MARRIAGE AND WORK:

AN ANALYSIS FOR FRENCH COUPLES IN THE LAST DECADE♣

ELENA G. F. STANCANELLI
CNRS ,GREDEG, Nice and OFCE, Sciences-Po, Paris

January 2007

Abstract

This paper looks at French couples' labour market behaviour over the last thirteen years, from 1990 to 2002. We find that the proportion of dual earners couples has been steadily rising over time. Joint activity rates have gone up from 52% in 1990 to over 58% in 2002. About a fifth of women in dual earners couples in our sample earns 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 provide some descriptive and exploratory analysis of the determinants of the labour market states of spouses, accounting for class endogamy as well as for changing macroeconomic conditions. As expected, we find that class endogamy is an important determinant of the labour market states occupied by spouses. "Normal" dual-earners and wife-higher-earnings couples are more likely to belong to the same socio-economic class. Female breadwinners and wife-higher-earnings couples are significantly more likely to occur when both spouses are low-educated. But the probability of wife-higher-earnings increases with the education level of the wife while that of female breadwinners falls.

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

Elena STANCANELLI, email : elena.stancanelli@sciences-po.fr; fax 33-1-44185478

♣ This paper was presented at the GREDEG weekly workshop in June 2006. I am grateful to Edward Lorenz for his helpful remarks on the first draft of this paper. All errors are mine.

1. Introduction

According to recent studies for the USA and Australia the number of dual earners couples has been steadily increasing over time in these countries (Drago et al., 2004, Bureau of Labor, 2004). It was equal to 50% of married couples in Australia in 2001 and 59% in the USA in the same year. 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. The proportion of wives earning more than their husband among French dual earners couples is 22%, according to our estimates. In the United States there has been considerable attention paid to these new phenomena on the press and couple of best sellers have looked at female breadwinners couples (Minetor, 2006, Pappenheim and Graves, 2005). This is to our knowledge the first study ever, academic and non, that looks into this issue for France.

We analyse a thirteen years period, going from 1990 to 2002. Given the secular decline in marriage rates among French couples, we select both cohabitant and married couples for our analysis and find that 25% of women in dual-earners couples earn the same or more gross monthly earnings than their husband throughout the period considered -22% earning more than him and 3% just as much. We also looked at persistence in this state and found that almost 95% of these women were earning the same or more than their husband over two years periods and roughly 90% over three years period. This indicates that these are not transitory situations, but in one every four dual earners couples she does earn more than he does on a persistent basis. We then went on and compare earnings of spouses in these couples, to conclude that these "higher-earnings wives have average earnings well above the average "wife" in the sample, while their "husbands" have lower than average earnings, relative to husbands' average earnings in the sample.

We also find that the proportion of male breadwinner couples, where he works and she is out of work, has gone down from 30% in 1990 to 22% in 2002; while the number of female breadwinners has gone up by 2%, increasing from over 5% to over 7%.

This suggests that important structural changes are under way in French society that go in the same direction of what is happening in other Western countries. The issue here is for us not as much gender equality as it is class endogamy. It seems natural to think that marriage formation and labour market behaviour of couples cannot be treated in isolation. Pencavel (1998) relates the increasing education rates of American women to the increase in the

number of dual earners couples. We propose to try and relate the patterns observed in the labour market states occupied by couples to spouses' and couples' characteristics, accounting also for changes in macroeconomic conditions.

The structure of the paper is the following. First, the earlier French literature is briefly surveyed. Next the data are described. Descriptive analysis of couples' characteristics and labour market behaviour follows. Estimation of some exploratory econometric models is the next item. The last section concludes the paper.

2. The background literature

The conventional economic literature ignores behavioural interactions between members of the household. A number of models of the decision making process at the household level have been put forward. Among the most recent there are the collective household models (Chiappori, 1988, 1997) and the "revised" household production function (Apps and Rees, 1988, 1996, 1997, 2005). The sociological literature on marriage formation shows that individuals tend to marry others from the same socio-economic category. Positive assortative mating has been modelled by economists within a dynamic matching framework. The models specified allow for the dynamics of searching for a partner with similar socio-economic background and marrying them, when a successful encounter is made (Burdett and Coles, 1997 and 1999).

