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Natural versus social preferences for age-hypergamy**

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JEL Codes: J12, J16, Z13

Keywords: age gaps, age-hypergamy, couple formation, mating criteria, same-sex couples, marriage market.

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# The price of youth. Natural versus social preferences for age-hypergamy

Claudia Senik \* and Anne Solaz †

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## Abstract

This paper focuses on the role of age and age gaps in the mating process. We test the predictions of different theories of age heterogamy using a French exhaustive administrative database of newly formed same-sex and heterosexual couples. In both heterosexual and same-sex unions, age gaps and the likelihood of extreme age gaps increase with the income of the male richer partner, especially when he belongs to the top income decile. But women, even when they rank high in the income distribution, are usually matched with an older partner. Women are found to mate with a younger partner in only one specific case: above their 60s, when they provide at least 75% of the household income or rank higher than their partner in the distribution of income in their respective age group. The marriage market thus seems to be best described by exchange theory, mitigated by a remnant of patriarchal norms. In a way, the price of youth depends on the sex of the buyer.

**Keywords:** age gaps, age-hypergamy, couple formation, mating criteria, same-sex couples, marriage market

**JEL:** J12, J16, Z13

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# 1 Introduction

Age-heterogamy among heterosexual couples is a very stable feature of human societies, with a predominance of man-older couple, aka “age-hypergamy”, as opposed to age-hypogamy for older-women couples (Casterline *et al.*, 1986; Hancock *et al.*, 2003; Presser, 1975; Buss, 1989; Kemkes-Grottenthaler, 2004; Mignot, 2010; Díez Minguela, 2011; Ní Bhrolcháin, 1992). In modern societies, the age difference at first heterosexual marriages is still about 2 or 2.5 years – to the advantage of the man. In second and third marriages, the importance of which has been mounting over time since the 1970s, this age gap is wider, all the more so as the age of the man increases (Vera, Berardo and Berardo, 1985; England and McClintock, 2009; Feighan, 2018; Esteve *et al.*, 2009); Shepard, 2019; Silva and Perchesky, 2024). In OECD countries, age-hypergamic couples, with a gap of more than 10 years, represent about 8% of all couples, and 2% of couples have a gap of more than 15 years (Bergström, 2018), but this ratio has been increasing over the last three decades, especially in the upper part of the income distribution (Kolk, 2015).

In this paper, we focus on the age difference among newly formed couples, with a special interest in extreme age-heterogamy, i.e. the formation of couples with at least 10 or 15 years age difference. A relatively abundant literature in social sciences has tried to explain the prevalence of age-hypergamy. Here, we are interested in confronting biological and socio-biological evolutionist theories, which rationalize heterogamy as an adaptive behavior essentially driven by reproduction concerns, to other sociological and economic theories that abstain from the reference to fertility. We particularly focus on the role of each partner’s individual income in the matching process.

Most theories represent mating as a search process, in which each person seeks a partner endowed with some desirable features (Becker, 1973; Weiss, 1997). This general idea has been formalized by Gary Becker’s seminal theory of marriage (1973; 1981) as starting by a matching process on a “marriage market”<sup>1</sup> (see also Weiss, 1997). However, this framework does not contain any univocal prediction concerning age-homogamy or heterogamy. Becker himself, for example, discusses the possibility that age is part of the *positive assortative mating traits* (together with education, culture, ethnicity, intelligence, lifestyle, etc.), for which there is complementarity between spouses and that are associated with greater marital quality and

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<sup>1</sup>“Two simple principles form the heart of the analysis. The first is that, since marriage is practically always voluntary, either by the persons marrying or their parents, the theory of **preferences** can be readily applied, and persons marrying (or their parents) can be assumed to expect to raise their utility level above what it would be were they to remain single. The second is that, since many men and women compete as they seek mates, a **market in marriages** can be presumed to exist. Each person tries to find the best mate, subject to the restrictions imposed by market conditions. Hence, based on these simple principles of rational choice, future partners do their best to select each other, based on traits that will be favorable to the marriage quality” (Becker, 1973, p. 814).

stability. By contrast, negative assortative mating traits, such as earnings potential (wages), are substitutable between spouses, due to the advantage of specialization in paid work versus housework (see also [Berardo et al., 1993](#); [Larson and Holman, 1994](#); [Stevenson and Wolfers, 2007](#); [Arránz Becker and Lois, 2010](#); [Gonzaga et al., 2007](#); [Choo and Siow, 2006](#); [Mansour and McKinnish, 2014](#)).

But marriage models can accommodate different types of hypotheses about people's preferences over the age of their partner. Essentially, the literature in social science and psychology has proposed three lines of theories of mating preferences based on different rationales. First, biological and socio-biological theories that insist on fertility motives as a basis for age-hypergamy. Second sociological theories of patriarchal domination (macho norm), whereby men and women's mating preferences align with their gendered roles as prescribed by society, including age-hypergamy, but without any biological foundation, although these norms can be considered a remnant of biological evolution. Third, economic models of the marriage market that need not make any special *a priori* assumption regarding asymmetric age-related preferences, and where youth and money (among other traits) may constitute two positive features of candidates on the marriage market.

So far, due to data limitations, research has mostly focused on heterosexual couples in order to discuss the potential asymmetric preferences of men and women vis-à-vis mating criteria. But what about same-sex couples, for which there is no *a priori* reproduction reason for such an asymmetry? Some previous studies have compared same-sex versus heterosexual couples. [Ciscato et al. \(2020\)](#) find less assortative mating in Californian same-sex couples in terms of age, education, and race. The same observation has been made for American couples ([Jepsen and Jepsen, 2002](#); [Schwartz and Graf, 2009](#)), Norwegian and Swedish couples ([Andersson et al., 2006](#)) and Dutch couples ([Verbakel and Kalmijn, 2014](#)). We attempt to complete these stimulating results to help disentangle the competing views about age-heterogamy.

Due to the nature of available data, most previous research has analyzed populations of existing couples, with the difficulty that many of partners' observed characteristics-income, for example-are endogenous to decisions that are taken in the course of the marriage. Because we are interested in mating criteria, we here focus exclusively on newly formed couples that live together for the first time. This presents the advantage that, at that moment a couple is formed, one's partners' income can be considered as exogenous to further marital decisions.

We use a French exhaustive database that contains all same-sex and heterosexual couples formed in 2019 ([Fideli, 2020](#)). We first test the predictions of the socio-biological view. If fertility is the dominant

driver of age-heterogamy, the latter should be much less prevalent among same-sex couples, especially among gay couples, for whom reproduction and adoption remain rare. Age-heterogamic unions should also predominantly concern couples with a young fertile woman (say under 40), and where the older mate is relatively very wealthy. As it turns out, these predictions are not supported by the data. In fact, age gaps are wider and extreme age gaps are more likely among same-sex couples than among heterosexual couples. In addition, age gaps and the likelihood of extreme age gaps are highest in couples where the younger partner is a woman above her 40s.

We then turn to investigating the relationship between income and age as mating criteria. It turns out that among heterosexual couples, average age gaps and the likelihood of an extreme age gap are higher in couples where the male partner is richer and older, and increase with the income of the male partner, especially when he belongs in the top income decile or top percentile. The same patterns (where the richer mate is older) hold for gay couples, but less so among lesbian couples, and not at all for woman-richer heterosexual couples.

Within man-older heterosexual couples, the proportion of extreme age gaps increases by 42 percentage points (from 7% to 10%) as the richer (male) partner moves from the 90th to the 98th income percentile. In gay couples, this proportion increases from 9% to 13%. Naturally, these proportions are higher for heterosexual and gay men aged 60 and older: up to 20% in the top income decile. The age gap between partners also depends on the income gap. The proportion of couples with an age gap of more than 10 years doubles from 5% to 10% as the contribution of the richer partner increases from 50% to 90% and above, except for women-richer heterosexual couples, where this proportion remains low, in the vicinity of 2,5%. When the female partner is older and richer than her male partner, the age gap can be large (10 years or more) as long as she contributes at least 75% of the household income, or when she ranks higher than her male partner in the distribution of income within their respective cohort.

These findings lend support both to the market exchange and patriarchal theories, as it seems that men and women do trade youth against income, but not along the same terms of trade.

## 2 Literature

### 2.1 Theories of mating preferences

This paper is part of the literature dedicated to the matching process in a 'marriage market', where potential partners search for a mate with desirable features. In this literature, three main views on mating preferences prevail.

The simplest and perhaps most prominent one posits that reproduction is the main objective pursued by both partners. Because their fecundity declines more rapidly with age, women wish to marry young while still fecund, and are thus willing to accept marriage proposals from older men. In contrast, men's fertility declines at a slower rate, which allows them to extend their search period and reject the proposals of less fertile older women. The mating process thus naturally leads to the formation of age-hypergamic couples (see, for example, [Díaz-Giménez and Giolito, 2013](#)). The fertility motive can be instinctive or conscious, as suggested by Gershoni and Low (2018)<sup>2</sup>

A variant of the pure biological theory is developed by evolutionary socio-biologists or evolutionary psychologists. Again, these theories assume that mating is mainly driven by a biological script aimed at favoring reproduction. But here, both the asymmetry of females and males' windows of fertility and of their social positions drive the age gap. Because men's value on the marriage market depends on their ability to provide material resources for the development of children, and because income and wealth generally increase in age (see, for example, Rubinstein and Weiss, 2006), it naturally follows that the ideal match is between a young and fertile woman and a rich man, hence an older man. In this socio-biological view, age hypergamy is thus the result of a match based on asymmetric preferences of the spouses ([Buss and Barnes, 1986](#); [Buss, 1989, 1994](#); [Buss and Schmitt, 1993](#); [Kenrick and Keefe, 1992](#); [Greenlees and McGrew, 1994](#); [Buunk \*et al.\*, 2001](#); [Díaz-Giménez and Giolito, 2013](#)). Note that such mating models need not go as far as assuming that men are the only ones to care about physical attractiveness and youth, or that income is only valued by women: these traits may be seen as positive by both men and women, but with different relative weights. These views can be embedded in economic models of the marriage market if their starting hypothesis is adopted, i.e. the utmost importance of reproductive traits as a matching criterion. For example, in [Bergstrom and Bagnoli \(1993\)](#), the age gap at first marriage relates to the traditional sex specialization

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<sup>2</sup>The authors show that the adoption of free in vitro fertilization in 1994 in Israel led to an increase in the average age of women at first marriage.



of economic roles: men provide income, whereas women provide children. Marriage is then viewed as a waiting game in which older and richer men outbid younger, poorer men in their competition for younger, potentially fertile women, who are relatively scarce and choosy (see also Siow, 1998; Diaz-Gimenez and Giolito, 2018).

As the previous example illustrates, sociobiological models of asymmetric preferences explicitly assume traditional gender roles, with breadwinner men and care-giver women. Admittedly, it is still the case, even in modern developed societies, that men are usually wealthier than women, and women devote much more time than men to housework and childcare. These interpretations would predict that age hypergamy recedes in modern societies, where women have gained financial independence by participating in the labor market, where gender earnings gaps have decreased, and where couples have a much smaller number of children, which diminishes the importance of fertility as a matching criterion (Coles and Francesconi, 2011; Mignot, 2010; Gustafson and Fransson, 2015; Atkinson and Glass, 1985; Van Poppel *et al.*, 2001). *De facto*, the average age gap tends to be smaller in gender-equal countries (Casterline *et al.*, 1986; Mignot, 2010; Díez Minguela, 2011; Ní Bhrolcháin, 1992).

