more likely to live in large provincial towns. This could reflect either mentality or differential unemployment rates, which are lower in the area of Paris.

They are also less likely to be French, which would suggest either more difficulties to get integrated into the French labour market for non-French couples or a more traditional attitude to role sharing.

The presence of small pre-school children increases the probability of MF, FB and OO, relative to that of being a dual-earners couple. The probability of being a MF or an OO couple also increases with the number of children while that of being an MF couple decreases.

Increasing age difference reduces the probability of being a dual-earner couple, and increases that of MB, FB, and OO. Spouses enjoying the same education level –having isolated the effect of same-education-low- are less likely to be MB, FB or OO. These findings suggest as we had expected that positive assortative mating, as measured by smaller age difference and same level of education, increases the probability of being dual-earners. Belonging to the same socio-occupational class is not included among the explanatory variables of the multinomial logit; given its construction this variable might be endogenous and, therefore, we exclude it (see earlier footnote).

Finally, the time dummies suggest that the probability of MB decreases significantly overtime, while that of FB increases.

Let us then look at the results of estimation of the bivariate probit model of being a dual-earners couple and one where the wife earn the same or more than her husband. We discuss the marginal estimates for positive outcomes of both probabilities: wives earning higher wages in dual-earners couples. These estimates are given in Table 13. We find that the higher-earnings-wife (HEW) probability increases significantly with the age of wives, but at a decreasing rate (negative age squared estimate). Older cohorts wives are less likely to be higher-earnings ones. So are low-educated wives: the probability of being a higher-earnings wife increases significantly with education (remember education level 6 is the lowest and the basis for these dummies is having completed a university degree or higher). The likelihood of HEW increases for unmarried couples, by approximately 0.4% percentage points. It also increases with the presence of small pre-school children, by 0.2 percentage points, but it falls

with the number of children. The causal nature of the variable "small pre-school children" may actually be questioned. It is more likely that HEW occurs first and that labour market attachment is stronger for HEW. The same could apply to FB in the earlier model.

Being of French nationality increases the probability of HEW. It might be that non-French wives are having a harder time making a career or it could be that they are just overly less-educated relative to French women[8]. There might also be cultural factors at stake.

Living in the region of Paris does not affect the likelihood of HEW, while living in large provincial towns reduces it significantly.

Finally, coming to the positive assortative mating variables, we find that larger age difference reduces significantly the HEW probability. Spouses enjoying the same education level have lower chances of HEW, except for the case of spouses being both low-educated, that are significantly more likely to be HEW. So the probability of HEW is higher for higher educated wives only when the husband does not have the same education level. On the other hand, if we look at descriptive statistics from Table 2, both spouses in HEW couples tend to be more educated than the sample average. Moreover, belonging to the same professional class increases significantly the probability of HEW, by 0.8 percentage points.

Conclusions

This paper investigates the labour market states occupied by spouses and their determinants. There is huge economic literature on lone parents but, to our knowledge, no economic paper deals with the situation of female breadwinners in couple households. This issue is relevant for policy purposes. First of all, it is on the agenda of all OECD governments to increase participation rates of (married) women and some lessons could be learned from the case of female breadwinners. Second, obstacles to the labour supply of secondary earners may have to be removed, in order to foster the labour supply of men married to a female breadwinner. Thirdly, some female-breadwinner households may be exposed to the risk of poverty like most lone parents are. And finally, it is crucial for the well-being of men and women in "female-breadwinner" households that their existence is acknowledged by society as a whole.

The data used for the analysis are drawn from the French labour force surveys of 1990 to 2002. We find that in one every six couple-households the wife was the sole or the main

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[8] We have found that for a larger proportion of non-French respondents education was either very low or non-coded.

earner in France in year 2002. The number of dual-earners has gone up from 52% of the population in 1990 to 58% in 2002. About a fifth of women in dual-earners couples in our sample earn a higher gross monthly salary than their husbands. The proportion of male breadwinners couples has diminished steadily overtime, from 30% in 1990 to 22% in 2002; while that of female breadwinners has increased from 5% to 7%.

We have assumed a simplified unitary framework, which allows us to carry out some straightforward exploratory econometric analysis of the different states occupied by spouses, without imposing any a priori constraints on the data. We have thus distinguished the occurrence of dual-earners, from male and female breadwinners' couples and couples where both spouses are out of work. We have controlled for variables relating to the macroeconomic and local labour market situation, for demographic and socio-economic characteristics of the wife, as well as for couple's specific characteristics, ranging from the presence and age of children to various indicators of positive assortative mating of spouses. Our findings confirm the importance of this last set of regressors to explain joint labour behaviour of the two spouses.

