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Abstract: Nowhere in the developed world is extramarital childbearing more pervasive than in Iceland. Roughly 70% of children are born outside of marriage, thereof 85% of firstborn, which, on the surface, puts Iceland at the vanguard of a development often associated with a second demographic transition. In this study we investigate the union-formation behaviour of Icelandic women during a period of 20 years with the objectives of gaining insight into the interplay of childbearing, cohabitation, and marriage; and to enhance our understanding of the nature and function of cohabitation in the family-building process. We use population register data, which are analysed by means of event history techniques, and presented as annual indices of entry into cohabitation and first-marriage formation respectively. We find indications of forceful postponement of first-registered cohabitation formation, but a stable portion of around 80% of women registered cohabitation before any first marriage or age 46. Around 70% of women married before age 46, and the standardized marriage rates remained relatively stable during most of our study period. Our findings suggest that within a context such as the Icelandic one most people tend to marry, regardless of the prevalence of cohabitation, and that social policies regulating cohabitation may have limited impact on marriage intensities. We propose that registered cohabitation should be seen as providing a semi-regulated union status for parents in relation to childbearing. Marriage on the other hand could be seen as providing an elevated union status to couples.

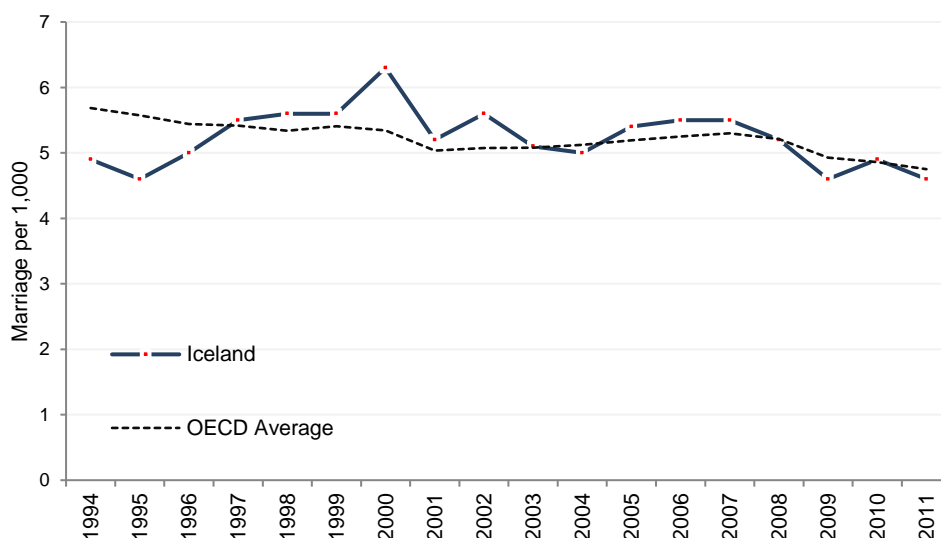
Keywords: Family formation; cohabitation; Marriage; Iceland.



Introduction

We have witnessed fundamental changes in family formation patterns in high-income countries in recent decades. These changes—often associated with a second demographic transition—include low marriage rates; increasing number of premarital births; and prevalence of nonmarital cohabitation. Childbearing and marriage are becoming increasingly uncoupled. Iceland is among the vanguards in this development and the share of nonmarital births is larger in Iceland than anywhere else in the western world. According to recent data, seven out of ten Icelandic children are born to unwed mothers: 85% of firstborn; 69% of secondborn; and 52% of thirdborn (Statistics Iceland 2018). The relatively high portion of premarital and nonmarital births has received international attention and raised questions about the future of marriage in Iceland (Weir 2017). However, a quick glance over official statistics shows that the crude marriage rate of Iceland is on par with the OECD-countries' average (Figure 1), which on the surface may appear counter-intuitive given the frontrunner status of the country in terms of the frequency of out-of-wedlock births.

Figure 1: Number of marriages per 1,000 of population 1994–2011



Source: OECD 2018 (and author's calculations)

Note: Official figures pertaining to 2012 onwards for Iceland are not available

The study context provides a strong case to investigate family formation from the perspective of the second demographic transition framework (SDT), discussed below, with respect to the country's long history of cohabitation and its frontrunner status in terms of family

change. Recent family demographic trends in Iceland might provide insight into future trends elsewhere. Despite the advanced development in Iceland, the (recent) family formation patterns have not been studied before. The objectives of this study are to provide the first comprehensive overview of recent trends in union formation in Iceland. To that end, we display a system of annual indices of the propensity to formally cohabit and marry during a 20 year period: between 1994 and 2013. We rely on a proven method, established by Hoem (1991, 1993) and later elaborated by Andersson (1997, 1998, 1999), where we standardize union-formation risks for age and other relevant demographic factors. We use population-based register data in our calculations, covering the total female population born in Iceland between 1962 and 1997. The data contain the childbearing and union histories of these women, including information about registered cohabitation that give us a rare opportunity to study on a population level the prevalence of cohabitation over time; to gain insight into the interplay of childbearing, nonmarital cohabitation, and marriage; and to enhance our understanding of the nature and function of nonmarital cohabitation in the family-building process.