To our knowledge these studies do not take explicitly into account the relationship between marriage formation and labour market behaviour of spouses. Pencavel (1998) is an exception. The author carries out some exploratory analysis of the correlations between the increasing education levels of American women and the increase in the participation rates of spouses. He shows that the two processes are interrelated.

Earlier French studies have shown that social class is an important determinant of the labour force supply of married women and that earnings and working hours of spouses tend to be correlated (Galtier 1998, Fermanian and Lagarde, 1999, Lollivier, 2001). In particular, Galtier (1998) investigating part-time work of French women, finds that long hours part-time jobs are more likely to go to women married to higher-earnings men, while small hours part-time jobs are more often carried out by women married to lower-earnings men. This leads to increased inequality of hours of work and earnings of couples. Fermanian and Lagarde (1999) analyze working hours of French partners, finding evidence of a strong correlation between

the hours of work of husband and wife. They conclude that "social class", defined as socio-economic category, and children are important determinants for these correlations: social class has a positive impact while the presence of children has a negative one. Lollivier (2001) looks at the labour supply of married women in France, using panel data models. The author finds that "class endogamy", defined as the association between the education levels of husbands and wives, has a strongly significant impact on the labour force participation of higher educated women.

Our aim is to expand on these earlier studies by taking a more global picture of couples' labour market states and investigating their determinants.

3. The data

The sample for analysis is drawn from the French Labor Force Surveys of years 1990 to 2002. We cannot extend our analysis to later years, as the LFS series was broken in 2003[1]. This survey has a rotating sample structure which enables one to construct a longitudinal sample. Around 60,000 households are interviewed each year in March, with a third of the sample being replaced each year. All household members are interviewed.

For our analysis, we first select from each survey year a sample of individuals with the following characteristics:

a) they reported to be "household heads" 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.

Records for which either the "husband" or the "wife" was not in the survey were dropped from the sample. We define here "husband" and "wife" as the partners, without distinguishing for whether they are married or not. Figure 1 provides some background information on the marriage rate of couples in the sample: the percentage of women married is shown. The rate of marriages falls steadily over time, while that of cohabitation increases

[1] Since 2003, to follow European data harmonization directives, the LFS questionnaire was changed, so that the notion of employment and unemployment, for example, are no longer comparabke to the earlier series. Moreover, the new series of LFS surveys are run on a continuous-time basis, while the earlier LFS that we analyze here were based on a single interview being carried out in March of each year. Most LFS interviews are now carried out by telephone and the respondents are first asked whether their situation is the same as earlier on. Households are kept in the sample for at most 18 months period. Seasonality is very strong in the new series. Pooling together the old and the new LFS series is therefore out of question.

over time as well as the number of single women[2]. Single women include here also divorced and widowed women.

Records for husband" and wife were linked, giving a final sample of roughly 35,000 couples for each of the years considered. Observations relating to the different years were pooled together over time to construct our final sample for analysis, which contains almost 471,000 couples. Over 16% of the couples in our final sample were living together without being married.

Labour market states are defined using the (subjective) answers to the relative questions. Labour market participants include employed and unemployed people. Non-participants are students, retirees and other inactive persons.

We have information in the dataset on the social class of husband and wife. Two alternative definitions of social class have been used here: the narrower one is based on a two-digit classification of the social class of the respondents; the broader one relies on a one-digit classification. The relevant survey question is given in the Annex to the paper, in the original French language.

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.

The survey collects information on monthly gross wage at the time the survey was run. Monthly salaries have been deflated.

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. Almost 100% of children aged three and older are at (maternal) school in France. This is available to everyone and free of charge, so not rationed.

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. The base for these dummies are medium size cities with a population of 20,000 to 200,000 inhabitants.

[2] Having included both married and cohabiting couples in our model should somewhat limit the possible selection problems due to the fact that marriage rates decrease overtime. Having included also cohabiting couples into the model, should limit this problem, as we look here at all couples and not just at married ones.

