Population Association of America
2004 Annual Meeting Program

Session 148: The Family in Historical Perspective

Marriage Squeeze and Changes in Family Formation: Historical Comparative Evidence in Spain, France, and United States in the XXth Century*

Anna Cabré
Centre d'Estudis Demogràfics

Albert Esteve
Population Center, University of Minnesota

Abstract:

The effects of cohort sizes on family formation have been thoroughly studied, following Easterlin's seminal work, which identifies the labor market as the explanatory factor. The present paper proposes a different but converging hypothesis: with universal female marriage, women in shrinking birth-cohorts would marry younger and in greater proportions, that is, the marriage market would be the explanatory factor. This kind of marriage squeeze should have rapid stimulating effects on female nuptiality, contrary to small effects where there is an excess of females.

In two earlier works, the authors have developed the mechanisms of adjustment and tested them successfully for 20th Century Spain, predicting from findings a reversal of fertility trends performed by the cohorts born after 1980. Using recent comparable census microdata, through IPUMS-International, the study is extended now to France and United States, where we seek to generalize the proof. These cases differ by their chronologies and by the imbalances of sexes at specific moments, such as post World War II.

* This research is part of the project BSO2000-0477 "Población y migraciones en Cataluña. Estudio territorial, histórico y prospectivo", funded by the Spanish Ministry of Science and Technology. *Programa Nacional de Promoción General del Conocimiento. Plan Nacional I+D+I 2000-2003*.

The Marriage Squeeze

An imbalance in the numbers of males and females at prime marriage ages produces a marriage squeeze effect. Marriage patterns should reflect preferences in mate selection when the sex-age composition of the marriage market is in perfect equilibrium, which means the same number of males and females at all ages. The optimum scenario, however, is not always achieved. For instance, sex differences in mortality or migration patterns can easily create disequilibria in local marriage markets by decreasing or increasing the population of males or females of certain ages. History provides some illustrative examples on how war related mortality dramatically reduced the number of males. In a classical work, Louis Henry (1966) explored for France how the heavy lost of males during the First World War affected the marriage behavior of both male and female cohorts at marriageable ages. Despite the fact that women were trapped in a severe marriage squeeze, the proportion never marrying hardly changed. This paradox encouraged Henry to further explore the mechanisms by which the squeezed cohorts were able to overcome the situation without modifying excessively the proportions never marrying.

The marriage market equilibrium can also be altered by in- and out-migration movements. Thus, transoceanic migrations have changed the marriage markets of origin and destination societies: in Europe the marriage market was favorable to men, whose numbers were reduced by migration, in America and Oceania, final destinations of these migrants, women were scarce. The massive male immigration to certain localities in Australia during the XIX century provides an interesting example of the scarcity of

potential brides, which had important effects on marriage levels. On the other hand, in rural-urban migrations, women have tended to migrate to urban areas in greater proportions than men, increasing the level of bachelorhood in rural areas.

Along with mortality and migration, variations over time in the number of live births, depending on strength and length, can also affect, the age-sex structure of the marriage market a couple of decades later, as larger or smaller cohorts enter the marriage market. From a theoretical point of view, isolating the effects of differential mortality and migration by sex, if males and females marry within the same age, the sex ratio at birth would explain one hundred per cent of the sex structure of the marriage market. Given, though, that almost universally men marry younger women, an increase in the number of births will lead to a scenario where the size of a male cohort will be smaller than subsequent female births cohorts. On the contrary, when the number of births decreases, male birth cohorts will be larger than subsequent female cohorts.

Beyond the causes that reside behind a marriage squeeze, disequilibria in the marriage market can be grouped on the basis of which sex squeezed. Therefore, two different types can be created: (1) excess of women - scarcity of men; (2) excess of men - scarcity of women. To the best of our knowledge, little has been done to specifically compare both types of marriage squeeze. Assuming exactly the same length and strength, does the scarcity of men produce the same effects on the marriage patterns as the scarcity of women? To answer this question, let's first briefly explore what are the main consequences of a marriage squeeze.

Marriage squeeze effects can be tested using theoretical models. As shown by Shoen (1983), in a fictitious marriage market, changes in age-sex composition influence marriage behavior by changing the level and distribution of marriages. An interesting conclusion derived from Shoen's work, but not later developed by the author, is that a decrease in the number of births, which catches men in a marriage squeeze, has greater effects than an increase of births, which produces the inverse situation. Thus, this idea implies that there are somehow asymmetric effects on the marriage market depending on the kind of marriage squeeze.

Despite conclusions arising from models, empirical analyses of the marriage squeeze are less conclusive. A marriage squeeze does not alter the level (proportion of ever-married) or the distribution (difference between male and female mean ages at marriage) of marriages in the way that would be expected from a theoretical model. Squeezes in the marriage market have been solved through different mechanisms. For instance, it is commonly stated that the rapid demographic growth occurred in Sub-Saharan countries has contributed to polygamy. But in those societies where polygamy does not exist, marriage squeeze has to be solved in a different way. It is generally observed that the level of marriages is rarely affected by a marriage squeeze, even in severe situations. Henry (1966) demonstrated that a strong difference in age-sex composition, produced by large losses of men during First World War, had a surprisingly slight effect on the level of marriage. Societies, concludes Henry, adapt themselves easily to the sex-age disequilibria by modifying mainly the distribution of marriages. Brides and grooms appear to adapt to, rather than to be constrained by, the age distribution of partners available. The marriage market is flexible; age preferences seem to be far from

rigid. The conclusions reached by Bhrolchain (2000), in her study of English and Welch females born between 1917 and 1922 caught in a marriage squeeze, and Schoen (1983), in his studies on the US, point in the same direction. The twentieth century US experiences indicate that the marriage squeeze had also little effect in the level of marriage, that is the proportion of ever married, but a considerable effect on its distribution. As some of the examples cited above suggest, the main mechanism by which a specific population overcomes a marriage squeeze is by changing the distribution of marriages. Age preferences flexibly accommodate substantial changes in the number of partners available. Age preferences in the marriage market are shaped by opportunity. Moreover, historical differences between male and females mean age at marriage must not be seen as a sign of esthetic preferences, but as the current balance of infinite age adjustments from the past (Cabré 1993). The almost universal fact that men are older than their spouses seems to be the consequence of a universal past too, based on excess female mortality caused by childbearing and for the greater trend to remarry among widowers. This argument differs from that of Guttentag and Secord (1983), who postulate that the observed mean age difference between spouses is due to a balance of power.