However, it is difficult to distinguish socio-biological theories from sociological patriarchal domination theory (aka social structure theory, or social role theory, as in Eagly (1987) or Eagly and Wood (1999), that posit that gender culture is a social construct, and spouses' asymmetric preferences reflect patriarchal domination that has been internalized by men and women in the form of stereotypical gender roles. Age is then seen as a marker of social status and authority, so that men-older couples express or enact men's social superiority. As put by sociologists such as Bozon (1990a,b), women "consent to domination" when they share the preference for an older male partner. Such patriarchal norms may reflect the persisting effect of biological evolution, i.e., hard-wired preferences that were adaptive in the early times of humanity and have remained ingrained (England and McClintock, 2009). As shown by cultural economics (Fernández, 2011), social scripts may persist even after their initial biological or economic foundations have disappeared, so that hypergamic *macho* mating criteria may continue to prevail even though they have lost their *raison d'être*.

Finally, another different view, which does not refer to the hypothesis of social gender norms, is the market exchange theory, in the line of Becker (1973). For example, a marriage may form on the basis of an exchange of money for beauty, regardless of which sex tends to be richer or older (e.g. Coles and Francesconi, 2011; Bloemen and Stancanelli, 2015). Because, *de facto*, men are still on average richer than women, age-hypergamic couples will be more frequent than the reverse, but this would not reflect

an asymmetry in men and women's mating preferences.<sup>3</sup> Coles and Francesconi (2011) claim that more equal career opportunities for women potentially explain the recent emergence of "toyboy unions", in which women are at least 5 years older than their partner.

In sum, the literature on age-hypergamy offers three not totally distinct lines of interpretation: (1) biology and socio-biological reproductive strategies, (2) macho norms (patriarchal male domination), and (3) trade. The first two assume asymmetric mating preferences, whereas the third one does not. As already discussed, they are often observationally equivalent in the sense that in the current social context they lead to many similar predictions. However, some of their predictions differ. Biological and socio-biological theories only predict the formation of heterosexual man-richer age-hypergamic couples with a young and fertile female partner. Patriarchal theory predicts the formation of age-hypergamic couples without reference to fertility. Trade theory, on the other hand, predicts a large proportion of either same-sex or different-sex couples where the richer mate is also the older one, including heterosexual couples where the female is richer and older than her partner.

## 2.2 Direct evidence on the search process

Empirical research on mating criteria is usually based on demographic data, where one can only observe already formed couples, but not mating criteria or the mating process. There are, however, exceptions to this rule. For instance, two surveys of the French population, run respectively in 1983 and in 2013, asked people whether they would accept a match with certain age gaps. Women were initially less open than men to a union in which they would be at least 5 years older than their male partner; although the acceptance rate of such matches increased dramatically for both men and women, during the period considered (Bergström, 2018).

A new source of direct empirical evidence on mating preferences has recently been provided by internet and digital dating devices data. As it turns out, men and women's explicit preference for age-hypergamic unions does not appear as clearly from these sources as would be suggested by actual unions. It is true that even on digital devices, people may not express their true aspirations, as they need to be realistic, and hence act strategically to a certain extent. We thus interpret the results of these studies as some shedding (some) light on the search process.

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<sup>3</sup>Another example of trade on the marriage market is given by Chiappori *et al.* (2012), who show that on the marriage market, a higher wage for men, or an additional year of education for women, can compensate for a larger BMI.

Using on-line dating data, [Hitsch et al. \(2010\)](#) found that both men and women are more likely to contact partners of similar age. However, their estimates also indicate that both men and women particularly avoid pairings in which the woman is older than the man. [Bergström \(2018\)](#) analyzed the desired age range declared by users of *Meetic*. She found that the preferences of women and men are similar, but not totally. As people age, their desire for a younger partner becomes stronger, but this tendency is more pronounced for men. Young women prefer older men only until they are 35 years old, and men start looking for younger women as they age. The author also looks at actual contacts made on *Meetic* via email: there, men are on average 2.4 years older than female users - very close to the age gap of actual unions in France. Again, at younger ages, men contact both older and younger women, but as they grow older, they show increasing interest in younger women. Among female users, the opposite is true. Women largely contact older men until their forties, but also contact younger users after this age. Hence, with time, men and women both develop a preference for a younger partner as they age. Eventually, actual encounters tend to be closer to men's preferences. [Belot and Francesconi \(2013\)](#) analyzed data from speed dating events and found that both women and men prefer partners of similar age, height, and education (women prefer men who are young and tall, while men are more attracted to women who are young and thin). However, both men and women prefer dates where the man is up to five years older, rather than dates where he is more than five years older or where the man is younger than the woman. Hence, they agree on a limited age-hypergamy. A recent experiment on real online daters aged 30-40 ([Low \(2024\)](#)) finds that for every year a woman ages, she must earn \$7,000 more annually to remain equally attractive to potential partners.

In sum, studies in the search process based on speed dating and digital dating devices suggest that both men and women express a preference for a partner in the same age band (see also [Kurzban and Weeden, 2005](#)), although with some asymmetry, namely a slightly greater tolerance for man-older couples.

### **2.3 Mating criteria among same-sex couples**

Concerning same-sex couples, empirical evidence, both descriptive and estimated through structural matching models, reveals that same-sex couples are less likely to exhibit positive assortativeness, at least with respect to a variety of traits, including age, education, as well as racial and ethnic background. This finding is reproduced in several studies based on data from different OECD countries ([Jepsen and Jepsen, 2002](#); [Andersson et al., 2006](#); [Schwartz and Graf, 2009](#); [Verbakel and Kalmijn, 2014](#); [Ciscato et al., 2020](#);

Lengerer and Schroedter, 2022). In all these countries, gay couples are more likely to be heterogamous in age and education than other types of couples.

However, one question is whether this lower assortativeness reflects specific mating preferences of same-sex couples or demographic constraints. On the side of demographic constraints, as pointed out by Ciscato *et al.*, 2020, because homosexual partners are drawn from the same population, positive assortative mating preferences would lead to couples with very similar characteristics, including small age gaps. However, homosexuals may be forced to pick from a restricted pool with fewer meeting opportunities and a lower likelihood of meeting a partner of the same age (or generally with the same traits). Scarcer positive assortative mating would then reflect demographic scarcity constraints rather than mating preferences (Harry, 1984; Kurdek and Schmitt, 1987; Kalmijn, 1994; Noack *et al.*, 2005; Solomon *et al.*, 2005; Andersson *et al.*, 2006; Schwartz and Graf, 2009; Rosenfeld and Thomas, 2012; Verbakel and Kalmijn, 2014; Ciscato *et al.*, 2020).

On the side of preferences, it has been argued that homosexuals may have weaker preferences for homogamy, which is a trait of the conventional culture. However, they could also prefer homogamic unions that are well-suited to egalitarian divisions of household tasks (Verbakel and Kalmijn, 2014). Finally, homosexuals frequently move to large cities. On the one hand, the pressure for conformity is weaker in such surroundings, and a larger city also means a more diverse crowd-favoring age-heterogamy. But, on the other hand, a large city is also a larger meeting pool, hence an improved possibility to find a person of the same age range.

We will take these identification caveats into account in our analysis by distinguishing rural and urban locations.

Let us underline that, to date, among these different streams of research on mating criteria, no study has ever considered together the age gap, income gap, gender, and sexual orientation of the partners, depending on the gender of the richer mate. Here, we attempt to fill this gap.

## 2.4 Hypotheses

We test the predictions of the different aforementioned mating theories.

## **Biological theory**

The prediction of the biological theory is:

*(H1) Newly formed age-heterogamic couples should mostly be man-older heterosexual couples, with a woman in reproductive age, here under 40.*

## **Socio-biological theory**

The prediction (H2) of the socio-biological theory adds the notion of income to (H1):

*(H2) Newly formed age-heterogamic couples should be more frequent among man-older heterosexual couples, with a woman of reproductive age, and a relatively rich man.*

Note that because income is measured at the moment of couple formation, it is not yet endogenous to marital specialization choices.

## **Patriarchal domination theory**

Mating preferences for age-hypergamic couples may have persisted in modern times, as a form of inherited norm of male domination, even after the issue of fertility has lost importance and women have gained financial independence. In this view, we expect to find mostly man-older couples, even when the female partner is richer. Hence hypothesis (H3):

*(H3) Age gaps within newly formed couples should mostly concern heterosexual couples with an older man.*

## **Pure exchange theory**

Finally, the prediction of the pure exchange theory (exchange between age and income) would be:

*(H4) Within newly formed couples, age gaps and income gaps should be positively correlated: the richer partner should also be the older one, whatever the type of couple, i.e. same-sex or heterosexual, man-richer or woman-richer couples.*

## **Demographic constraints versus tastes**

As discussed in Section [2.3](#), because we are interested in understanding the preferences that lead to age-heterogamic unions, we need to separate the role of preferences from that of demographic constraints.

Our data allows to distinguish couples who live in large cities versus rural areas, where the size of the choice set is smaller. We define as urban areas the French departments with the largest population size, i.e. Paris, Marseille, Lyon, Lyon, Bordeaux, and Toulouse. Hence hypothesis (H5):

*(H5): Age gaps should be larger in rural areas than in urban ones, especially among same-sex couples.*

### 3 Data and Methods

This paper is based on an analysis of the universe of couple formation in France in 2019, including heterosexual and same-sex couples. We ask whether this information lends support to either of the aforementioned theories as concerns age as a mating criterion. Although we endeavor to test the predictions of these different theories, our approach remains empirical and descriptive. We do not estimate a structural model in the line of [Ciscato \*et al.\*, 2020](#) for instance. This is in part because we do not have the information necessary to estimate such models, such as education and occupation, for example, but also because the findings we uncover, although through a "reduced-form" model, are sufficient to provide an answer to our questions.

#### 3.1 Data

We use an exhaustive administrative database, *Fideli 2020*, that contains the universe of French households and matches information from the tax administration (housing and income tax return files from 2019 and 2020). It contains demographic information on individuals, household structure, housing, and different types of income and taxes, at both the individual level and the fiscal household level.

We selected only newly formed same-sex and heterosexual couples, defined as those whose partners did not co-habit in 2019 (and at least one member did not co-habit with a partner) and lived together in 2020<sup>4</sup>. Cohabiting is defined as belonging to the same housing tax returns, but not necessarily to the same income tax returns. Members of these couples can be in a "free union", married or "pacsés", the French civil partnership. In these two last cases, they also share the income tax returns.