4. Descriptive analysis

4.1 Sample statistics, dual-earners, male and female breadwinners

Descriptive statistics, respectively, for all couples, and for dual earners couples, are given in Table 1. Table 2 shows sample statistics for dual earners couples where women earn the same or more gross monthly earnings than their husbands. Table 3 relates to the case of "male-breadwinner" couples, where the husband works and his wife is out of work, whether she is unemployed or a housewife. This is contrasted with that of "female-breadwinner" couples, where the wife works and her husband is out of work, whether he is unemployed or a "house-person" or a retiree.

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 1). 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 social class. Almost 18% of dual-earners spouses belong to the same social 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 spouses 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 earner couples 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 2). 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 3 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.

---

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

[4] The system of taxation is very favourable to male-breadwinner households in France.

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) 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 bread-winnership 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.

4.2 The labour market states of husbands and wives and their demographic and socio-economic characteristics

The main economic activities of the two spouses, within each couple, are compared in Tables 4a and 4b, respectively, for 1990 and 2002. We see that the number of dual earners couples 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 5a and 5b, 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.

Class endogamy has slightly decreased according to the narrower definition (see Table 6) but it has remained unchanged, on a wider criterion. Tables 7a and 7b compare the social 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 Figure 2, we compare trends in the activity rate of dual-earners couples to those for individuals from either gender, married or unmarried ones altogether. It emerges that the participation rates of French dual earners couples follow the same time pattern as that of women's participation rate, which has been increasing steadily over time. There are few downturns which correspond roughly to the turning points of the business cycle (French GDP growth rate over the same time period is shown, for comparison purposes, in Figure 3). The participation rate of men is much flatter, showing a slight decrease over time.

If we look at employment rates, in Figure 4, these patterns are even sharper. The employment rate of dual earners follows an upward trend, while that of men is decreasing until the end of the nineties, goes up in year 2000, an expansion year, to turn down again in 2001. Employment rates of dual earners couples follow closely those of women, but remain about a percentage point lower throughout the period considered.

Looking at unemployment, in Figure 5, we find that couples with both spouses unemployed are more of a minority: amounting to less than one percentage of our sample. However, this percentage would go up to about 4% if the sample were restricted only to individuals aged less than 55.

Next, we decompose trends in participation rates of dual-earners couples by age and education level of the wife, in Figure 6 and 7. Older spouses are less likely to be dual earners

than younger ones, as reasonable. The joint activity rate of couples where the wife is aged 45-55 increases over the period considered, while that of couples with a younger wife is decreasing, though less steadily over time. The relationship between wives' education levels and joint activity rates of partners is more clear-cut: the chart suggests a positive relationship, more or less constant over time.

Graphical inspection of participation rates by the presence and age of children (see Figure 8), indicate that dual earners with more than two children have increased their activity rates over time. Dual earners with young children of less than three years show rather pro-cyclical participation rates.

Finally, we inspect the trends in joint participation rates by the degree of "endogamy" of spouses in Figure 9. We focus on the following subgroups of dual earners spouses:

1. enjoying the same education level;
2. enjoying the same educational level, low (equal to at most compulsory education) for both spouses;
3. belonging to the same social class.

The highest activity rates, in absolute terms, are those of couples in the last group, although showing a decreasing trend over time. Couples in the first group have lower activity rates than the average –mainly because of the lower activity rates of couples where both spouses have a low education level (but this group shows an increasing trend over time).

In Table 7, 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[5].

[5] 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.

4.3 Dual earners, male and female breadwinners and wife-higher earnings couples

Let us distinguish five types of couples:

- "normal" dual earners couples where the husband earns more than his wife
- dual earners couples where she earns the same or more than him
- male breadwinner couples
- female breadwinner couples
- couples where both spouses are out of work;

We have defined out of work as including unemployment, and other non-participation states. The evolution of these states 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.

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-years and three-years 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 bread-winner 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 wanted to see more transitions out of this state.

5. An exploratory model of couples' labour market states

Husband and wife take joint decisions concerning their labour market state. Whether they both work or not depends on each spouse's wills plus possible pressure from the other as well as from the overall state of the labour market and from a combination of spouses' characteristics and couples' characteristics.