In the case of Brazil, with increasing cohorts and decreasing mortality, younger cohorts are larger than older cohorts, creating a constant 'excess of women - scarcity of men' marriage squeeze type, which according to Green and Rao (1992) is considered to be one of the causes behind the rise of consensual unions in that country.

Finally, the degree of change to be expected from a marriage squeeze depends on its tightness and context where it takes place. Measuring the tightness of the marriage squeeze has been a difficult task. No method offers a perfect solution that takes into

account all the complexities of the marriage market. The simplest measure is the sex ratio that compares men at certain ages with female x ages younger, x being the observed mean age difference between spouses. The main advantage of the sex ratio is its easy and straightforward interpretation, which is always useful to provide an illustrative picture of what is the strength of the imbalance. But comparing men to women x year younger is not representative of the real distribution. In fact, a difference of 2-3 years is not the dominant factor.

A more refined measure is to compute a ratio of men to women, but the total number at each age is weighted by the probability of marriage (Akers 1969). By taking into account probabilities for men and women separately the results change, because somehow both probabilities are shaped by opportunity: the weighted sex ratio is partially influenced by what it pretends to measure. Further developments have been made to consider exclusively the single population or to break down the marriage market in groups, based on sex, age, and educational characteristics. However, all these measures, as Mc Donald points out (1995), suffer as well from the circularity problem.

Excess of men - scarcity of women: predictable effects

In the literature, marriage squeeze has been often analyzed in particular conjunctures, such as heavy losses of men by exceptional mortality or in cases of local or specific populations affected by imbalances due to migration, usually as a first step for studying ethnic intermarriage (McCaa 1993). To our knowledge, little has been done to study the effects of marriage squeeze caused by sharp and lasting decreases in fertility, and occasional findings concerning these episodes have remained unexplained under this particular angle, such as the puzzling continuous reduction of age at marriage for only females in France during the fist third of the 19th century, stated by Henry et Houdaille (1978, 1979). However, this kind of marriage squeeze, characterized by the relative scarcity of women, would be of particular interest because of its rapid stimulating effects on nuptiality trends, contrary to its opposite, the female excess, which has been proven to have effects much lower than expected, as shown in some of the works mentioned above.

In recent decades, many developed countries have experienced dramatic decreases in births. Some developing countries have followed them in this way and many others will do so in the current or following decade. The case of decreasing births is going to be experienced at one moment or another, at one speed or another, by most countries of the World and by the ensemble of the World population, probably in the first third of the 21st century. The relative scarcity of women caused by decreasing fertility will predictably be aggravated by better survival rates, maintaining the advantage in numbers of males at birth until ages progressively higher. Considering, furthermore, that large areas of the world, mainly in Asia, are practicing extensive sex-selection against the girl-child, the

relative scarcity of women points as a common sensible point in future marriage markets across different continents, excluding substantial demographics-based transnational compensations.

Therefore, if the relationship between relative scarcity of women and increasing trends in nuptiality and fertility could be properly established, this knowledge could help to predict futures changes in these variables, or at least to signal in advance elements influencing their trends. The present contribution is only one step in this direction, but not the first one. In two former works, Cabré (1993 and 1994) has developed the mechanisms of the adjustments, triggered by female relative scarcity and has tested them successfully in 2Oth Century Spain, focusing on the nuptiality and fertility comparative records of the cohorts 1930-1945, which were prototypical of the theoretical case. The findings on these cohorts, parents of the Spanish "baby-boom" (1955-1975), have predict a reversal of nuptiality and fertility trends for the cohorts born after the dramatic drop of births occurred in late seventies when their members attain the age of reproduction. In some of these cohorts men outnumber women three years their junior by as much as 4 to 3.

The predicted changes proposed by Cabré are the following:

a) Not finding mates in the traditional three-years-younger age range (on average), men will seek younger women (or the few closest-in-age older women still available).

b) In doing so, the first excess male cohorts will invade the traditional marrying grounds of the younger cohorts, themselves in a situation of relative gender excess, increasing thus the competition amongst men and causing the anticipation of options and the general preference of men for marrying at younger ages.

c) Women will receive marriage proposals in greater number and at younger ages. It is likely that they will accept marrying younger, but their preferences as to the older or younger candidates are unclear.

d) Should female preferences go to older candidates, the difference in ages between spouses will increase, favoring traditional marriage structures where gender status and age status act in the same direction. This is likely to happen in the less educated segments of the population.

e) If female preferences go the younger closer-aged candidates, older candidates trapped by the change in trend will seriously risk becoming permanent bachelors. Nevertheless, the option for same-age partners seems more probable among the more highly educated segment. Older single educated man could chose mates among less educated younger women, passing all the burden on younger men with less education, who would then face very high chances of not marrying or marrying very late.

f) In the fifties and sixties, many man in the situation described above migrated to other countries, entering more favorable marriage markets and improving their competitive value in their own country. Nowadays, it is more likely that the immigration of foreign women will help balance the sexes.

g) Cohabitation out of marriage will loose its attraction for men, being considered a more precarious form of union as compared to marriage.

h) Male-caused divorce should slow its increase or even decrease, while female-initiated divorce could rise quite sharply. The final result is unclear.

i) Widow or divorced women will experience a substantial increase in their chances of remarrying, now quite low, while widowers and divorced men will encounter added

difficulties in remarrying, particularly if they desire to mate with young, never-married women.

j) All the above should generate a more family-friendly set of values and a consistent rise in fertility.