The relationship between family members is established by INSEE and allows one to identify both different-sex and same-sex couples, even when they are not married. We pay special attention to the risk of measurement errors concerning the identification of couples who are neither married nor in a civil

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<sup>4</sup>In most cases, both partners were not in a another cohabiting relationship in the previous year.

partnership, especially for same-sex partners. First, we asked INSEE to use surnames to confirm people's gender. Second, we dropped some observations that we suspected were not a 'real' couple (for example, if one person was declared a child of the respondent in the previous year and did not move). We also eliminated couples with the 2% largest age gap. Finally, we also ran a robustness check of our results by using only couples who share their income tax returns, i.e. married or pacsed couples, for whom there is no suspicion that they are flatmates rather partners. Our regression sample contains 451,441 couples with 21,042 same-sex male couples (4.66% of all newly formed couples), 17,069 same-sex female couples (3.78%), and 413,330 heterosexual couples.

Following the usual practice, we call *age-hypergamic* couples those in which the man is older than his female partner, and *age-hypogamic* those where the woman is older than her male partner. For same-sex couples, we will talk about age-heterogamy or age gaps. We then define extreme age-heterogamic couples as those with more than 10 or 15 years of age difference. We distinguish four types of couples: woman-richer heterosexual couples, man-richer heterosexual couples, gay couples, and lesbian couples.

### 3.2 Income categories

As for income, we use the measure of annual individual income available in the data, which sums labor market income (wages and self-employment income), work-related transfers (unemployment benefits and retirement pension) and taxable wealth income. We calculate the income percentile in which each person belongs among the entire population of newly formed couples. We draw a specific attention to the top-ten income decile, as this is where most of the action takes place.

Because we are interested in the role of income as a mating criterion and because income generally increases with age, we also use the percentile rank of a person in their cohort, i.e. within the group of people in their exact same age. We also take into account the fact that the distribution of income differs between male and female populations by considering the percentile rank of male (resp. female) income within male (resp. female) cohort, as in [Ciscato \*et al.\*, 2020](#). This constitutes a measure of the relative success of a person within her cohort and gender. These measures are in the spirit of Becker's theory of mating, whereby the attractiveness of a person depends on their rank in their own category. We also consider the potential role of the contribution of each partner in the household income.

Note that we interpret income as a proxy that captures the different dimensions of social status, i.e., material security and comfort, but also power, prestige, and influence, which are correlated with income and

wealth. Unfortunately, our data does not include information about people's education, occupation, or other metrics of social success.

We start with descriptive statistics that illustrate the patterns of our sample of newly formed couples. We then run OLS regressions of the age gap within couples depending on the type of couple (heterosexual, gay, lesbian). We also estimate the likelihood of being in a couple with an extreme age gap (more than 10 years) using logit models. We test for the influence of the presence of a female partner under 40 and the type of area (urban or rural), and different notions of income of the richer partner, such as income quantiles, income levels (in euros), ranks, and contribution to household earnings. We look at the association between income and age gaps over the entire distribution of income of the richer partner, using these different concepts of income. We systematically control for the regional district (department) fixed effects, the presence of children in the household, the presence of a foreign-born partner, and 10 years of age categories of the couple when there is no control for the female's age. We then plot the predictive margins of these different moments in the distribution of income against the age gap between the richer and the poorer partner, among each type of couple, as well as by age category.

## **4 Results**

### **4.1 Descriptive statistics**

As shown in Table 1, in our sample, 62% of newly formed heterosexual couples are age-hypergamic, that is, with an older male partner; 13% contain partners of the same age; and the remaining quarter is age-hypogamic (older female partner). The absolute age gap is larger among age-hypergamic couples (4.5 years on average) than among age-hypogamic couples (3.7 years), but it is also larger among same-sex couples (4.3 for same-sex men and 4.6 for same-sex women). Extreme age gaps among heterosexual couples (of more than 10 years or 15 years) are also much more frequent in hypergamic couples than in hypogamic couples, and they are almost twice as frequent among same-sex couples as among heterosexual unions. About 11% of newly formed age-hypergamic heterosexual couples have at least 10 years age gap, count about 14% for same-sex couples. Finally, the percentage of extreme age-heterogamic couples is similar among lesbian and gay couples. These findings are consistent with those of Silva and Percheski (2024) who find, based on American data, that man-man couples have higher rates of age heterogamy than man-woman. In their data, more than 3 in 10 man-man couples had age gaps of at least 8 years between partners.



Concerning the role of fertility as a mating criterion, the second and third panels of Table 1 show that age gaps are smaller and extreme age gaps are less frequent among couples where the younger woman is under 40. This is true for all types of couples, heterosexual and lesbian.

Finally, the lower part of Table 1 addresses the differences between urban and rural areas. It is true that in rural areas, extreme age gaps (over 10 or 15 years) are slightly more frequent. However, the general pattern of age gaps among different couples is similar both in rural and urban areas, i.e. more frequent extreme age gaps among same-sex couples, and the predominance of age-hypergamic couples among heterosexual couples.

Table 2 explores the role of income and shows the proportions of couples in which the richer partner is also the older. If income were not a mating criterion for having a younger partner, we should observe 50% couples in which the older partner is the richer one. But Table 2 shows the predominance of couples where the richer partner is also the older one: two-thirds of unions overall. This is true for heterosexual as well as same-sex couples, with a notable exception: among heterosexual couples, women, even when they are richer than their partner, are still predominantly younger than their partner (by 1 year on average). When a man mates with a poorer woman, in more than 3 times out of 4, he is older than her. By contrast, when a woman matches with a poorer man, she is still younger than him in the majority of cases (56%). Finally, when a same-sex couple is formed, in 2/3 of cases, the richer mate is also the older one.

The same picture appears with respect to extreme age gaps, as shown in the last columns of Table 2. In 7% of man-richer heterosexual couples, he is more than 10 years older than her. This is the case of only 2% of woman-richer couples. Among same-sex couples, this proportion is around 8-9%. The same patterns (with smaller percentages) prevail as concerns the frequency of couples with more than 15 years of age difference.

The middle part of Table 2 shows that the same patterns hold when considering the percentile of a person in the distribution of income in her cohort (among persons in her exact same age) instead of her income in euros. In this case, we define as "richer", within each couple, the partner whose percentile is the higher. As explained, this corrects for the (generally positive) association between age and income over the life cycle. This notion of income is also a better indicator of the "social position" of a person within her cohort. With this concept of income, the proportion of couples in which the richer partner is the older diminishes, but remain above 50% for man-richer and same-sex couples, showing that the increase of income in age is not

Table 1: Age gap of newly formed couples, by sexual orientation and type of area

	Age gap	Extreme age gaps (%)		N
	Mean	Age gap>10 y.	Age gap>15 y.	
<b>All couples</b>				<b>451,441</b>
Different sex couple	3.73	8.3	1.8	413,330
<i>Man older</i>	4.51	10.6	2.4	256,892 (62%)
<i>Same age</i>	0			51,885 (13%)
<i>Woman older</i>	3.65	6.9	1.4	104,553 (25%)
Same sex men	4.36	14.0	3.0	21,042
Same sex Women	4.33	13.4	3.0	17,069
<b>By woman's age</b>				
<b><i>With woman &lt;= 40 (at least one for same-sex)</i></b>				
Different sex couple	3.30	6.2	1.3	285,173
<i>Man older</i>	4.23	9.0	2.0	183,132
<i>Same age</i>	0			40,904
<i>Woman older</i>	2.74	1.9	0.1	61,137
Same sex women	3.88	10.8	2.3	13,119
<b><i>With woman &gt;40 (all women for same-sex)</i></b>				
Different sex couple	4.66	12.9	3.0	128,157
<i>Man older</i>	5.20	14.3	3.3	73,76
<i>Same age</i>	0			10,981
<i>Woman older</i>	4.92	13.9	3.2	43,416
Same sex women	5.81	21.9	5.5	3,950
<b>By region of residence</b>				
<b>Living in rural region</b>				
Different sex couple	3.79	8.5	1.9	293,11
<i>Man older</i>	4.55	10.7	2.4	182,515
<i>Same age</i>	0			35,435
<i>Woman older</i>	3.74	7.3	1.4	75,16
Same sex men	4.67	15.5	3.4	11,906
Same sex women	4.72	15.3	3.5	10,130
<b>Living in urban region</b>				
Different sex couple	3.56	7.8	1.7	120,22
<i>Man older</i>	4.41	10.2	2.3	74,377
<i>Same age</i>	0			16,450
<i>Woman older</i>	3.40	6.0	1.2	29,393
Same sex men	3.97	12.0	2.5	9,136
Same sex women	3.76	10.5	2.3	6,939

Source: Fideli 2020. Urban areas are the departments that include the largest cities Paris, Marseille, Lyon, Bordeaux, and Toulouse

the main driving mechanism. Income helps heterosexual and gay men to match with a younger partner, but not a heterosexual women.

The lower part of Table 2 is based on a third concept of income: the income percentile of a person within her cohort and gender. This takes into account both the positive association between income and age and the gender inequalities in the labor market. We there define as "richer" the partner with the higher income percentile within her cohort and gender. Using this last concept of income, in roughly half of the couples, the female ranks higher than her male partner. However, even when she ranks higher than her partner, she remains on average 2 years younger than him. In only 36% of the cases is she older than him. This rules out the idea that the prevalence of man-richer age-hypergamic couples is purely driven by the patterns of income distribution across age and gender (i.e. men and older people are generally richer). This pattern still appears when these two confounding factors are neutralized.

In general, Table 2 suggests that youth has a price on the marriage market. If it were not the case, in newly formed couples, the older mate would not necessarily also be the richer one or the one who ranks higher in the income distribution within his cohort (and gender). *Ceteris paribus*, we would expect to see half of the couples where the older partner is also the richer one, and half where the reverse is true. The deviation from this 50% benchmark is an indication of the value of youth on the different marriage markets. As can be seen, among heterosexual couples, age gaps are essentially to the advantage of a richer and older man. It seems that men can trade their income against the youth of their new partner, but we do not see women doing so upon forming a new heterosexual couple. Finally, the deviation from 50% is clear, but is less pronounced for gay and lesbian couples.