Finally, sticking to the unitary framework, we have estimated models of the probability of observing a dual-earners couple and one where the wife earns the same or more than her husband. We assume to this end that spouses' potential earnings are independent and exogenously determined and that couple's formation is ex-ante determined, as conventional in the literature. We find that the higher-earnings-wife (HEW) probability increases significantly with education and it is stronger for unmarried couples. The probability of HEW is higher for higher educated wives only when the husband does not have the same education level. Belonging to the same professional class increases significantly the probability of HEW, by 0.8 percentage points. However, low-educated women married to low-educated men also show higher probabilities of earning more than their husband, suggesting that higher-earnings wives can be found at the two extremes of the distribution of education levels of couples: among both high-educated and low-educated couples. This might indicate that higher-earnings wives are not just the result of emancipation but possibly also reflect some deterioration of earnings and employment of low-educated men relative to those of low-educated women. Future research will have to look further into these issues.

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Appendix: definition of socio-economic professional class, according to the original French question.

The list below gives the socio-economic and professional category of individuals, according to the narrower definition, at two digits level. The broader classification, at one digit level, is given in brackets.

- Agriculteurs sur petite exploitation *(classe 1)*
- Agriculteurs sur moyenne exploitation *(classe 1)*
- Agriculteurs sur grande exploitation *(classe 1)*
- Artisans *(classe 2)*
- Commerçants et assimilés*(classe 2)*
- Chefs d'entreprise de 10 salariés ou plus *(classe 2)*
- Professions libérales *(classe 3)*
- Cadres de la fonction publique *(classe 3)*
- Professeurs, professions scientifiques *(classe 3)*
- Professions de l'information, des arts et des spectacles *(classe 3)*
- Cadres administratifs et commerciaux d'entreprises *(classe 3)*
- Ingénieurs et cadres techniques d'entreprises *(classe 3)*
- Instituteurs et assimilés *(classe 4)*
- Professions intermédiaires de la santé et du travail social *(classe 4)*
- Clergé, religieux *(classe 4)*
- Professions intermédiaires administratives de la fonction publique *(classe 4)*
- Professions intermédiaires administratives et commerciales des entreprises *(classe 4)*
- Techniciens *(classe 4)*
- Contremaîtres, agents de maîtrise *(classe 4)*
- Employés civils et agents de service de la fonction publique *(classe 5)*
- Policiers et militaires *(classe 5)*
- Employés administratifs d'entreprises *(classe 5)*
- Employés de commerce *(classe 5)*
- Personnels des services directs aux particuliers *(classe 5)*
- Ouvriers qualifiés de type industriel *(classe 6)*
- Ouvriers qualifiés de type artisanal *(classe 6)*
- Chauffeurs *(classe 6)*
- Ouvriers qualifiés de la manutention, du magasinage et du transport *(classe 6)*
- Ouvriers non qualifiés de type industriel *(classe 6)*
- Ouvriers non qualifiés de type artisanal *(classe 6)*
- Ouvriers agricoles *(classe 6)*
- Anciens agriculteurs exploitants *(classe 7)*
- Anciens artisans, commerçants, chefs d'entreprise *(classe 7)*
- Anciens cadres *(classe 7)*
- Anciennes professions intermédiaires *(classe 7)*
- Anciens employés *(classe 7)*
- Anciens ouvriers *(classe 7)*
- Chômeurs n'ayant jamais travaillé *(classe8)*
- Militaires du contingent *(classe8)*
- Élèves, étudiants *(classe8)*
- Personnes diverses sans activité professionnelle de moins de 60 ans (sauf retraités) *(classe8)*
- Personnes diverses sans activité professionnelle de 60 ans et plus (sauf retraités) *(classe8)*

Table 1a : Economic activity of husband and wife, year 1990: percentages.