Our research questions are as follows: First, have there been any changes in the union-formation behaviour during the last few decades? And, if so, are there indications that cohabitation is replacing marriage – or are the two union types perhaps differently motivated? Based on the SDT narrative, one might expect to find an increase in the propensity to formally cohabit over time, at the expense of the propensities to marry. Second, we ask whether there are indications of any specific period influences during our study period. Here we are particularly interested in the last years of our study period. In 2008, Iceland suffered an economic breakdown when 90% of the country's financial system collapsed. Unemployment increased sevenfold; households default rates almost doubled between 2008 and 2010; and social turmoil followed. Jónsson (2018) found that in the aftermath of the economic crisis fertility declined, regardless of parity, and that the family-care gender balance was affected, demonstrated by a decline in fathers' early childcare involvement (Sigurðardóttir and Garðarsdóttir 2018). If the crisis will have had any influence on the union formation patterns in Iceland, we expect to find a drop in the first-marriage intensities and a decline in the propensity to register cohabitation around the time when the crisis materialized, parallel to the declining fertility.

In what follows, we first provide an overview of the general trends and potential determinants of changes in family formation in western countries. Subsequently, we turn our attention to the Icelandic context. After a discussion about the study background, we describe the data and method and present the results. Finally, we conclude with a summary discussion.

Background

Across Europe, marriage rates have declined substantially since the 1960s; fertility has decreased, in some places to very low levels; the number of unmarried couples has increased; and more children are born to unwed mothers (Sobotka and Toulemon 2008; Billari and Liefbroer 2010). Simultaneously, we observe increases in the median ages of the usual family-related indicators of the transition to adulthood: first-union formation, marriage, parenthood, and to a lesser extent home leaving (Andersson and Philipov 2002; Andersson, Thomson, and Duntava 2017). On the surface, this transformation in most European countries appears to consist of a universal shift towards ‘less-family’ and more diverse living arrangements, fewer children – and a gradual retreat of marriage as the primary social institution for the family (Sobotka and Toulemon 2008; Esping-Andersen 2017).

Two of the most prevalent theoretical frameworks in the demographic literature explaining this scenario are the second demographic transition thesis and the gender-relations thesis. According to the second demographic transition thesis (SDT) – which has been used as somewhat of “a label, description, and even explanation for a plethora of diverse changes in fertility and family-related behaviours and attitudes” (Sobotka 2008, p. 172) – the family-related changes described above are, to describe it rather vaguely, a consequence of post-modern values. According to its proponents, the SDT is founded on an upsurge of higher-order needs, such as self-fulfilment, lifestyle, personal development, and freedom of choice (van de Kaa 1996, 425), which is fostered through capitalist economies and cultures promoting increased autonomy of the individual (Lesthaeghe 2010). Childbearing becomes a choice rather than inevitability, competing with other ‘goods’ in life, and is easily controlled by means of modern contraception. Simultaneously we observe an increase in the frequency of extramarital births. While the two may appear contradictory, i.e. increased control over one's procreation and an expansion in the share of births out of wedlock, this contradiction is explained as a consequence of marriage ceasing to be the normative setting for childbearing (van de Kaa 1996). The strong normative structure, previously supported by both Church and State, loses ground in an era governed by individual choice and freedom-of-self (Lesthaeghe 2010). Consequently, individuals make family-related choices based on their personal self-fulfilment (Carlson 2019). Cohabitation emerges as an alternative to marriage and can be viewed as one of the crucial components behind the de-standardization of traditional family formation patterns (Noack et al. 2013), and “the important engine driving the rise in nonmarital childbearing in Europe” (Kiernan 2004, 43).