Table 2: Age gaps and income of the richer partner in newly formed couples

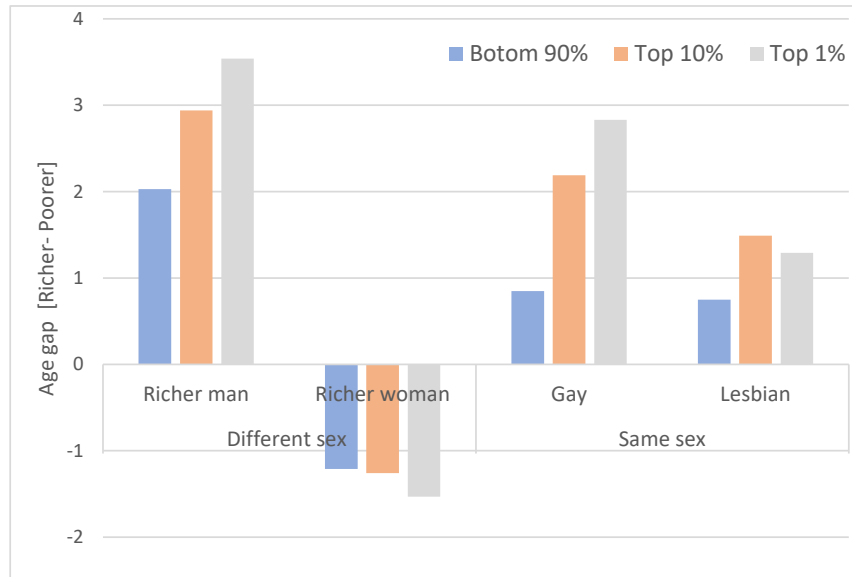
	Age gap [richer-poorer]	Richer & older partner %	Extreme age-gaps (%)		N
			Richer >10 y. older	Richer >15 y. older	
<b>Income in euros</b>					
Different sex couple	1.05	66.0	5.6	1.3	413,330
<i>Man-richer</i>	2.22	77.3	7.3	1.7	273,295 (66%)
<i>Woman-richer</i>	-1.22	44.0	2.4	0.5	140,035 (34%)
Same sex men	1.07	65.3	8.9	2.0	21,042
Same sex women	0.84	64.0	8.0	1.8	17,069
<b>Income in centiles by exact age*</b>					
Different sex couple	0.35	59.1	4.8	1.1	413,330
<i>Man-richer</i>	1.80	73.4	6.6	1.6	257,663 (62%)
<i>Woman-richer</i>	-2.02	35.3	1.7	0.4	155,667 (38%)
Same sex men	0.04	56.2	7.2	1.6	21,042
Same sex women	-0.15	55.3	6.5	1.5	17,069
<b>Income in centiles by exact age and sex*</b>					
Different sex couple	-0.17	54.2	4.1	0.9	413,330
<i>Man-richer</i>	1.75	73.2	6.5	1.5	200,868 (49%)
<i>Woman-richer</i>	-2.00	36.1	1.8	0.4	212,462 (51%)
Same sex men	-0.09	55.5	7.0	1.5	21,042
Same sex women	-0.04	55.8	6.8	1.6	17,069

Source: Fideli 2020.

\* Partners with same percentile within their age (or in their age and gender) are randomly assigned to be the richer or poorer partner

Figure 1 focuses on couples where the richer partner belongs to the highest income decile, or centile. It appears that in heterosexual couples, the richer the men, the younger their partner, on average by 3 (for the top 10) to 3.5 years (top percentile). The average gap is smaller in gay couples, and even more so for lesbian couples. It is negative for women, who, even in the top 10% income category, form unions with older men. Concerning the percentage of extreme age gaps, 2 shows that about 14% of heterosexual men and 18% of gay men who belong in the top income percentile have a partner who is at least 10 years younger than them. These proportions are smaller among lesbian couples and negligible among female richer heterosexual couples.

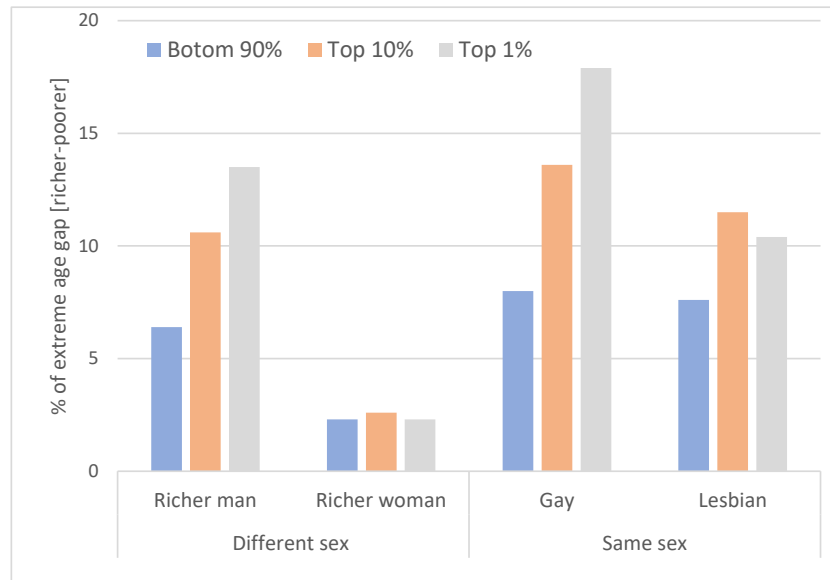
Figure 1: Age gap between the richer and the poorer partner, by income percentile of the richer partner and type of couple



## 4.2 Testing the predictions of the biological theory

We now turn to the estimates described in section 3.1. We start with the predictions of the biological theory and then turn to estimate the association between age gaps and the income level of the richer partner. Table 3 displays the age gap (OLS, column 1) and the probability of being in an extreme age-heterogamic couple, that is, one with more than 10 or 15 year age gap (logistic regression, columns 2 and 3), controlling for household income decile, the average age of partners, a dummy for couples containing at least one

Figure 2: % of couples with at least 10 years age gap, by income percentile and type of couple



foreign-born partner, the presence of children in the household, as well as the rural/urban regional district (department). The results confirm the descriptive findings.

As shown by the estimates of Model 1, age gaps are wider among same-sex couples than among heterosexual couples, even controlling for children, urban location, etc. Likewise, extreme age gaps are more likely among same-sex couples than among heterosexual couples.

Estimates of Model 2 show that among heterosexual couples, age-gaps and the likelihood of extreme age gaps are greater among hypergamic couples, i.e. with an older male partner. Again, age gaps are on average larger among gay couples than among heterosexual partners, and the likelihood of an extreme age gap is greater among same-sex couples.

Estimates of Model 3 concern couples that include a woman. It shows that age gaps and the likelihood of extreme age gaps are higher when the female partner is over her forties, which goes against the prediction of the biological and socio-biological theories.

Estimates of Model 4 provide more details by distinguishing, among heterosexual couples, the situation where the male partner is older or younger. Among heterosexual unions, age gaps and the likelihood of extreme age gaps are highest in couples with an older male partner and a woman over 40 years old.

Overall, based on all these observations, the different predictions derived from biological theory (H1) do not seem to be supported by the data.

### 4.3 Demographic constraints versus preferences

Models 5 and 6 introduce the distinction between rural and urban areas to test hypothesis H5 (age gaps should be larger in rural areas than in urban ones, especially among same-sex couples). The idea is that in rural areas, a thinner marriage pool may favor undesired age gaps.

It appears (Model 5) that age gaps and the likelihood of extreme age gaps are indeed larger among couples living in rural areas, for both different-sex and same-sex couples. It is thus true that age heterogamy is more prevalent in rural areas, probably denoting demographic constraints, which tends to confirm hypothesis (H5). However, the overall patterns previously uncovered are not modified by taking this element into account. Same-sex couples remain more age-heterogamic than heterosexual couples, whether in rural or urban areas.

### 4.4 Age gaps and income quantiles

We now turn to the estimates of age gaps or the likelihood of large age gaps over the entire distribution of income, following different concepts of income (percentiles, levels in euros, and contribution to household income). We plot the predictive margins estimated for each moment of the distribution. In the sequel, we do not distinguish 10 year versus 15 year age gaps, for space and sample size reasons, but the results are essentially similar.

Figure 3 displays the predictive margins of the models linking the age gap between the richer and the poorer partner and the income quantile (percentiles) to which the richer partner belongs, for each type of couple. The left panel considers the average age gap in years, while the right panel displays the fraction of couples with an age difference of 10 years or more. It turns out that the age gap increases as the income quantile of the richer partner rises up to the 90th percentile for all types of couples. The steeper increase occurs within the top decile (90 to 100 percentile). However, this is true only for man-richer heterosexual couples and gay couples. Among woman-richer heterosexual couple, women still tend to form a couple with an older partner, and even more so as they reach the very top of the income distribution in the population. Likewise, in lesbian couples, the age gap between partners increases with the income of the richer partner but

Table 3: Conditional Estimates of Age Gaps

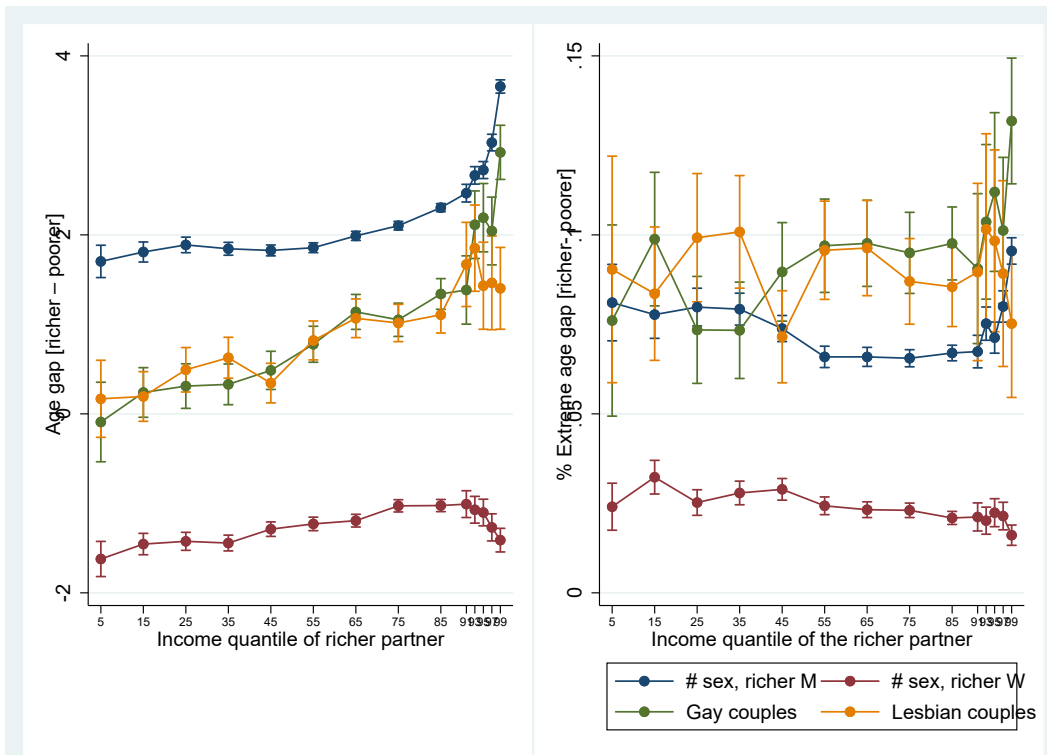
Type of model	Age gap absolute OLS	Age gap>10 y. Logistic	Age gap>15 y. Logistic
<b>Model 1</b>			
Different sex couple	ref	ref	Ref
Gay couple	0.80***	0.72***	0.61***
Lesbian couple	0.72***	0.68***	0.65***
N	451,441	451,441	451,441
<b>Model 2</b>			
Different sex Older Man	ref	ref	Ref
Different sex Older Woman	-1.20***	-0.63***	-0.72***
Gay couple	0.43***	0.55***	0.43***
Lesbian couple	0.39	0.50***	0.46***
N	451,441	451,441	451,441
<b>Model 3</b>			
Different sex Older Woman >40	ref	ref	Ref
Different sex Older Woman <=40	-1.11***	-0.66***	-0.65***
Lesbian, women >40	1.33***	0.74***	0.77***
Lesbian, women<=40	-0.43***	-0.01	-0.04
N	430,399	430,399	430,399
<b>Model 4</b>			
Different sex Older Man, woman >40	ref	ref	Ref
Different sex Older Man, woman <=40	-0.78***	-0.40***	-0.35***
Different sex Older Woman, woman >40	-0.39***	-0.03	-0.02
Different sex Older Woman, woman <=40	-2.50***	-2.16***	-3.47***
Lesbian, woman >40	1.17***	0.73***	0.76***
Lesbian, woman<=40	-0.60***	-0.03	-0.06
N	430,399	430,399	430,399
<b>Model 5</b>			
Different sex, rural	ref	ref	Ref
Different sex, urban	<b>-0.16***</b>	<b>-0.66***</b>	-0.02
Gay, rural	0.97***	0.79***	0.68***
Gay, urban	<b>0.40***</b>	<b>0.55***</b>	0.46***
Lesbian, rural	0.97***	0.74***	0.71***
Lesbian, urban	<b>0.29***</b>	<b>0.49***</b>	0.50***
N	451,441	451,441	451,441
<b>Model 6</b>			
Different sex Older Man, rural	ref	ref	Ref
Different sex Older Man, urban	-0.14***	<b>-0.46***</b>	-0.02
Different sex Older Woman, rural	-1.18***	-0.60***	-0.70***
Different sex Older Woman, urban	<b>-1.40***</b>	<b>-0.77***</b>	-0.77***
Gay, rural	0.607***	0.62***	0.50***
Gay, urban	<b>0.04</b>	<b>0.39***</b>	0.28***
Lesbian, rural	0.60***	0.57***	0.52***
Lesbian, urban	<b>-0.08*</b>	<b>0.32***</b>	0.32***
N	451,441	451,441	451,441