	Husbands						
Wives	Employed	Unemployed	Other unemployed ILO	Full-time Education	Retired	Other inactive	Sum
Employed	**51.7**	1.4	0.2	0.2	2.4	1.3	*57.3*
Unemployed	4.9	**0.6**	0.05	0.03	0.3	0.2	*6.0*
Other unemployed ILO	0.6	0.03	**0.03**	0.01	0.01	0.02	*0.7*
Full-time Education	0.6	0.03	0.01	**0.15**	0.0	0.02	*0.8*
Retired	0.8	0.05	0.0	0.0	**2.7**	0.2	*3.7*
Other inactive	23.3	1.2	0.1	0.04	5.4	**1.4**	*31.5*
Sum (observations)	*81.9*	*3.3*	*0.5*	*0.4*	*10.7*	*3.1*	*100 (34973)*
Note : Sample weighted statistics.							

Table 1b : Economic activity of husband and wife, year 2002: percentages.

	Husbands						
Wives	Employed	Unemployed	Other unemployed ILO	Full-time Education	Retired	Other inactive	Sum
Employed	**57.8**	1.9	0.3	0.3	3.0	2.0	*65.3*
Unemployed	4.0	**0.6**	0.07	0.05	0.2	0.3	*5.3*
Other unemployed ILO	0.6	0.04	**0.04**	0.0	0.02	0.02	*0.8*
Full-time Education	0.8	0.06	0.01	**0.2**	0.0	0.03	*1.1*
Retired	1.0	0.02	0.0	0.0	**3.0**	0.2	*4.2*
Other inactive	16.6	1.3	0.1	0.08	3.5	**1.7**	*23.3*
Sum (observations)	*81.0*	*3.9*	*0.6*	*0.6*	*9.6*	*4.3*	*100 (34828)*
Note : Sample weighted statistics.							

Table 2a : Education levels of husband and wife, year 1990, %

Wives	Men Level 1 (the highest)	Level 2	Level 3	Level 4	Level 5	Level 6	Sum
Level 1 (the highest)	**3.3**	0.6	0.5	0.3	0.1	0.2	*5.1*
Level 2	2.1	**1.8**	1.4	1.7	0.5	0.7	*8.2*
Level 3	1.6	1.1	**2.3**	3.3	0.9	1.6	*10.8*
Level 4	0.8	0.9	2.3	**10.2**	1.6	6.5	*22.4*
Level 5	0.5	0.4	1.4	3.0	**1.3**	2.6	*9.2*
Level 6	0.5	0.6	1.8	11.6	1.9	**27.8**	*44.2*
Sum (observations)	*8.8*	*5.6*	*9.7*	*30.1*	*6.4*	*39.4*	*100 (34270)*
Note : Sample weighted statistics.							

Table 2b : Education levels of husband and wife, year 2002, %

Wives	Husbands Level 1 (the highest)	Level 2	Level 3	Level 4	Level 5	Level 6	Sum
Level 1 (the highest)	**6.2**	1.7	1.3	1.1	0.4	0.4	*11.0*
Level 2	3.0	**3.3**	2.3	2.9	0.9	1.0	*13.4*
Level 3	1.6	1.9	**3.2**	5.0	1.1	1.9	*14.7*
Level 4	0.8	1.6	2.7	**12.0**	1.7	5.7	*24.6*
Level 5	0.4	0.6	1.1	3.3	**1.0**	2.2	*8.6*
Level 6	0.4	0.6	1.4	9.1	1.5	**14.7**	*27.7*
Sum (observations)	*12.5*	*9.7*	*12.0*	*33.3*	*6.6*	*25.9*	*100 (34826)*
Note : Sample weighted statistics.							

Table 3 : Trends in positive assortative mating

	Same education level	Same socio-economic professional class (at two digits level)	Same socio-economic professional class (at one digit level)
	Mean (standard error)	Mean (standard error)	Mean (standard error)
1990	0.47 (0.50)	0.14 (0.35)	0.23 (0.42)
1991	0.47 (0.50)	0.14 (0.34)	0.22 (0.41)
1992	0.45 (0.50)	0.13 (0.34)	0.22 (0.42)
1993	0.45 (0.50)	0.13 (0.34)	0.22 (0.41)
1994	0.44 (0.50)	0.13 (0.34)	0.22 (0.41)
1995	0.44 (0.50)	0.13 (0.33)	0.22 (0.41)
1996	0.43 (0.50)	0.12 (0.33)	0.21 (0.41)
1997	0.42 (0.49)	0.12 (0.33)	0.21 (0.41)
1998	0.41 (0.49)	0.12 (0.33)	0.22 (0.41)
1999	0.41 (0.49)	0.13 (0.33)	0.22 (0.41)
2000	0.41 (0.49)	0.12 (0.33)	0.22 (0.41)
2001	0.41 (0.49)	0.12 (0.33)	0.22 (0.42)
2002	0.40 (0.49)	0.12 (0.33)	0.22 (0.42)
Note : Sample weighted statistics.			