What we now intend to do is to extend the study to France and the United States, seeking a wider generalization of the proof in cases which differ by their chronologies and by the imbalances of their marriage markets at sensible moments such as post World War II. Contrary to Spain, USA and France experienced the post-war baby-boom, which certainly cannot be simply explained by one single factor but which might keep some relation with marriage squeeze, especially in the second part of it, when the decreasing cohorts born during the thirties entered their reproductive life. Also, France and the US are different as to the situation of the marriage markets when their baby-boom started: France had a very unbalanced market, marked by the deep scars in birth statistics caused by World War one, and a "tail" of marriage squeeze could have easily fueled the baby-boom there, while the US had a more regular and well-balanced market. Given these differences among the three countries, comparisons are expected to enlighten us with respect to the existence and possible effects of marriage squeeze.

The Spanish Experience: a prototypical case

A structural excess of women, for different reasons, has historically characterized the Spanish marriage market. The increasing tendency in the number of births during the century, the higher male mortality rates, and male out migration rates are behind the historical excess of women. However, the consistent deficit of women has appeared three times during the century, but we will focus on the effects produced by the decrease of births during the late thirties (Figure 1).

As it has been stated before, some of the mechanisms explained before were already verified in the "experimental" Spanish cohorts 1939-1945: proportions of ever-married went significantly up for women and somewhat down for men (Figure 2), age differences increased, age at marriage decreased very substantially for both sexes, with the decline initiated among females, several years before males; fertility increased; and men out-migrated more than women. Study of differentials in adjustments by education or social class was not done but can be now undertaken using census microdata that were previously unavailable. Other variables mentioned above, such as divorce or cohabitation, were not relevant given the legal framework existing in Spain prior to 1978.

<FIGURE 1> <FIGURE 2>

The good results of the test on Spain led to another verification (Cabré 1994): in the case of the Spanish region of Catalonia, where fluctuations in the numbers of births had been sharper, the changes undergone by all the tested variables were also higher than in the whole Spain and always in the expected direction.

Generalizing the proof: historical evidence from France and the US

France

In the course of the twentieth century, France has experienced two major contractions in the number of births. The first, and most striking, occurred during the First World War. This paper focuses exclusively on the effects of this first birth dearth. As shown in Figure 3, in 1916 the number of births had fallen to half of the number observed in 1913. Although the reduction was severe, it only affected a couple of years. By 1920, the number of births had returned to the level prior to the war. This contraction in birth rate and its subsequent effects on the marriage market have not been examined in detail. It is not necessary to compute highly sophisticated measures to be persuaded that men born between 1912 and 1915 were caught in a severe marriage squeeze.

< FIGURE 3 >

Data comes from the IPUMS microdata for the 1962 French 5 % census sample. Census microdata are an invaluable source for social science research. However, some precautions have to be taken in account when using a later census to explore an unbalanced marriage market in a somewhat distant past. Mortality can change the distribution of the age differences between spouses as measured in a subsequent census. The influence of divorce, separation and remarriage also affect the observed distribution of marriages. In this paper we do not address these potential biases, given that we do not think that they affect significantly our results. In 1962, the 1912-1915 birth cohort was 46 to 49 year old. We do not expect at these ages major mortality effects nor high age differences in their frequency of marriage.

The male marriage squeeze in France had a small but persistent effect on the proportion of males and females ever married, as shown in Figure 4. By comparing different cohorts at the same moment, we run the risk of mixing age and cohort effects, but, in spite of this, some observations can be made. Differences between male and female proportions of never married are bigger for cohorts born after 1914. With low and constant female levels of never-married, male's levels increase, which could be some indication of the predicted effects.

< FIGURE 4> <FIGURE 5>

The distribution of marriage was notoriously changed by the imbalance in the number of males and females available. The French Census of 1962 does not provide data on the age of first marriage. However, by comparing age between spouses, it is possible to compute the mean age difference for each male and female cohort. Male cohorts caught in a marriage squeeze increased the mean age difference between spouses (Figure 5). The mean age difference between spouses is greater for male cohorts born between 1912 and 1917 than previous or later cohorts. This altered the expected age-distribution of this variable in balanced situations, which usually shows an increase by age. Female cohorts 1914-1919 also show an increase in the mean age difference. A closer look on how male cohorts reacted to the marriage squeeze is provided in Figures 6 to 8. In the absence of any major disturbance, the spouse's age distribution does not change significantly among consecutive cohorts. The spouses' age distribution of the male French cohorts affected by the First World War birth decline, especially those born between 1911 and 1916, were convincingly altered because the women that they had a priori to marry belonged to diminished cohorts. Some of the distributions are bimodal. As

the cohorts move away, they tend to regain the spouses' age distribution observed for the oldest cohorts. The imbalance in the marriage market has been primarily solved by changes in the distributions of marriages, although the level of marriages also was slightly altered in the expected direction.

<FIGURE 6, 7, 8>

Finally, the French experience can be compared to the Italy situation. Bartiaux (1994) obtained similar results in her study of the effects that the birth decline in Italy during the First World War produced on the marriage market a couple of decades later.

The United Sates

The United States has experienced two major contractions in the number of births during the twentieth century. While in France the number of births, with the two exceptions mentioned above, was kept close between seven and eight hundred thousands births per year, the number of births in the United States did not follow the same pattern. During the first half of the century the number of births scarcely exceeded three million, while in the second half of the century this figure has always been higher, reaching its maximum level in the baby boom years 1960-1964.

<FIGURE 9>

In this paper we will focus on the birth decline occurring between 1924 and 1933, which was less sudden but longer than the French contraction (Figure 9). The US did not reach the level of 1924 again until twenty years later, 1944. Data comes from the IPUMS 5% sample of census microdata for the US 1980 Population Census.