Note: Controls: household income decile, urban/rural district, children, foreign-born status of partners, age category of couples (ten-year range) when there is no control for woman's age. Coefficients are in **bold** when they are significantly different between urban and rural within the same type of couples.



not in the top income decile income. The right panel shows that the proportion of couples where the richer partner is at least 10 years older than the poorer partner increases in the top income decile, but only among male-richer heterosexual couples and gay couples. Within man-older heterosexual couples, the proportion of extreme age gaps raises by 42 percentage points (from 7% to 10%) as the richer (male) partner moves from the bottom to the 8th percentile of the top income centile. In gay couples, this proportion increases from 9% to 13%.

Figure 3: Age gap between the richer and the poorer partner, by income quantile and age of the richer partner. OLS, Predictive margins



Controls: average age, urban/rural, children, foreign or mixed couple. Left panel: age gap between the richer and the poorer partner. Right panel: % of couples with at least 10 years age gap.

Because age gaps are more likely as partners age, and because couple formation may follow different patterns along the life cycle, figure 4 displays the age gap between the richer and the poorer partner by type of couple and distinguishes three groups depending on the age of the richer partner: 18-39, 40-59, and above 60. It turns out that the age gap increases with the income quantile of the richer partner, especially when he belongs to the top decile of income distribution, and more so if he is aged 60 or more. But again, this is only true when the older and richer partner is a man, in heterosexual and gay couples. For richer women

aged in their forties or sixties, instead of an increase, we observe a decrease in age gaps as they rise in the distribution of income, especially when they are older or when they belong in the top income decile.

Figure 4: Age gap between the richer and the poorer partner depending on the income centile of the richer partner, by type of couple and age, predictive margins, OLS



*Controls: urban/rural, children, foreign or mixed couple*

Likewise, the proportion of large age gaps increases with the income of the richer partner aged 60 or more (up to 20%), but only for man-richer heterosexual couples and for gay couples (Figure 5). For women-richer couples, the probability of being older than their partner decreases sharply with their income quantile, particularly for those in their forties and sixties. These observations confirm those made by England and McClintock (2009) and Shepard (2019), using American data, that age hypergamy becomes more likely as the age of men at marriage increases, but does not depend as much on the age of the bride.

#### 4.5 Age gaps and income levels

Figure 6 plots the age gap between the richer and the poorer partner depending on the income of the richer partner in euros instead of income deciles. This allows estimating this relationship using a polynomial in the income of the richer partner. The left panel shows that the association is positive for all couples except for

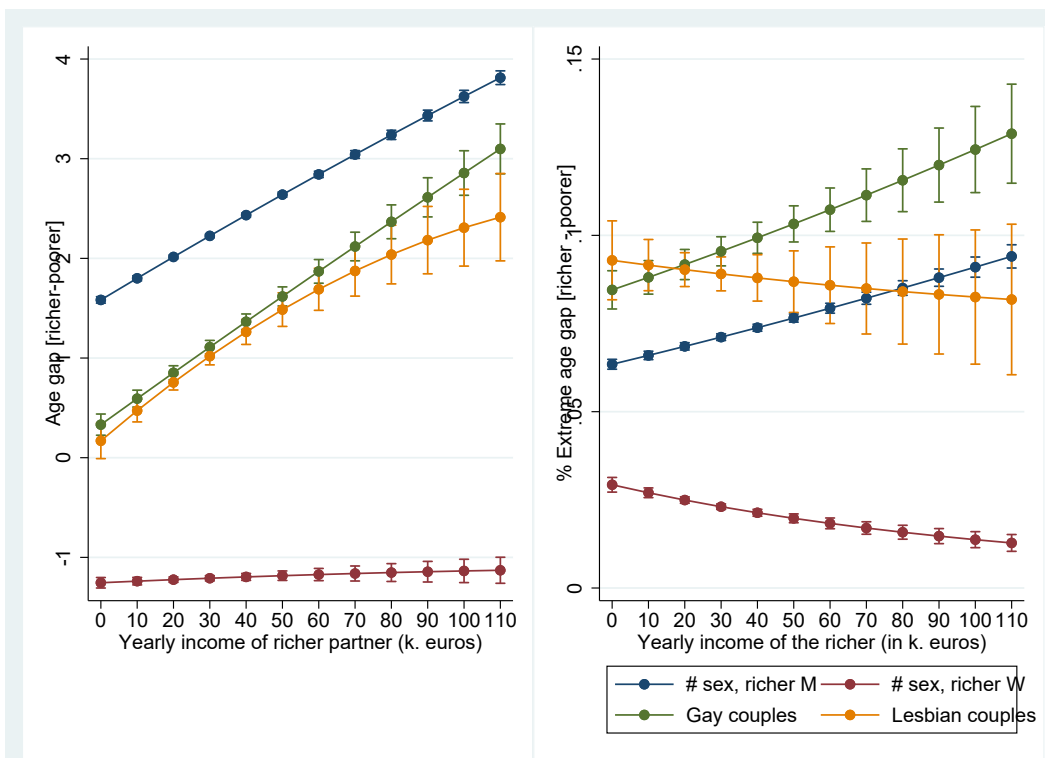
Figure 5: Extreme age gaps by income decile and age of the richer partner



*Controls: average age, urban/rural, children, foreign or mixed couple. % of couples with more than 10 years age gap between the richer and the poorer partners.*

heterosexual woman-richer couples, where the age gap remains flat. The positive relationship is steeper for heterosexual man-richer couples and gay couples. For men, an additional annual income of 37 000 euros is associated, in average, with a one year larger age gap vis-à-vis their partner. High income also buys a larger age gap within gay couples than within lesbian ones. This is confirmed by the right panel, which shows that the higher the income of the richer partner, the more likely he is to mate with a much younger partner (at least 10 years younger), but only in heterosexual male-richer and in gay couples. In woman-richer couples, the reverse is true.

Figure 6: Age gap between the richer and the poorer partner depending on the income level (in €) of the richer partner, OLS, predictive margins



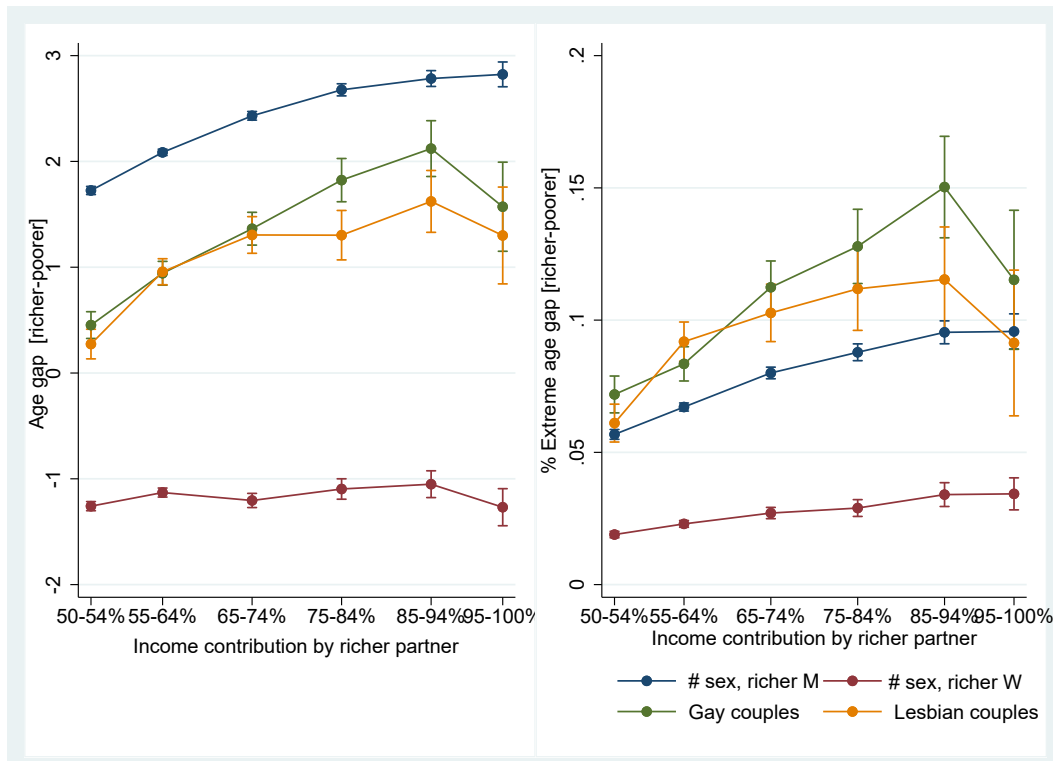
Polynomial form of income. Controls: average age, children, urban/rural, foreign or mixed couple. Left panel: age gap between the richer and the poorer partner. Right panel: % of couples with at least 10 years age gap.

#### 4.6 Age gaps and income shares

Figure 7 turns to another notion of income gap: the share of the household income earned by the richer partner. Again, as shown by the left panel, the larger a person's contribution to household income, the younger their partner, but this is not true for women-richer heterosexual couples and true to a lesser extent

for lesbian couples. As shown in the right panel, the same picture emerges as regards the frequency of large age gaps (more than 10 years). There, the likelihood of large age gaps increases much more mildly with the income contribution of the richer female partner, either heterosexual or lesbian, than with the income contribution of the richer male partner. The proportion of couples with an age gap of more than 10 years doubles from 5% to 10% as the contribution of the richer partner increases from 50% to 90% and above, except for women-richer heterosexual couples, where this proportion remains low, in the vicinity of 2,5%.

Figure 7: Age gaps and income contribution by the richer partner. Predictive margins, OLS.