Table 4a: Socio-economic professional classes of husbands and wives, year 1990: percentages

	Husbands								
Wives	1	2	3	4	5	6	7	8	Sum
1	**2.7**	0.1	0.02	0.05	0.03	0.2	0.3	0.04	*3.4*
2	0.1	**3.1**	0.3	0.4	0.2	0.5	0.1	0.1	*4.8*
3	0.03	0.3	**3.0**	0.8	0.2	0.2	0.1	0.1	*4.7*
4	0.3	0.9	3.1	**4.7**	1.3	2.0	0.2	0.3	*12.8*
5	0.5	2.5	2.7	7.4	**4.9**	13.0	0.5	0.9	*32.5*
6	0.1	0.5	0.2	1.3	0.8	**6.6**	0.1	0.3	*10.1*
7	0.05	0.1	0.1	0.05	0.03	0.1	**0.8**	0.03	*1.2*
8	0.8	2.4	4.4	5.0	2.9	12.0	1.3	**1.6**	*30.5*
Sum	*4.7*	*9.9*	*13.9*	*19.7*	*10.3*	*34.6*	*3.5*	*3.3*	*100 (31282)*

Note : Sample weighted statistics.

Table 4b: Socio-economic professional classes of husbands and wives, year 2002: percentages

	Husbands								
Wives	1	2	3	4	5	6	7	8	Sum
1	**1.2**	0.04	0.0	0.05	0.03	0.1	0.1	0.02	*1.5*
2	0.04	**1.7**	0.2	0.4	0.1	0.4	0.09	0.1	*3.1*
3	0.08	0.5	**4.8**	1.6	0.4	0.5	0.2	0.2	*8.3*
4	0.3	0.9	4.1	**5.2**	1.7	3.0	0.4	0.4	*16.1*
5	0.6	2.6	3.5	7.7	**5.5**	14.8	0.6	1.4	*36.8*
6	0.2	0.3	0.2	1.2	0.7	**5.7**	0.1	0.5	*9.1*
7	0.03	0.04	0.3	0.1	0.02	0.1	**0.9**	0.05	*1.5*
8	0.3	1.7	3.7	3.3	2.2	9.3	1.2	**1.9**	*23.6*
Sum	*2.8*	*7.9*	*16.8*	*19.5*	*10.7*	*33.9*	*3.7*	*4.7*	*100 (31972)*

Note : Sample weighted statistics.

Table 5: Distribution of the ratio of the wife's gross monthly salary over the husband's gross monthly salary, for dual-earners couples in salaried work

	D1 (10%)	Q1 (25%)	Median (50%)	Q3 (75%)	D9 (90%)	Observations
1991	0.36	0.56	0.77	0.98	1.16	8962
1992	0.35	0.54	0.76	0.98	1.16	9818
1993	0.34	0.53	0.76	.97	1.18	11166
1994	0.34	0.53	0.76	0.98	1.18	11690
1995	0.33	0.53	0.76	0.98	1.19	11625
1996	0.33	0.52	0.75	0.99	1.21	12662
1997	0.33	0.52	0.76	1	1.21	11207
1998	0.33	0.53	0.77	1	1.23	11196
1999	0.34	0.54	0.77	1	1.22	10967
2000	0.34	0.54	0.77	1	1.22	11132
2001	0.35	0.54	0.76	1	1.22	12543
2002	0.35	0.53	0.76	1	1.21	12812

Table 6. Descriptive statistics : sample and dual-earners.