Let U be total household utility, Y being total income, H total working hours, L, total leisure time, and h denote husbands and w, wives. Spouses will maximise U(Yh, Yw, Lh, Lw) subject to the budget constraint Y=Yh+Yw.

We consider four possible combinations of labour market states of husband and wife:

- They both work: dual earners couples (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 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.

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. Now these maybe rather strong assumptions, especially if being out of work is for example not the result of a determined choice but more of involuntary unemployment or deficient demand. 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:

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

Each probability is estimated relative to the base:

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

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, so that hourly wage rates, than maybe a finer measure of earnings power, are bound to be measured with quite some error[6].

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

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

[6] 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.

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:

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

We consider four sets of regressors:

- demographic and socio-economic characteristics of the wife;
- couples' characteristics ;
- characteristics of the local labour market;
- year dummies, 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[7]); 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 social class[8]. The variable measuring age differences is meant to capture some dimension of positive assortative mating, as proxied by closer age of the two spouses.

[7] 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.

[8] Here it should be noticed that also unemployed people and those for whom no information was available on professional skills were given a social 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 social class and being in this situation is roughly 10% at both points in time.

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.

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 either 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 the as we had expected positive assortative mating, as measured by smaller age difference and same level of education, increase the probability of being dual-earners. Belonging to the same socio-occupational class is not included among the explanatory

variables of the multinomial logit, as 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[9].

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.

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

Conclusions

This paper investigates the labour market states occupied by spouses and their determinants. The literature on collective household behaviour assumes that couples' sharing of non-labour income is the major factor driving the choice of hours of work of husband and wife. Marriage formation has been looked at by economists, who have shown that class endogamy is an important determinant of the model.

We try here to make the link between these two strands of literature by investigating the relation between class endogamy and labour market behaviour of spouses, by developing a stylised simple model of the states occupied by the two spouses that controls among other things for endogamy.

The data used for the analysis are drawn from the French labour force surveys of 1990 to 2002. For simplicity, we call the two partners "husband" and "wife", but we include in our model married couples as well as unmarried but living together ones.

The number of dual earners couples 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%.

About 47% of the couples had the same education level in 1990, against 40% in 2002. The proportion of low-educated couples has gone down, from 28% to 15%, while that of the higher educated has increased going from 3% to 6%. Class endogamy has slightly decreased according to the narrower definition adopted: about 14% of spouses belonged to the same social class in 1990 against 12% in 2002. But it has remained unchanged, on a wider criterion: 22% of spouses are from the same social class throughout the sample period, according to this criterion. Class endogamy of high-qualified professional 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.

We have carried out some exploratory descriptive analysis of couples' joint labour market behaviour, decomposed by age, education, social class, and presence and age of children. The highest activity rates are those of couples belonging to the same social class, which, do,

however, show a decreasing trend over time in activity rates. Couples enjoying the same education level have lower activity rates than the average –mainly because of the lower activity rates of couples where both spouses have a low education level- but their activity rates show an increasing trend over time.

We have estimated a multinomial logit model of the different states occupied by spouses distinguishing 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, we have estimated a bivariate probit model of being a dual earners couple and one where the wife earns the same or more than her husband. 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.

Bibliography

Apps, P. and Rees, R. (2005), « Gender, Time Use and Public Policy over the life cycle », IZA Working Paper No. 1855, November.

Apps, P (2003), « Gender, Time Use and Models of the Household », IZA Working Paper No. 796, June.

Apps, P. F. and Rees, R. (1997), "Collective Labor Supply and Household Production", *Journal of Political Economy*, 105, 178-190.

Apps, P. F. and Rees, R. (1996), "Labor Supply, Household Production and Intra-Family Welfare Distribution", *Journal of Public Economics*, 60, 199-209.

Apps, P. F. and Rees, R. (1988), "Taxation and the Household", *Journal of Public Economics*, 35, 155-169.

Belding, T. C., 2004, "Nobility and Stupidity: Modeling the Evolution of Class Endogamy", University of Michigan, mimeo.

Burdett, K. and Coles, M. G. (1999), "Long-Term Partnership Formation: marriage and employment, *Economic Journal*, Vol. 109, pp. 307-334.