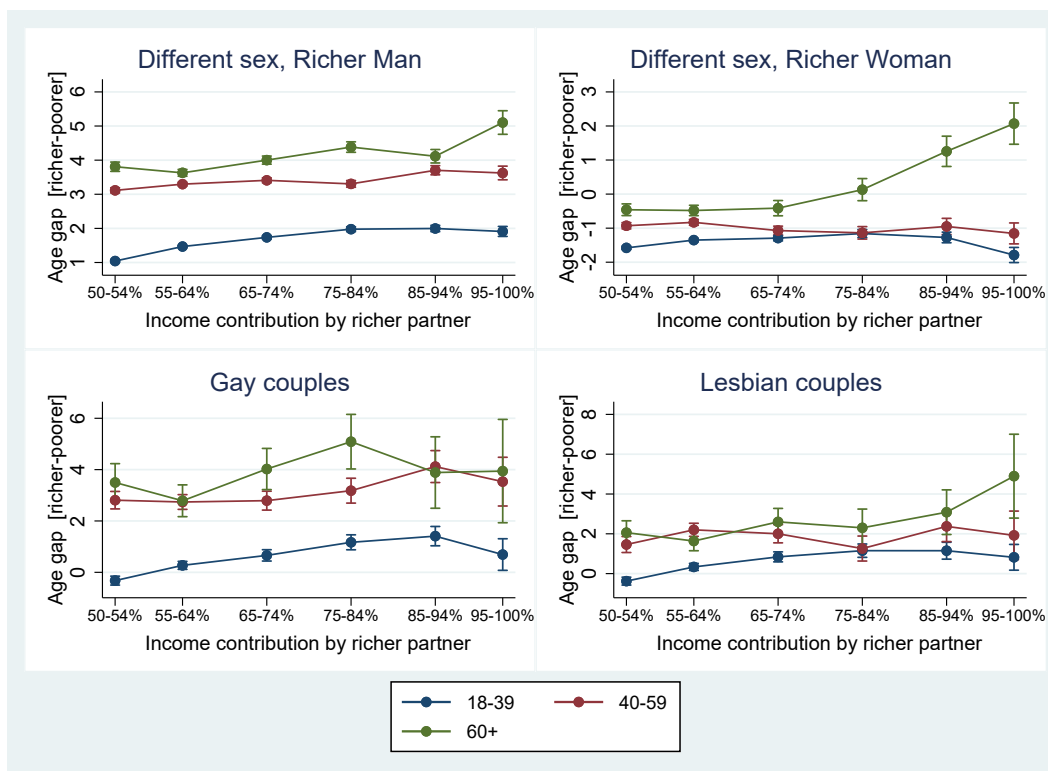


Controls: average age, children, urban/rural, foreign or mixed couple. Left panel: age gap between the richer and the poorer partner. Right panel: % of couples with at least 10 years age gap.

Finally, figure 8 details the relationship between income shares and age gaps between partners, by age group. Here, the new finding is that richer women who form a heterosexual couple after the age of 60 seem to be able to 'buy' a younger male partner (up to 2 years on average) when they contribute at least 75% of the household income. Note that in other types of couples, the average age gap is higher and reaches 4 to 5 years. Feighan (2018) also observed that in American woman-older marriages, women contribute a particularly high proportion of the family income compared to other couples. Figure 16 in the appendix

shows that this result holds on the sub-sample of officially married or partnered (Pacs) couples, which rules out the suspicion that they could be simple cohabitants, or mother and child.

Figure 8: Age gaps by by income contribution and age of the richer partner



*Controls: children, urban/rural, foreign or mixed couple.*

## 5 Robustness checks

### 5.1 Income ranks within one's cohort and gender

We experimented with different concepts of income and corresponding definitions of the "richer" partner (as explained in section 3.2). The objective is to check whether our previous results were not driven by the dynamics of income over the life cycle or the gender gap in earnings. The concept of income percentile within one's own cohort and gender may also be a better proxy of a person's unobserved relative "social value" or "social prestige".

Figure 9 in the appendix reveals the same patterns as Figure 3 with respect to the top percentiles. A higher rank is associated with a larger age gap (a younger partner), but only for man-richer heterosexual

couples. A man whose income is the highest 10% within his male age group will partner with a younger, sometimes much younger woman. But a woman who stands at the same position within the population of women of her age will generally still mate with an older man (as shown by the decreasing curve for the top 10% richer women). Most of the remaining part of the curves, i.e. before the 90th percentile, is flat. This suggests that part of our previous results regarding this portion of the income distribution of the richer partner may be related to the general increase in income with age<sup>5</sup>.

Finally, Figures 10 and 11 replicate the same estimates over our three age groups. They confirm that the age gap increases for the top 10% richer men and decreases for the 10% richer women, especially as they form a couple in later ages (between 40 and 59 or after 60).

Hence, overall, these observations suggest that men and women do not trade their social position in the same way. Whereas for men, a higher income is associated with the likelihood of mating with a young partner, for women, what matters is not their absolute level of income, but their relative income as compared to their potential partner. Women-older heterosexual couples tend to appear only in situations where there is a clear financial surplus of the female partner over her partner.

## 5.2 First versus later unions

Do these findings depend on whether the unions we observe are first unions, or second or third unions, where we expect at least one partner to be older? Our data contain information about the legal marital status of partners in the year preceding the union (in 2018), that is, single, married or pacsés (the French formal civil partnership), divorced or widowed<sup>6</sup>. We define first unions couples where both partners had never been married.

Figure 12 shows that, as expected, the age gap between spouses is greater among later unions than among first unions. The gradient in age gap is particularly sharp when the richer partner belongs in the top decile of the income distribution, and even more so in later unions as opposed to first unions. But again, this is not the case of woman-richer heterosexual couples, where the opposite happens, both in first and second unions. The same picture appears with respect to the likelihood of forming a couple with an extreme age gap (right panel of the figure).

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<sup>5</sup>The results are similar when we use the percentile of a person in her age only, instead of age and gender - not shown but available upon request.

<sup>6</sup>We do not have any information about previous unmarried partnerships

What about the influence of the income share of the female partner that we have uncovered in Section 4.6? Again, the patterns are similar and much clearer in later unions than in first unions (richer women over 60 are more likely to form a couple with a young man if they contribute at least 75% of the household income (Figures 13 and 14 in the appendix).

### 5.3 Formal versus informal unions

Do we observe different mating criteria across couples, depending on whether they have a formal contract - marriage or PACS? One might indeed suspect that criteria for the formation of formal unions may be more stringent than for consensual unions, as they are more difficult to dissolve. Looking at official couples, either married or pacsés, also has the advantage of ruling out a risk of misclassification error, especially for same-sex couples: for these couples, the suspicion can be ruled out that they share the same roof without being a couple.

Most estimated relationships between age gaps and income quantiles, or the contribution of the richer partner, appear to follow the same patterns as before, whether among formal and informal unions (Figures 15 and 16 in the appendix), although these associations are stronger among informal couples. There is, however, one exception that concerns formal couples: there, the likelihood of a large age gap between partners is not increasing in the income quantile of the richer partner when the latter is a woman, even when she is above her 60s (figure 17 in the appendix): when a new couple is formed by a woman and a much younger male partner, this is generally without a formal contract (at least initially). In view of the earlier remark, this observation calls for caution in the interpretation of these couples.

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<sup>7</sup>Recall that we observe couples on the first year they form a couple, i.e. when they start declaring a common housing tax returns.



## 6 Conclusions

This exploration of the universe of newly formed couples in France in 2019 shows that biological theory is clearly not sufficient to explain age heterogamy. First, it is among same-sex couples that age gaps are wider and extreme age gaps more likely, and this cannot be attributed solely to their narrower mating pool, as it is true whether in rural or urban areas. Second, among heterosexual couples, age gaps are greatest in couples with an older male partner and a woman older than 40 years. Likewise, among lesbian couples, the age gaps are wider when the younger partner is over 40 years of age. Age-heterogamy thus does not seem to be explained by the importance of fertility as a mating preference, which speaks against both the biological and socio-biological theories.

Next, we observe a systematic relationship between income and age gaps between partners. The average age gap is greater in couples where the richer partner belongs to the highest income decile, or the greater his share in the household income. This seems consistent with the exchange theory, whereby money can buy youth. However, we also uncover an asymmetry that qualifies this conclusion: money, as measured in euros or quantiles, buys men a younger partner (on average), and for some of them a much younger partner (more than 10 years younger). But this is not the case for women, i.e. lesbian couples or woman-richer heterosexual couples. We observe women matching with a younger or much younger partner only when she has a clear financial surplus over her partner, in particular, when her contribution to household income is greater than 75% or when.

Hence, men and women do seem to trade their social position in exchange for youth, but the terms of trade are not the same for them.

Although it is difficult to know the extent to which these patterns reflect pure mating preferences or implicit bargaining between partners, it remains that they are consistent with an exchange theory, whereby partners trade their traits, and both income and youth are desirable traits in the eyes of both men and women. However, we also uncover some persistence of the patriarchal culture, where it is expected that men "dominate" their partner in terms of income and age, and the reverse is more difficult to accept. It remains to be seen to what extent this norm will persist over time as the income and social status gap between men and women narrows and the proportion of couples in which the woman earns more than her partner increases. Will the price of youth continue to depend on the sex of the buyer?

In conclusion, let us underline the limitations of this paper. First, because we focus on newly formed couples, we do not observe individuals who remain single. However, it is common knowledge that there are more single older women than men. This is, for example, the case in France, where, after the age of 55, the proportion of women who live alone increases more than that of men<sup>8</sup>. This is partly explained by the longer life expectancy of women, but other mechanisms may be at work, such as men's preference for younger women, and older women's choice to remain single rather than "marry down" (England and McClintock, 2009). Another limitation is that we do not have information about the education and occupation of people, which requires us to use income as a proxy for social status, power, and prestige. We partly compensate for this drawback by using the percentile of each partner in the income distribution within their own age and gender. Finally, we do not have information on people's wealth, except the income flow that they derive from it, which of course may matter for partners' attractiveness. These elements constitute avenues for future explorations of the mating process.