Explanatory variables	Sample of husbands and wives		Dual-earners spouses	
	Mean	Standard deviation	Mean	Standard deviation
Age of the woman	41.528	11.053	39.337	9.137
Age of the man	43.913	11.146	41.410	9.273
Wife Cohort 1955-1965	0.310	0.462	0.351	0.477
Wife cohort 1945-1954	0.292	0.455	0.319	0.466
Wife cohort born before 1944	0.167	0.373	0.092	0.290
Education level 6, woman	0.363	0.481	0.249	0.433
Education level 5, woman	0.087	0.282	0.090	0.286
Education level 4, woman	0.246	0.430	0.272	0.445
Education level 3, woman	0.123	0.328	0.147	0.354
Education level 2, woman	0.107	0.309	0.143	0.350
Education level 6, man	0.327	0.469	0.245	0.430
Education level 5, man	0.062	0.241	0.066	0.249
Education level 4, man	0.333	0.471	0.368	0.482
Education level 3, man	0.102	0.303	0.115	0.319
Education level 2, man	0.075	0.264	0.092	0.289
Not married living together	0.166	0.372	0.184	0.387
Any child <3 years	0.120	0.325	0.107	0.310
Children number	1.324	1.229	1.307	1.043
French nationality	0.913	0.282	0.946	0.226
Region of Paris	0.160	0.367	0.176	0.381
Small neighborhood	0.471	0.450	0.483	0.450
Large neighborhood	0.192	0.394	0.179	0.385
Age difference	2.385	4.400	2.073	4.032
Same education level	0.432	0.495	0.395	0.489
Same education level * level 6 (low)	0.210	0.407	0.123	0.329
Same class at 2 digits	0.129	0.335	0.177	0.382
Monthly gross wage woman	6981.528	6715.453	7050.639	6619.977
Monthly gross wage, man	9686.316	8026.423	9697.594	7267.985
Couple' s income from work	13771.84	10643.2	15923.3	10665.13
Observations	*470996*		251106	

Note : Unweighted sample statistics for the period 1990-2002. Wages are given in deflated French francs; they are averaged over positive values only; to transform into euros, must divide by 6.55957. Total income from work is given by the sum of wages of working spouses.

Table 7. Descriptive statistics : the case of higher earnings wives
Dual-earners couples where the wife earns the same or more than her husband

Explanatory variables	Mean	Standard deviation
Age of the woman	38.277	8.932
Age of the man	39.667	9.263
Wife Cohort 1955-1965	0.353	0.478
Wife cohort 1945-1954	0.289	0.453
Wife cohort born before 1944	0.067	0.250
Education level 6, woman	0.135	0.342
Education level 5, woman	0.077	0.250
Education level 4, woman	0.236	0.425
Education level 3, woman	0.171	0.376
Education level 2, woman	0.231	0.421
Education level 6, man	0.249	0.433
Education level 5, man	0.071	0.258
Education level 4, man	0.373	0.484
Education level 3, man	0.117	0.322
Education level 2, man	0.097	0.296
Not married living together	0.249	0.432
Any child <3 years	0.128	0.334
Children number	1.160	0.984
French nationality	0.958	0.200
Region of Paris	0.206	0.405
Small neighborhood	0.424	0.494
Large neighborhood	0.194	0.396
Age difference	1.390	4.046
Same education level	0.356	0.479
Same education level * level 6 (low)	0.077	0.267
Same class at 2 digits	0.174	0.379
Monthly gross wage woman	9690.62	10426.7
Monthly gross wage man	7654.036	3239.664
Couple' s income from work	17344.66	12106.07
Observations	*34560*	

Note : unweighted sample statistics for the period 1990-2002.

Table 8. Descriptive statistics Couples mono-employed				
	Male breadwinner couples		Female breadwinner couples	
Explanatory variables	Mean	Standard deviation	Mean	Standard deviation
Age of the woman	39.485	10.486	46.276	11.378
Age of the man	41.905	10.039	50.068	12.415
Wife Cohort 1955-1965	0.326	0.468	0.191	0.393
Wife cohort 1945-1954	0.275	0.447	0.302	0.459
Wife cohort born before 1944	0.134	0.341	0.343	0.475
Education level 6, woman	0.430	0.495	0.444	0.497
Education level 5, woman	0.092	0.288	0.087	0.282
Education level 4, woman	0.242	0.428	0.219	0.413
Education level 3, woman	0.111	0.314	0.096	0.294
Education level 2, woman	0.072	0.259	0.091	0.288
Education level 6, man	0.339	0.473	0.463	0.499
Education level 5, man	0.061	0.239	0.059	0.236
Education level 4, man	0.326	0.469	0.277	0.447
Education level 3, man	0.096	0.294	0.085	0.279
Education level 2, man	0.066	0.249	0.052	0.223
Not married living together	0.153	0.360	0.182	0.386
Any child <3 years	0.190	0.392	0.056	0.230
Children number	1.173	1.385	0.839	1.063
French nationality	0.871	0.336	0.906	0.291
Region of Paris	0.147	0.354	0.178	0.382
Small neighborhood	0.459	0.498	0.442	0.497
Large neighborhood	0.205	0.404	0.200	0.400
Age difference	2.503	4.523	3.792	5.089
Same education level	0.430	0.495	0.472	0.499
Same education level * level 6 (low)	0.236	0.425	0.306	0.461
Same class at 2 digits	0.015	0.124	0.030	0.171
Monthly gross wage woman			6479.779	7428.885
Monthly gross wage man	9675.064	9341.608		
Couple's income from work	9675.064	9341.608	6479.779	7428.885
Observations	*125510*		32351	