Burdett, K. and Coles, M. G. (1997), "Marriage and Class", *Quarterly Journal of Economics*, Vol. 112, pp. 141-168.

Bureau of Labor (2004), "Women in the Labor Force: a databook (report 973)", Washington DC, Bureau of Labor Statistics, Us Department of Labor.

Chiappori, P. -A. (1997), « Introducing Household Production in Collective Models of Labour Supply », *Journal of Political Economy*, Vol. 105, No. 1, pp. 191-209.

Chiappori, P. -A. (1988), « Rational Household Labour Supply », *Econometrica*, Vol.56, pp. 63-89.

Drago, R., Black, D. and Wooden, M. (2004), "Female breadwinner families: their existence, persistence and sources", IZA, Discussion Paper No. 1308, September.

Fermanian, J.D, and Lagarde, S. (1999), « Les horaires de travail dans le couple », *Economie et Statistiques*, Vol. 321-322, pp. 89-110.

Galtier, B. (1998), « Les emplois des salariés à temps partiel dans le secteur privé: diversité des emplois et des conditions de travail », Document de Travail n° 98-03, Conseil Supérieur de l'Emploi, des Revenus et des Coûts.

Lollivier, S. (2001), « Les choix d'activité des femmes en couple : une approche longitudinale », *Economie et Statistique*, n° 349-350, pp.125-140.

Minetor, R. (2006), "Breadwinner wives and the men they marry: how to have a successful marriage while out-earning your husband", New Horizon Press Publisher.

Pappenheim, H. And Graves, G. (2005), "Bringing home the bacon: making marriage work when she makes more money", HarperCollins publishers, New York.

Pencavel, J. (1998), "Assortative Mating by Schooling and the Work Behavior of Wives and Husbands", *American Economic Review*, Vol. 88, No. 2, pp. 326-329.

Stancanelli, E. (2006), "Les couples sur le marché de l'emploi: une analyse exploratoire des années récentes", Revue de l'OFCE, No. 99, 0ctober 2006.

Stancanelli, E. (2004), "Evaluating the employment incentives of the French Tax Credit, 'la Prime Pour l'Emploi' : a difference in difference model", document de travail OFCE, No. 2004-07, juillet.

Annex : definition of social class, according to the original French question.

The list below gives the socio-economic 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 1. Descriptive statistics

	Sample of husbands and wives		*Dual-earners spouses*	
Explanatory variables	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 2. Descriptive statistics

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 3. 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 4a : 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 4b : 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 5a : Education levels of husband and wife, year 1990, %

	Men						
Wives	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 5b : Education levels of husband and wife, year 2002, %

	Husbands						
Wives	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 6 : Trends in class endogamy

	Same education level	Same social class (at two digits level)	Same social 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 7a: Social 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 7b: Social 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 8: 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 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.						