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<sup>8</sup><https://www.insee.fr/fr/statistiques/2381512>

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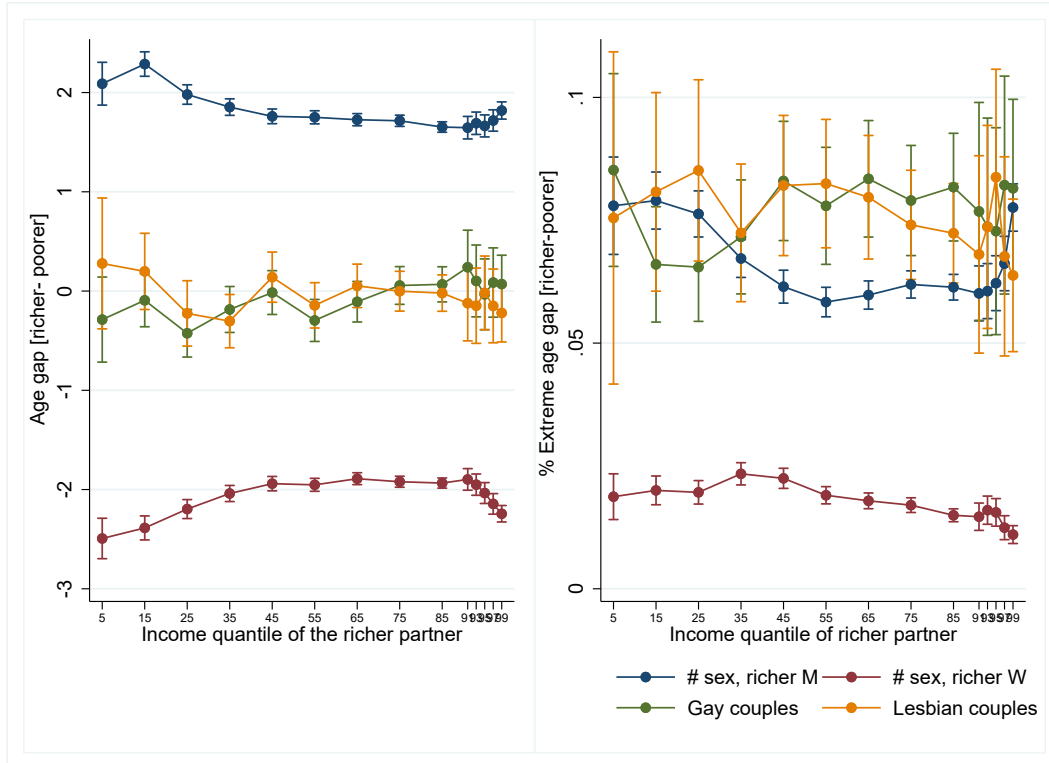
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## Appendix

Figure 9: Age gap between the richer and the poorer partner depending on **income percentile** of the richer partner in his cohort and gender.



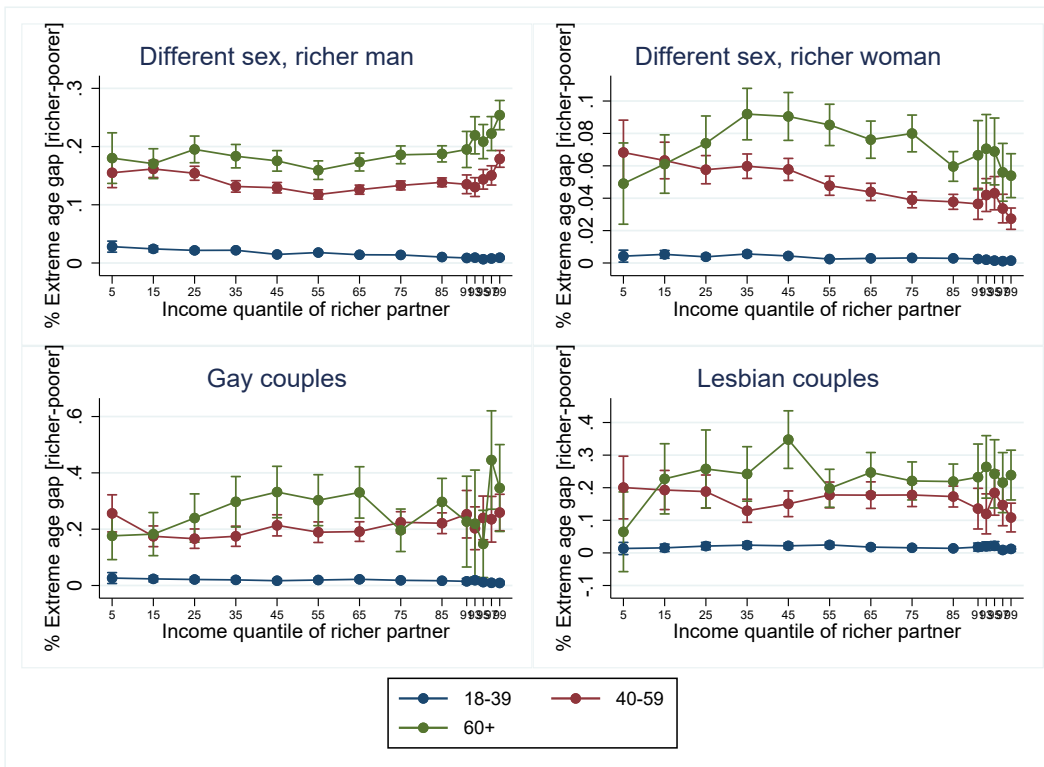
*Notes: The richer partner is the one who ranks higher in his exact own age and gender group.  
 Controls: average age, urban/rural, children, foreign or mixed couple.  
 Source: Fideli 2020.*

Figure 10: Age gap between the richer and the poorer partner depending on the **income percentile** of the richer partner in his cohort and gender. By age group.



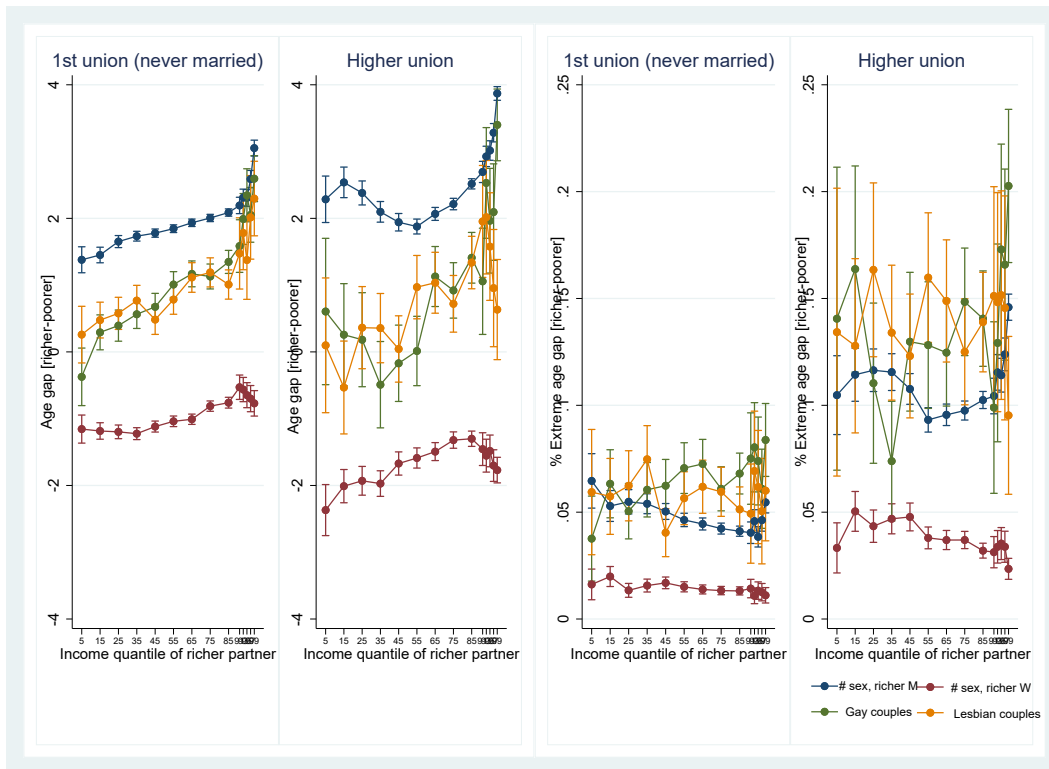
Notes: The richer partner is the one who ranks higher in his exact own age and gender group.  
 Controls: urban/rural, children, foreign or mixed couple.  
 Source: Fideli 2020.

Figure 11: Extreme age gaps between the richer and the poorer partner, depending on the **income rank** of the richer partner. By age group.



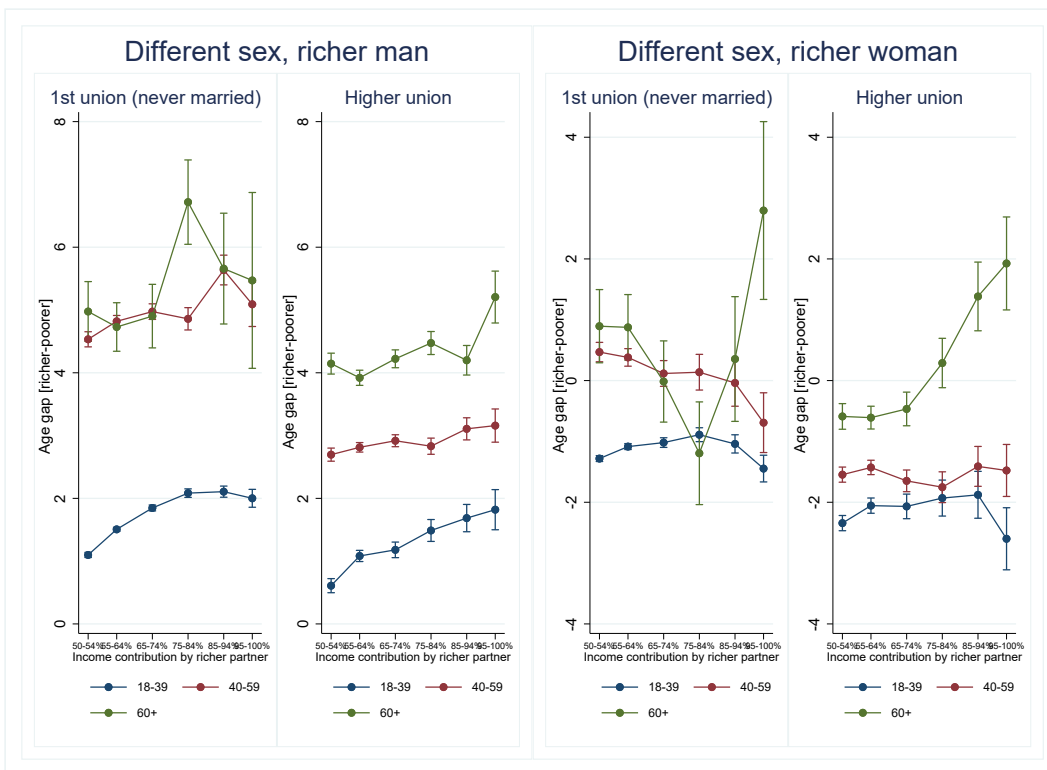
Notes: The richer partner is the one who ranks higher in his exact own age and gender group. Extreme age gaps = more than 10 years.  
 Controls: urban/rural, children, foreign or mixed couple.  
 Source: Fideli 2020.