<FIGURE 10>

<FIGURE 11> <FIGURES 12 to 14>

Male cohorts theoretically caught in a marriage squeeze did not present any of the predicted effects. Moreover, the proportion of never married seems even to contradict our initial expectations. For the squeezed birth cohorts, the male proportion of never married decreases and increases for females (Figure 10). The distribution of marriages does not show any kind of disturbance nor in the mean age difference between spouses (Figure 11), nor in the spouses' age distribution by male cohorts (Figures 12 to 14). The US results open a range of questions related to the suitability of using census data, analyzing data at aggregate level, and, most important, not taking in account other factors that, especially in the US, can be distorting our results, such as immigration, divorce, remarriage and changes in nuptiality patterns. The intensity of these factors eroded the expected effects of marriage squeeze. A more detailed analysis is needed to understand how male cohorts resolved their marriage squeeze, to the extent that it existed.

Discussion and further directions

The results of this analysis do not point in the same direction. While the prototypical case of Spain and to some extent the French experience, which differs significantly in terms of strength and length of its marriage squeeze, verify the adjustments predicted by Cabré (1993). The US experience does not, however, follow the same pattern. Further research is necessary to explore the uniqueness of the US case. Contextual aspects, such as the incidence of divorce, remarriage, and immigration, need to be taken into account to explain differences among these cases. With regard to Spain, an imbalance in the number of males and females produced by a birth dearth had palpable

effects on the marriage market. In other words, the Spanish marriage market seems to be more sensible to unequal distributions of potential brides and grooms, which probably correlates with the fact that it is a less flexible marriage market, compared to the American or French. Certainly, the incidence of divorce and remarriage is lower that in the other countries considered here.

On the other hand, migration also plays a key role in shaping the sex-age structure of the marriage market by increasing or decreasing the size of birth cohorts. Since the United States is a country of immigration and the flows are predominantly male, we would expect that the marriage squeeze would be further aggravated rather than attenuated by this circumstance. More research needs to be done in this direction.

The length and strength of the birth decline would affect the marriage market differently when diminished cohorts reach marriageable age. It's been observed, based on the Spanish and French cases studied above and the cited case of Italy, that abrupt, but short birth declines seem to have considerable effects on the marriage market. On the contrary, gradual and less intense birth declines do not have the same effect, as shown by the US experience.

To continues this line of research, we will search the historical record for evidence of how societies have been solving the excess of men – scarcity of women type of marriage squeeze, which we believe should occur in most of the developed and less developed countries that have experienced dramatic decreases in births in recent years.

References

Akers, D.S., 1967. “On measuring the marriage squeeze”. *Demography.* 2: 907-924.

Bartiaux, Françoise, 1994. "Dénatalité et marché matrimonial. Le cas de l'Italie en 1930-1950". *Population.* 1:91-118.

Cabré, Anna, 1993. "Volverán tórtolos y cigüeñas" a Luís Garrido i Enrique Gil Calvo (eds.), *Estrategias familiares.* Madrid: Alianza Editorial, p. 113-131.

Cabré, Anna, 1994. "Tensiones inminentes en los mercados matrimoniales" a Jordi Nadal (ed.) *El mundo que viene.* Madrid: Alianza Editorial, p. 37-62.

Henry, L., 1966. “Perturbations de la nuptialité résultant de la guerre 1914-1918”. *Population.* 2:163-166.

Henry, L. & Houdaille, J. 1978. "Célibat et âge au mariage aux XVIIe et XIXe siècles en France. I. Célibat définitif". *Population.* 1: 43-84.

Henry, L. & Houdaille, J. 1979. "Célibat et âge au mariage aux XVIIe et XIXe siècles en France. II. Age au premier mariage". Population 2: 403-441.

Greene, M. E. & Rao, V. (1992) “A compressao do mercado matrimonial e o aumento das unioes consensuais no Brasil”. *Rev. Bras.Estudios Pop. Campinas,* 9(2):168-182.

Guttentag, M. & Secord, P.F., 1983. *Too many women?*. Beverly Hills: Sage, 1983.

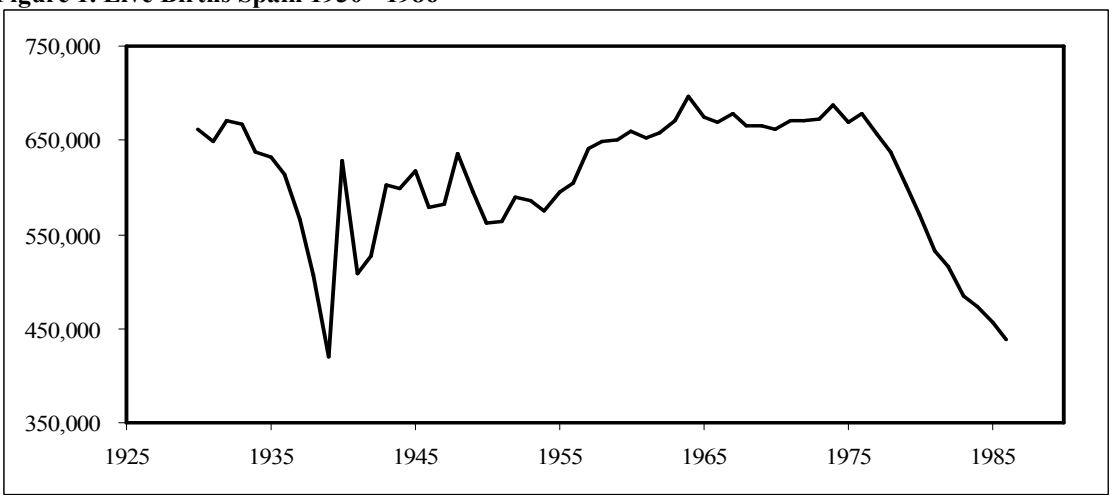
McCaa, Robert, 1993. "Gender in the Melting Pot: Marital Assimilation in New York City, 1900-1980", *Journal of Interdisciplinary History* 24(2):207-231.