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

Figure 1. Marriage rates of French women aged 15 to 65

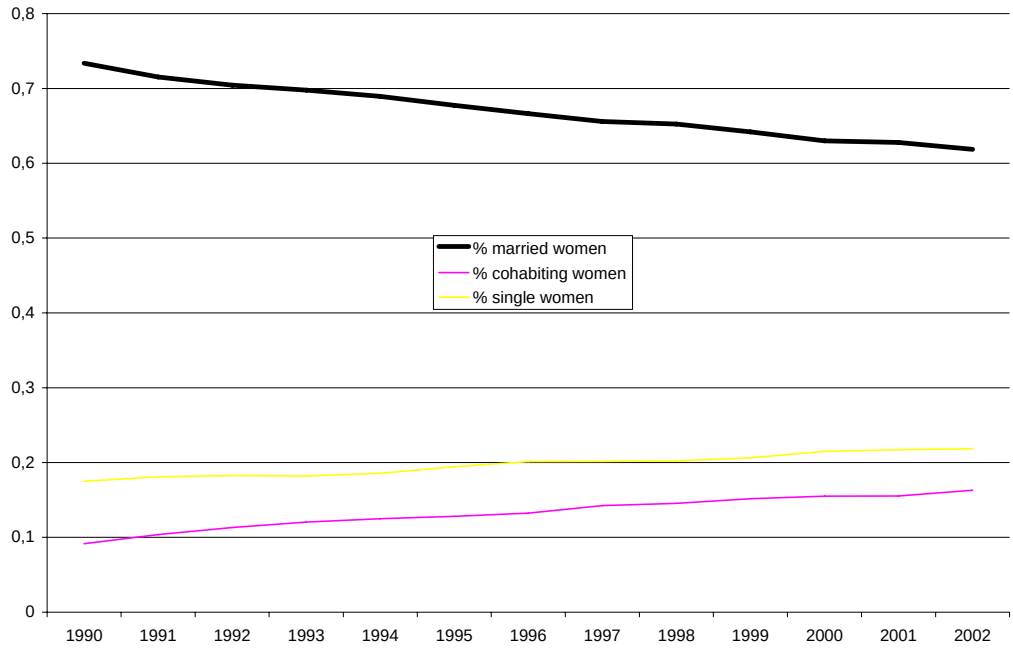

Figure 2. Participation rates

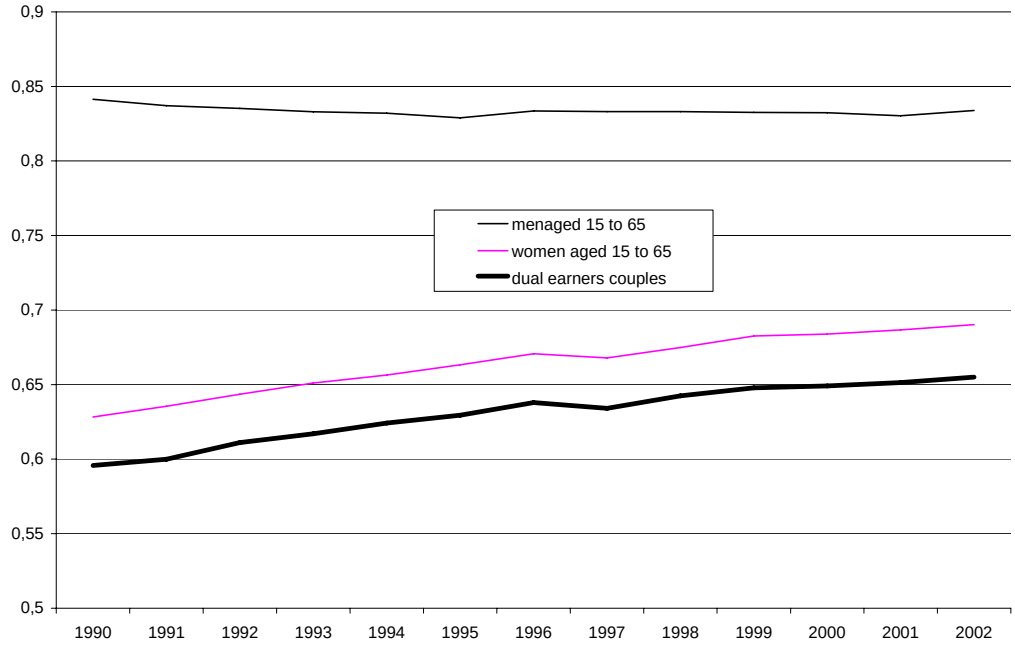

Figure 3. French GDP growth rate