Note : unweighted sample statistics for the period 1990-2002.

Table 9: Trends in couples' situation on the labour market

	Normal dual-earners	She earns >= than he does	Male Breadwinner	Female breadwinner	Both out of work
1990	47.88 (48.34)	3.28 (3.37)	30.45 (30.22)	5.58 (5.56)	12.81 (12.51)
1991	45.69	6.06	29.27	5.83	13.16
1992	45.29	6.39	28.81	6.08	13.43
1993	44.62	6.93	27.82	7.03	13.60
1994	43.90	7.13	27.52	7.52	13.92
1995	45.17	7.35	26.69	7.17	13.62
1996	44.60	8.25	26.66	7.28	13.21
1997	44.88	7.77	26.58	7.35	13.42
1998	45.68	7.89	25.95	7.30	13.19
1999	46.44	7.81	25.44	7.44	12.87
2000	47.88	7.00	24.66	7.00	12.50
2001	48.18	8.95	24.01	6.78	12.09
2002	48.22 (48.38)	9.27 (9.46)	23.23 (23.23)	7.44 (7.50)	11.83 (11.52)
Note: unweighted sample statistics. Sample weighted statistics are given in brackets.					

Table 10: Transition matrices : transitions over one year, from 2000 to 2001 (1990 to 1991).

2001 2000	Normal dual-earners	Male Breadwinner	Female breadwinner	Both out of work	She earns >= than he does	Total
Normal dual-earners	41.25 (40.21)	3.41 (3.53)	1.21 (1.72)	0.33 (0.43)	2.91 (3.62)	49.10 (49.51)
Male Breadwinner,	4.11 (4.15)	18.45 (23.72)	0.19 (0.19)	1.42 (1.84)	0.26 (0.16)	24.43 (30.06)
Female breadwinner	0.89 (0.87)	0.17 (0.14)	4.73 (3.45)	0.76 (0.66)	0.46 (0.18)	7.01 (5.30)
Both out of work	0.18 (0.18)	0.97 (0.69)	0.36 (0.33)	9.95 (10.59)	0.07 (0.04)	11.53 (11.83)
She earns >= than he does	1.99 (1.31)	0.29 (0.09)	0.36 (0.12)	0.05 (0.01)	5.24 (1.77)	7.93 (3.30)
Total	48.43 (46.72)	23.28 (28.17)	6.85 (5.80)	12.50 (13.53)	8.94 (5.78)	100 (100)
Number of observations	9578 (9016)	4605 (5436)	1355 (1118)	2472 (2611)	1768 (1115)	1768 (1115)
These are sample weighted statistics. Transitions from 1990 to 1991 are given in brackets. Percentages shown are cell percentages.						

Table 11: Transition matrices : transitions over two years, from 2000 to 2002 (1990 to 1992).

2002 2000	Normal dual-earners	Male Breadwinner	Female breadwinner	Both out of work	She earns >= than he does	Total
Normal dual-earners	40.24 (38.90)	4.24 (4.58)	1.85 (2.74)	0.57 (0.88)	3.40 (3.83)	50.29 (50.93)
Male Breadwinner,	5.23 (5.19)	16.57 (21.26)	0.41 (0.28)	2.59 (2.93)	0.37 (0.12)	25.16 (29.77)
Female breadwinner	1.08 (0.93)	0.23 (0.17)	4.23 (2.72)	1.09 (0.98)	0.37 (0.23)	7.00 (5.04)
Both out of work	0.29 (0.29)	0.82 (0.76)	0.41 (0.25)	8.53 (9.43)	0.04 (0.05)	10.10 (10.78)
She earns >= than he does	1.95 (1.24)	0.47 (0.14)	0.50 (0.20)	0.04 (0.04)	4.50 (1.86)	7.46 (3.47)
Total	48.79 (46.55)	22.33 (23.28)	7.39 (6.85)	12.81 (12.50)	8.67 (8.94)	100 (100)
Number of observations	4113 (3906)	1882 (2257)	623 (519)	1080 (1196)	731 (511)	4113 (3906)
These are sample weighted statistics. Transitions from 1990 to 1991 are given in brackets. Percentages shown are cell percentages.						