McDonald, Peter, 1995. "L'équilibre numérique entre hommes et femmes et le marché matrimonial: le point sur la question". *Population.* 6:1579-1590.

Ni Bhrolchain, M. 2000. “Flexibility in the marriage market”. *Population*. 55 (6): 899-939.

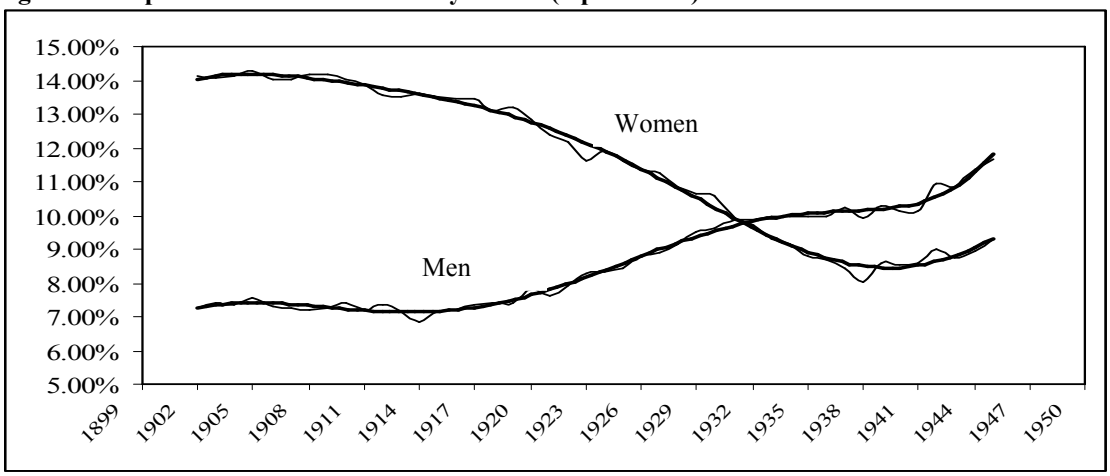
Shoen, R., 1983. “Mesuring the Tightness of the Marriage Squeeze”. *Demography* 20:62-78.

Figure 1. Live Births Spain 1930 - 1986



Source: Movimiento Natural de la Población Española (INE) (Vital Statistics)

Figure 2. Proportion of never married by cohort (Spain 1986)

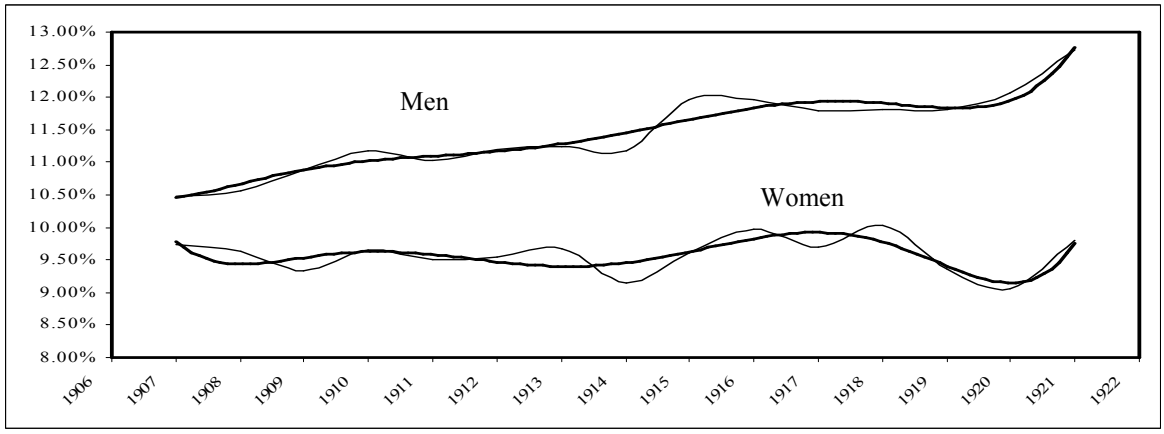


Source: INE Padrón municipal de habitantes 1986.

Figure 3. Live Births, France 1899-2002

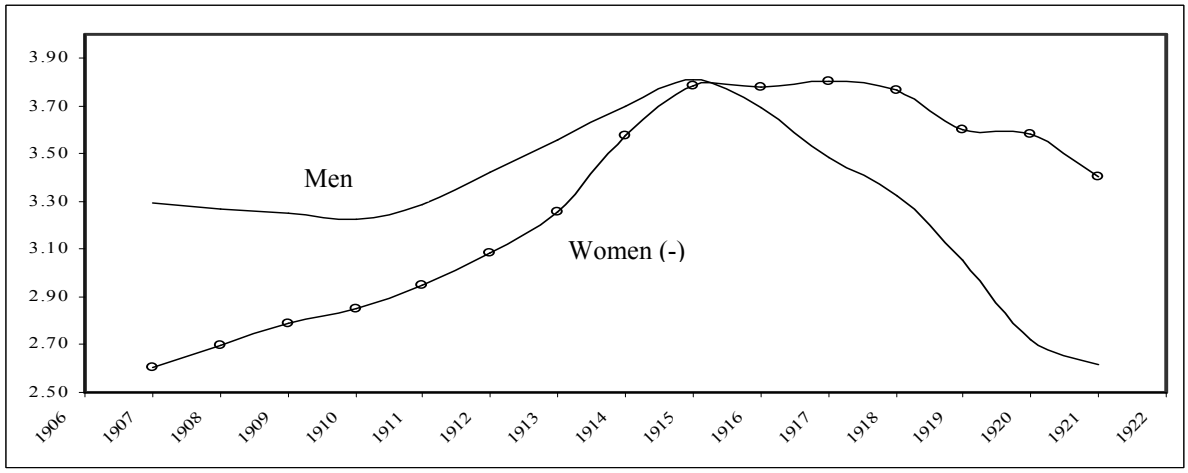
Source: INSEE, par Vallin, J. et Mesle, F. "Tables de mortalité françaises pour les XIXè et XXè siècle et projections pour le XXIè siècle", INED