Figure 4. Employment rates

Figure 5. Unemployment rates

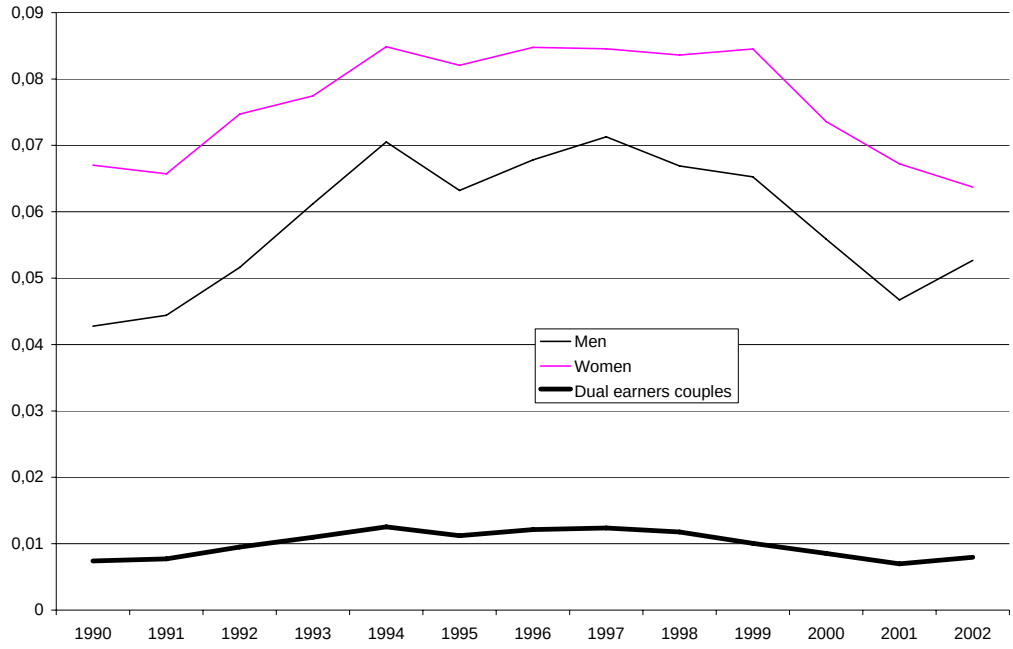

Figure 6. Participation rate of dual-earners couples by age of the wife

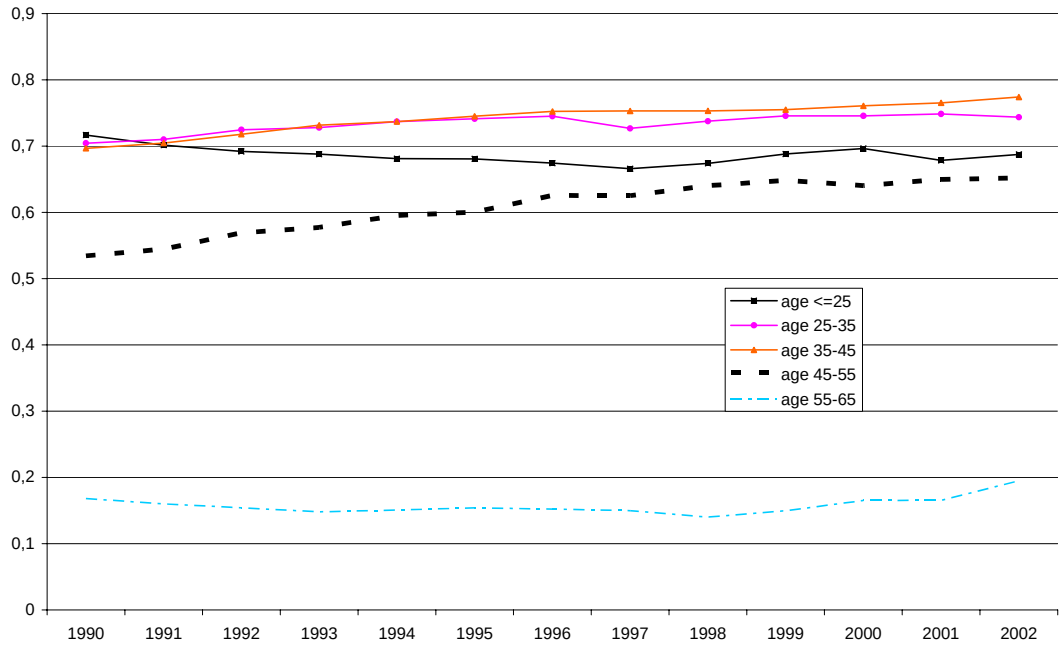

Figure 7. Participation rates of dual earners couples by wife's education