	Male breadwinner	Female breadwinner	Out-work spouses
Age of the wife	-0.352**(0.004)	-0.306**(0.007)	-0.742**(0.007)
Age of the wife squared	0.004**(0.00005)	0.005**(0.00008)	0.010**(0.00007)
Wife Cohort 1955-1965	-0.010 (0.016)	0.016(0.034)	0.098**(0.033)
Wife cohort 1945-1954	0.013 (0.026)	-0.167**(0.050)	-0.334**(0.050)
Wife born before 1944	0.224 (0.038)	0.016 (0.066)	-0.087(0.064)
Education level 6	0.967**(0.018)	0.206** (0.032)	1.352**(0.037)
Education level 5	0.584**(0.019)	0.201 (0.033)	0.843**(0.039)
Education level 4	0.478**(0.016)	0.182** (0.028)	0.725**(0.035)
Education level 3	0.276**(0.018)	-0.085** (0.032)	0.455**(0.038)
Education level 2	-0.122**(0.019)	-0.046 (0.032)	0.024**(0.042)
Not married	-0.043**(0.011)	0.649**(0.019)	0.669**(0.020)
Any child <3 years	0.512**(0.011)	0.109**(0.028)	0.524**(0.023)
Children number	0.423**(0.004)	-0.050**(0.007)	0.355**(0.006)
French nationality	-0.651**(0.014)	-0.466**(0.024)	-0.974**(0.020)
Region of Paris	-0.329**(0.012)	-0.063**(0.020)	-0.672**(0.021)
Small neighborhood	-0.179**(0.009)	-0.243** (0.016)	-0.318**(0.016)
Large neighborhood	0.047**(0.011)	0.108** (0.020)	0.152**(0.018)
Age difference	0.010**(0.0009)	0.114**(0.001)	0.126**(0.001)
Same education level	-0.105**(0.010)	-0.248**(0.019)	-0.092**(0.020)
Same educ. level * level 6	0.107**(0.016)	0.756**(0.029)	0.542**(0.027)
Same class at 2 digits			
Year	-0.010**(0.001)	0.006**(0.002)	0.002 (0.002)
Constant	5.513**(0;086)	2.032**(0.144)	
Observat ions	446330		
Pseudo R2	0.1601		
Likelihood ratio (χ2, 63)	156853.23		

Table 12. Multiniomial logit of labour market state occupied: reference state are dual-earners couples.

Note: A ** stands for significance at the 5% level.

Table 13. Results of estimation of the bivariate probit model of observing a dual-earner couple and that she earns>+ than he does

	Marginal effects (dF/dx)	
Explanatory variables	coefficient	standard error
Age of the wife	0.019**	0.001
Age of the wife squared	-0.0002**	0.0002
Wife Cohort 1955-1965	-0.001	0.005
Wife cohort 1945-1954	-0.014*	0.008
Wife cohort born before 1944	-0.023**	0.011
Education level 6	-0.227**	0.003
Education level 5	-0.129**	0.004
Education level 4	-0.125**	0.003
Education level 3	-0.085**	0.004
Education level 2	-0.004	0.004
Not married	0.037**	0.003
Any child <3 years	0.018**	0.004
Children number	-0.031**	0.001
French nationality	0.033**	0.005
Region of Paris	0.003	0.003
Small neighborhood	0.003	0.003
Large neighborhood	-0.019**	0.003
Age difference	-0.008**	0.0003
Same education level	-0.051**	0.003
Same educ. level * level 6	0.132**	0.007
Same class at 2 digits	0.079**	0.004
Year	-0.001**	0.0005
Rho	0.009	0.023
Observations	139056	
Wald ((χ2, 44)	7873.95	
Log Likelihood	-76568.061	

Marginal effects are computed for the case where both outcomes are positive.

** stands for significance at the 5% level; * stands for significance at the 10% level.