Figure 4. Proportion of never married by cohort (French Census 1962)



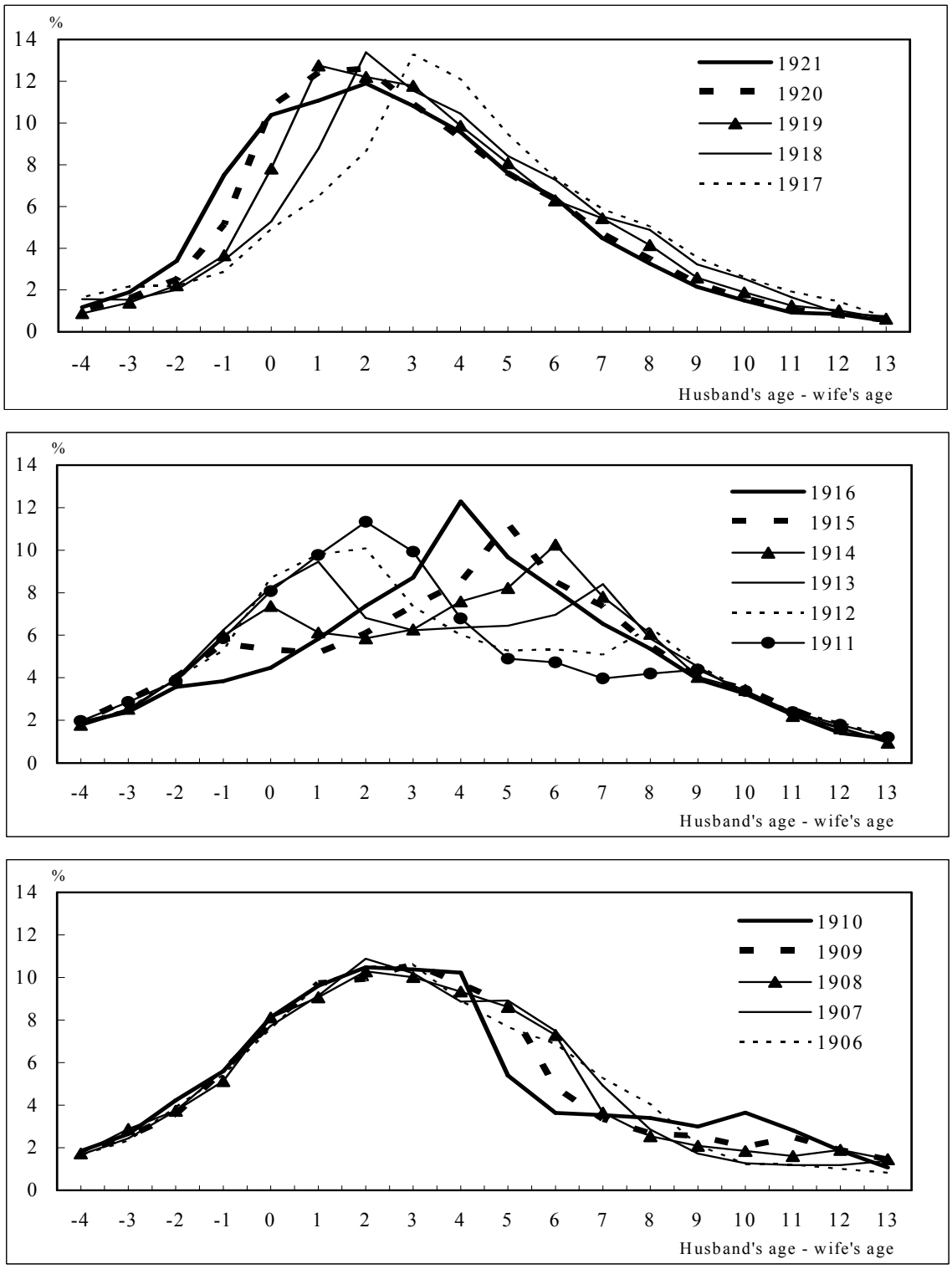
Source: Matthew Sobek, Steven Ruggles, Robert McCaa, et al., *Integrated Public Use Microdata Series-International: Preliminary Version 1.0*. Minneapolis: Minnesota Population Center, University of Minnesota, 2002.

Figure 5. Mean age difference between spouses by male and female cohort (French Census 1962)



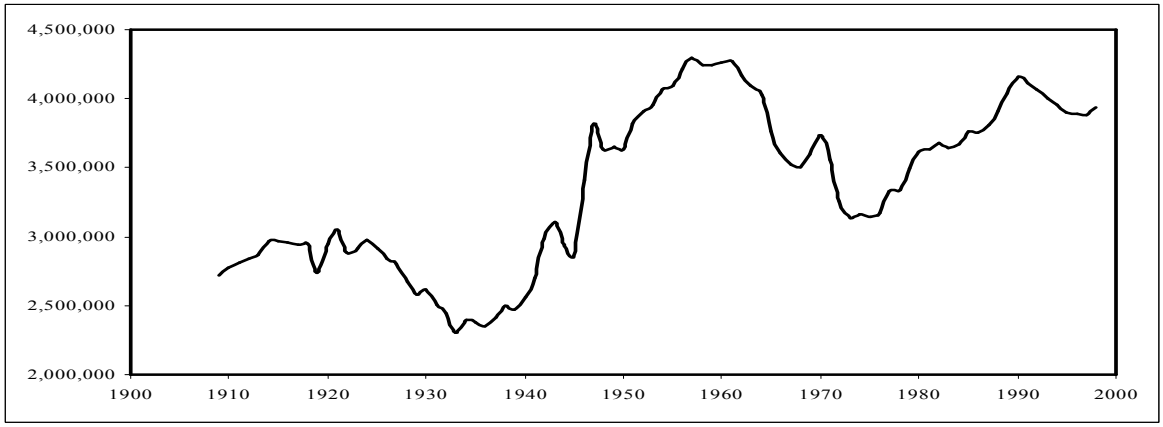
Source: Matthew Sobek, Steven Ruggles, Robert McCaa, et al., *Integrated Public Use Microdata Series-International: Preliminary Version 1.0*. Minneapolis: Minnesota Population Center, University of Minnesota, 2002.