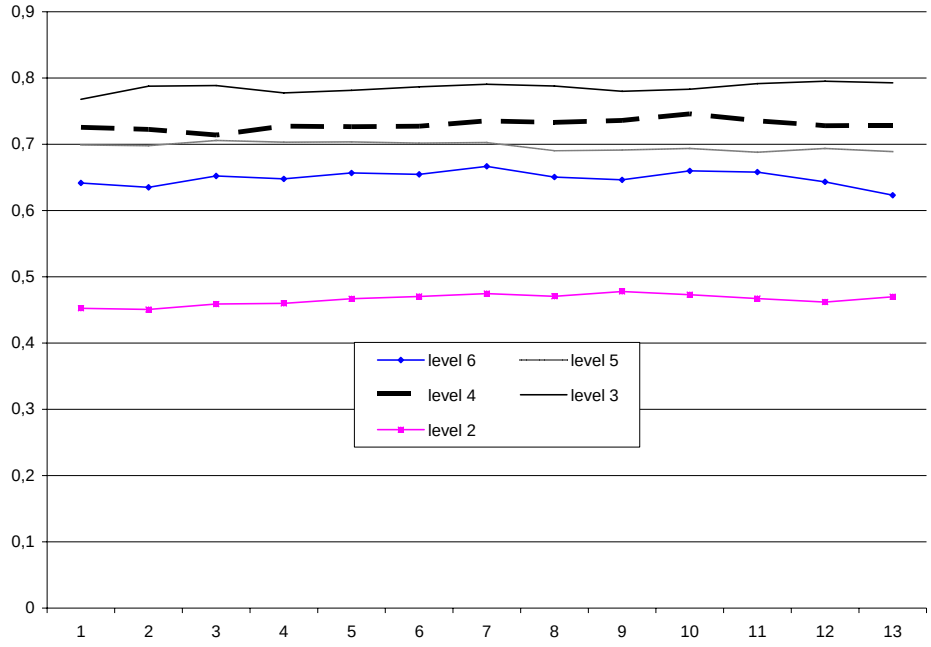

Figure 8. Participation rates of dual earners couples by presence and age of children

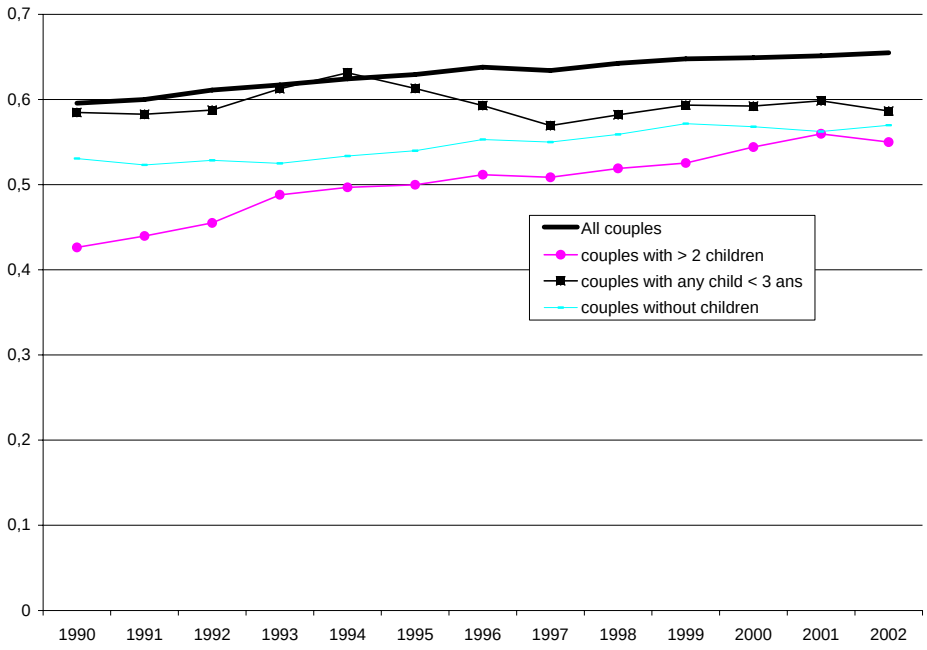

Figure 9. Participation rate of dual earner couples and endogamy