Figure 12: Age gap between the richer and the poorer partner depending on the income decile of the richer partner, **First versus higher order unions**



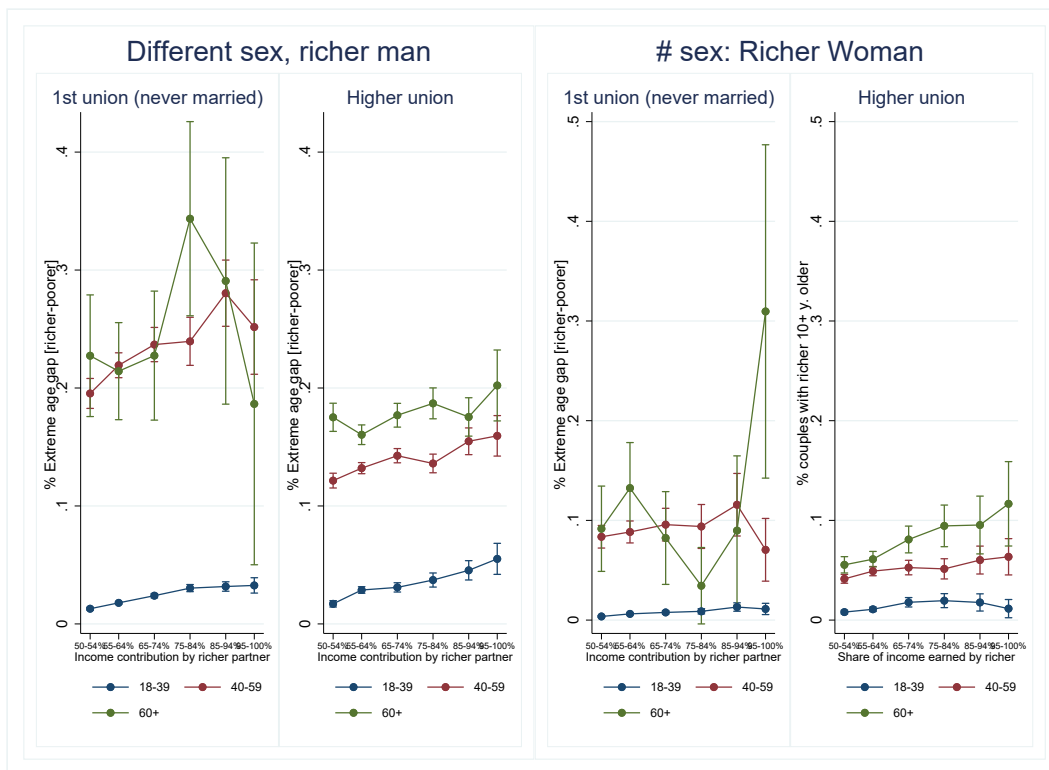
Controls: average age, urban/rural, children, foreign or mixed couple. Left panel: age gap between the richer and the poorer partner. Right panel: % of couples with at least 10 years age gap between the richer and the poorer partner.  
Source: Fideli 2020.

Figure 13: Age gap between the richer and the poorer partner depending on the income contribution by the richer partner, **First versus higher order unions**. By age group.



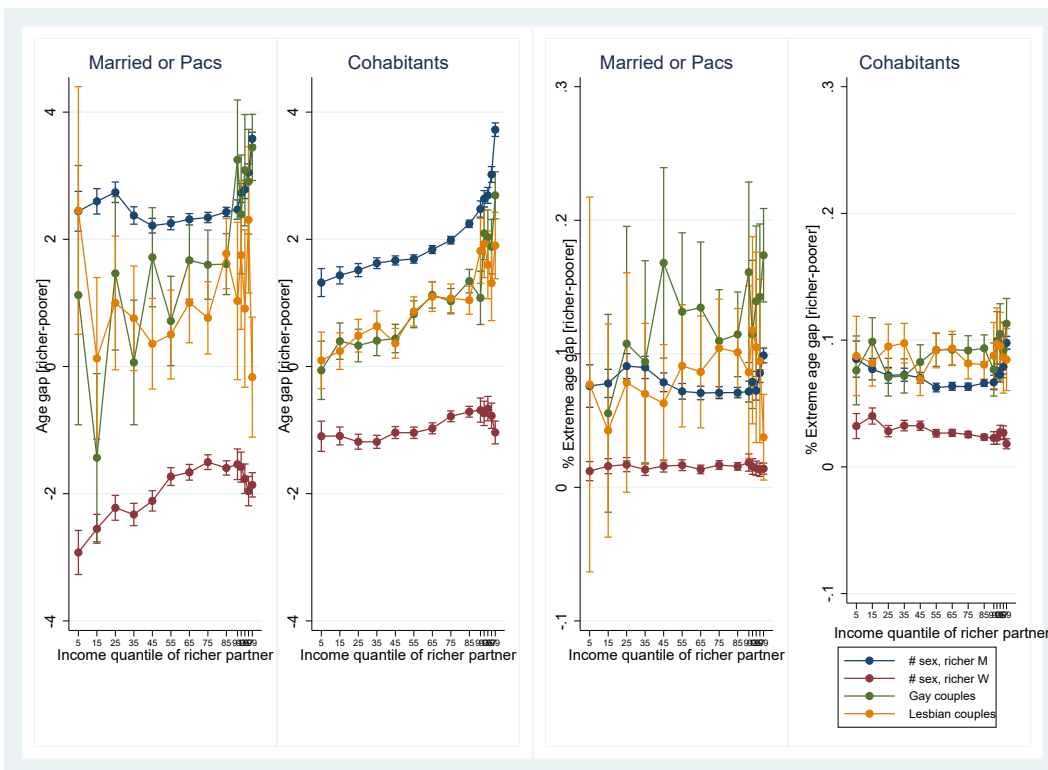
Controls: urban/rural, children, foreign or mixed couple.  
 Source: Fideli 2020.

Figure 14: Extreme age gaps between the richer and the poorer partner depending on the income contribution by the richer partner. **First versus higher order unions.** By age group.



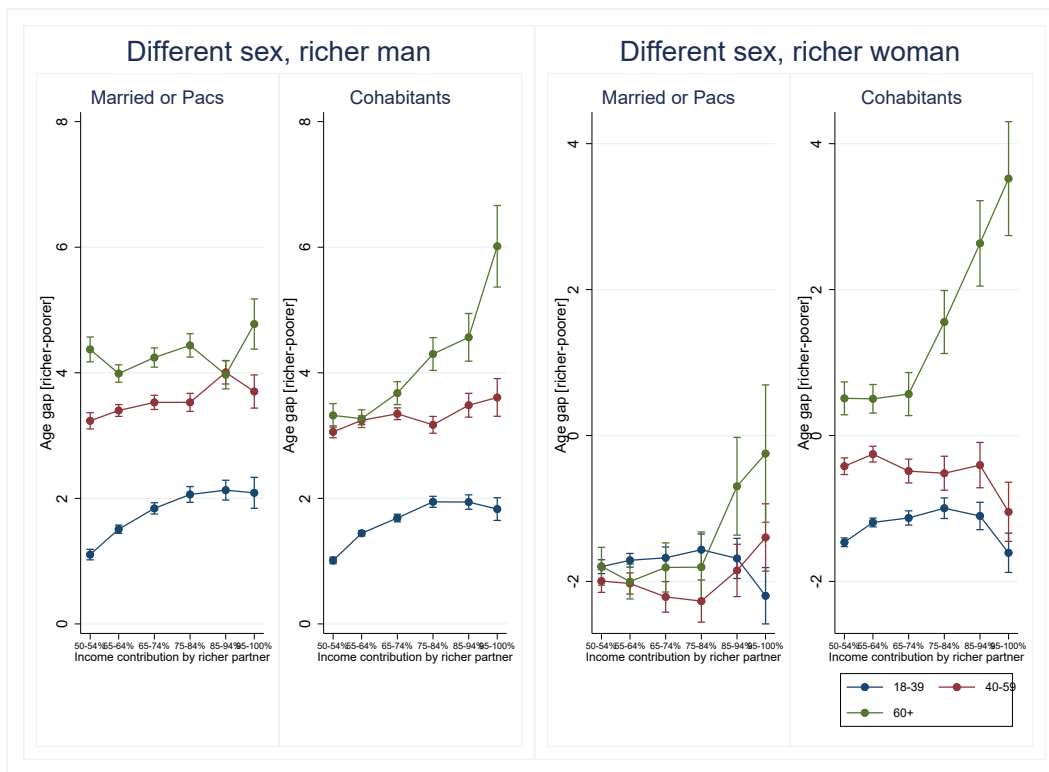
Controls: urban/rural, children, foreign or mixed couple. Extreme age gaps = more than 10 years.  
Source: Fideli 2020.

Figure 15: Age gap between the richer and the poorer partner depending on the income quantile of the richer partner, **Formal versus informal unions**



Controls: average age, urban/rural, children, foreign or mixed couple.  
 Source: Fideli 2020.

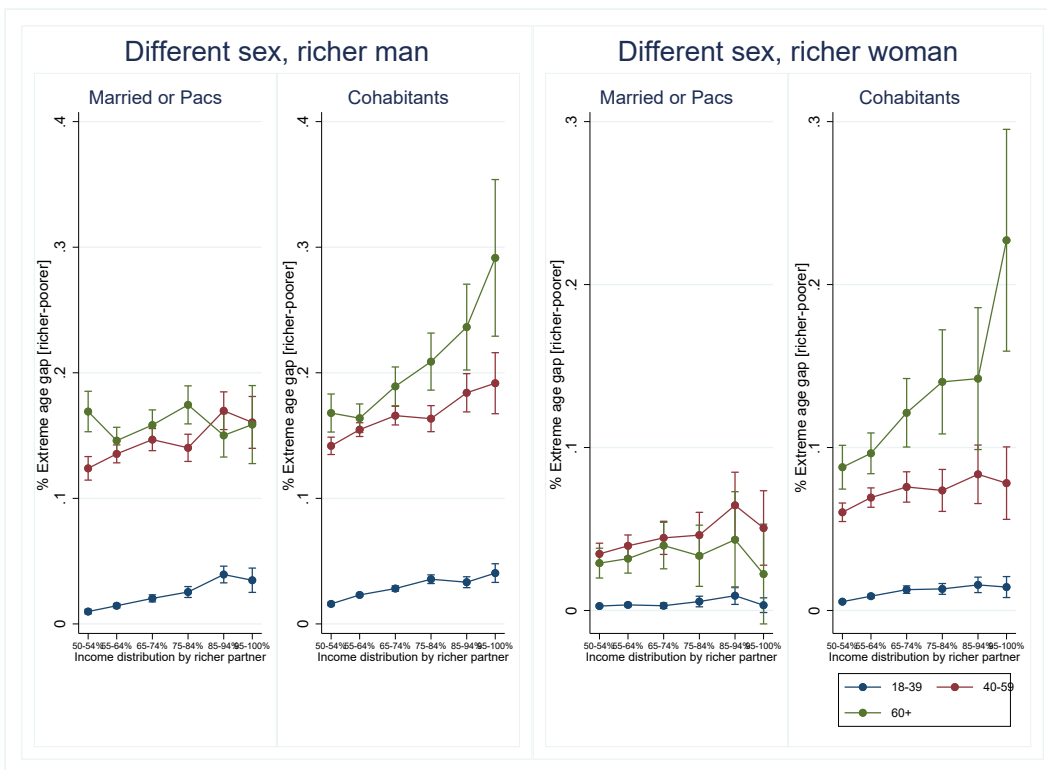
Figure 16: Age gap between the richer and the poorer partner depending on income share of the richer partner. **Formal versus informal unions**



Controls: urban/rural, children, foreign or mixed couple.  
Source: Fideli 2020.



Figure 17: Extreme age gap between the richer and the poorer partner depending on income decile of the richer partner. **Formal versus informal unions**



Controls: urban/rural, children, foreign or mixed couple. Extreme age gaps = more than 10 years.  
 Source: Fideli 2020.