Figures 6, 7, 8 Age difference by Male Cohort (French Census 1962)



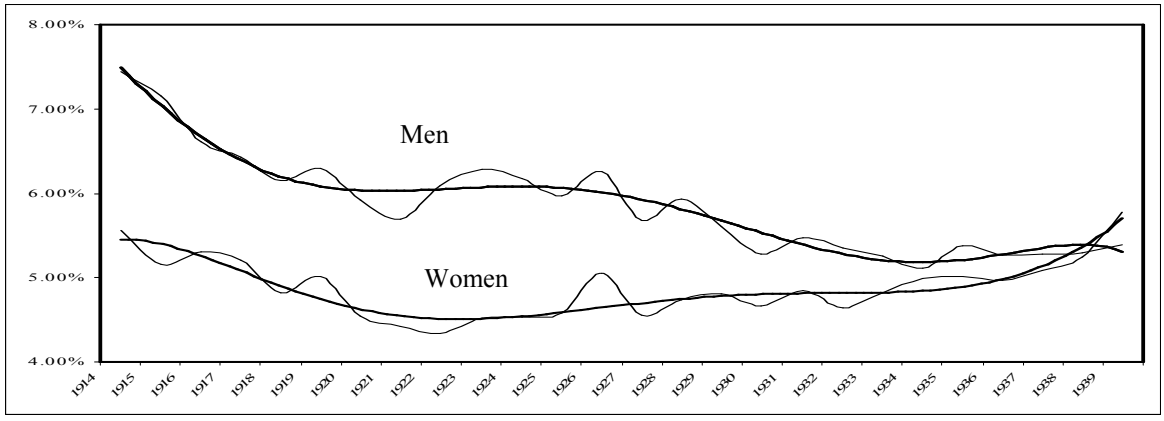
Source: Matthew Sobek, Steven Ruggles, Robert McCaa, et al., *Integrated Public Use Microdata Series-International: Preliminary Version 1.0*. Minneapolis: Minnesota Population Center, University of Minnesota, 2002.

Figure 9. Live Births, United States 1909-1998



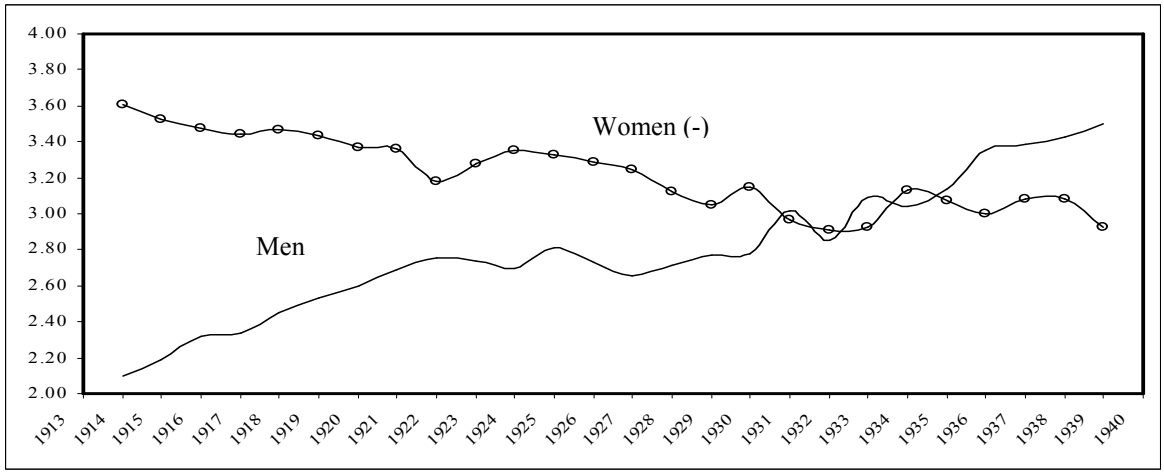
U.S. Public Health Service, National Center for Health Statistics, Vital Statistics of the United States, 1993, vol. I, "Natality", Table 1□2; National Vital Statistics Reports, Vol. 48, No. 3, "Births: Final Data for 1998," Table 1.

Figure 10. Proportions of never married by cohort (US Census 1980)



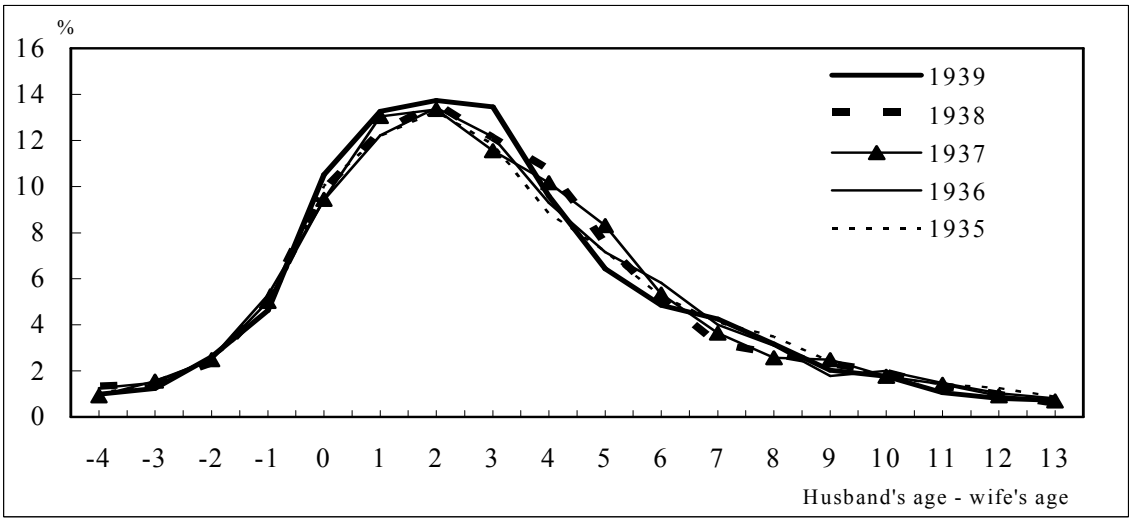
Source: Matthew Sobek, Steven Ruggles, Robert McCaa, et al., *Integrated Public Use Microdata Series-International: Preliminary Version 1.0*. Minneapolis: Minnesota Population Center, University of Minnesota, 2002.

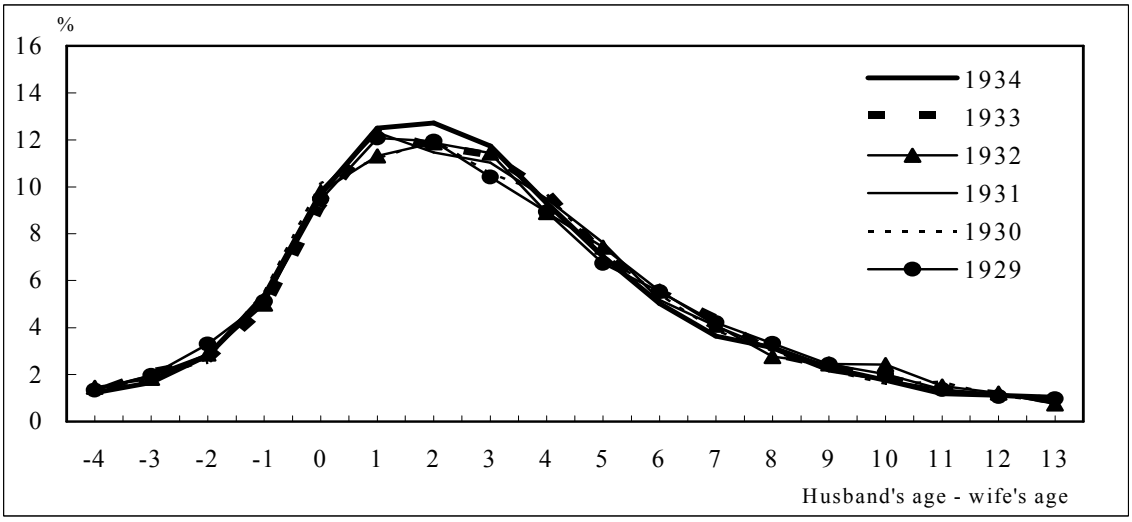
Figure 11. Mean age difference between spouses by male and female cohort (US Census 1980)

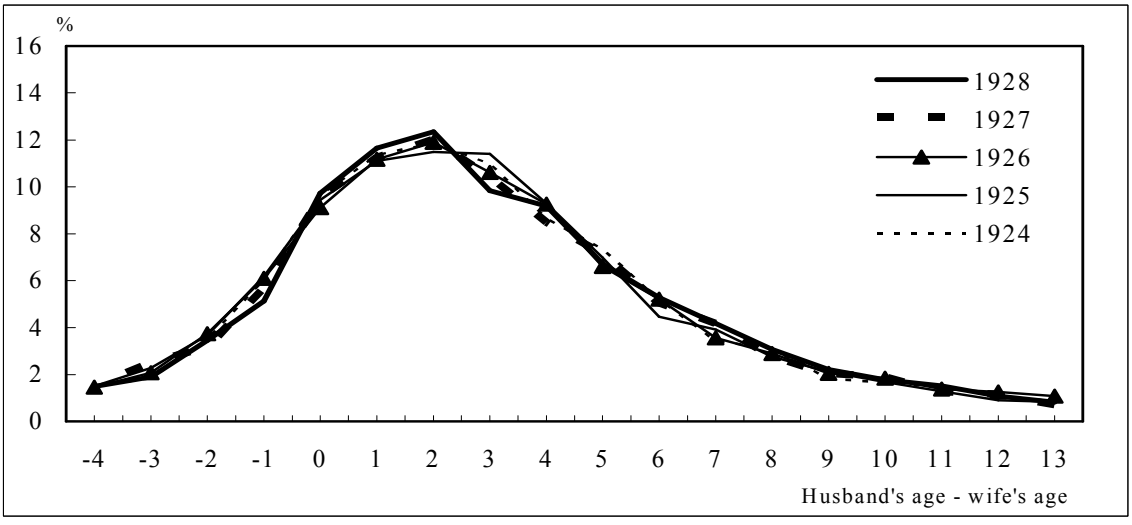


Source: Matthew Sobek, Steven Ruggles, Robert McCaa, et al., *Integrated Public Use Microdata Series-International: Preliminary Version 1.0*. Minneapolis: Minnesota Population Center, University of Minnesota, 2002.

Figures 12, 13, 14 Age difference by Male Cohort (US Census 1980)







Source: Matthew Sobek, Steven Ruggles, Robert McCaa, et al., *Integrated Public Use Microdata Series-International: Preliminary Version 1.0*. Minneapolis: Minnesota Population Center, University of Minnesota, 2002.