Albeit the expansion of these SDT-related symptoms appear universal in Europe (Lesthaeghe 2010), highlighted by the increase in childbearing within cohabitating unions (Kiernan 2004; Parelli-Harris et al. 2009), there (still) is a shortage of evidence that indicates any convergence to a new general pattern of family-demographic behaviour across developed countries (Sobotka and Toulemon 2008; Billari and Liefbroer 2010; Parelli-Harris and Sánchez Gassen 2012). While consistent country variations have been assigned to differentials in societal contexts – i.e. different cultures and histories, institutional settings and family policies; economic status; and the onset of SDT-related changes in different countries (Lesthaeghe 2010; Carlson 2019; and general discussions in e.g. Heuvelline and Timberlake 2004; Thomson 2005; Billari and Liefbroer 2010; Parelli-Harris and Lyons-Amos 2015) – they have equally brought about criticism of the SDT framework. Recent trends in family demography in the SDT-frontrunner states, the Nordic countries, demonstrate a turnaround towards increasing marriage rates since the late 1990s and a relatively high fertility in the region, parallel to some of the highest extramarital-birth rates in the world and persisting prevalence of nonmarital cohabitation. This development has nourished criticism of the SDT thesis to the extent that the credibility of the individualization perspective has been questioned and contributed to a hypothesis about a return to “more family” in the region (Esping-Andersen 2017, 9).

The relatively high gender egalitarianism in the Nordic countries has fuelled theories that instead make gender relations the explanatory point of departure of recent family changes. According to the gender perspective, the phase of less family is a consequence of imbalances between the expected societal roles of women on the one hand, and their opportunities on the other (McDonald 2000, 2013). During this period of “normative flux”, when women’s roles are advanced but society has yet to adapt in terms of new family norms and implementations of gender egalitarian family policies, fertility remains low and union instability high (Esping-Andersen and Billari 2015). During the second phase of the ‘gender revolution’, gender equality will have increased and men will have entered the private sphere with a feminization of men’s roles. As a consequence family stability re-emerges with higher levels of fertility and union formation (Goldscheider et al. 2015).

Although the two theoretical frameworks originate from two distinct standpoints, and they approach the role of gender relations differently, both sets of theories aim to explain the same overall developments: i.e. a trend towards less-family highlighted by a drop in marriage intensities, increases in extramarital childbearing, diffusion of cohabitation, and low(er) fertility. The gender perspective regards this development as an interim part during (the first phase of) a gender revolution whiles the SDT thesis approaches it as a part of a second

demographic transition, which has somewhat of an ambiguous end-point. To a certain degree, Iceland appears to be something of a bastard in this regard.

The Icelandic context

Iceland resembles the other Nordic countries – Denmark, Finland, Norway, and Sweden – to a large extent in terms of its culture and institutional settings, and it shares the record high prevalence of cohabitation with the other Nordic countries – elaborated on below. At least in relative terms, Iceland is highly gender egalitarian. During 2009 - 2018 it was ranked the most gender-equal country in the world on the World Economic Forum's Global Gender Gap Index (World Economic Forum 2018). Female labour force participation is one of the highest in the world – almost on par with that of men's – despite that family policies were developed relatively late in Iceland compared to the other Nordic countries (Eydal 2008). Notwithstanding, fertility has hardly declined to sub-replacement levels. The total fertility rate (TFR) has remained above the average in Europe, fluctuated around 2.1 ever since the mid-1970s and until the aftermath of the 2008 economic crisis. The projected cohort fertility of the 1983 birth cohort is estimated at 2.3 children per woman over the life course (Statistics Iceland 2019). Iceland has thus never experienced the same drop in period fertility as most other developed countries have, and both sets of theories discussed above expect.

The Icelandic culture is highly individualised, and according to Aðalsteinsson and his colleagues (2011) Iceland is the only country in the western world that has ever scored higher than the United States in terms of the degree of individualism on Hofstede's cultural dimension index (Hofstede 1991, 2001). The country is also relatively secular: according to a survey, less than four in five Icelanders under the age of 25 said that they were religious; and none of the respondents in that age category believed that God created the Earth (Siðmennt 2016). Simultaneously, the share of extramarital births is larger in Iceland than anywhere else in the developed world, while the crude marriage rates are on par with the OECD average – making the country an interesting case to study in terms of union formation and its development over time.

Cohabitation and extramarital childbearing in Iceland

Iceland has a long tradition of nonmarital childbearing and cohabitation, which presumably dates back to the island's settlement in the 800s and the "Old Norse culture" (Tomasson 1976, 256) – and thus long before even any first demographic transition took place. As far back as publication of official statistics go (mid-1800s in Iceland) the proportion of extramarital births

has been exceptionally high – even compared to ‘other liberal Scandinavian countries’ (Björnsson 1969, 1). In the 1940s, one in four children was born to unwed mothers, as compared to a little more than the one in five children born out of wedlock in the 1870s (Trost 1978, 304). From the mid-1990s onwards over 60% of children in Iceland have been born outside of marriage (Statistics Iceland 2019).

Without going into much detail about historical trends, the high rate of illegitimacy in Iceland in the 19th and early to mid-20th century is suggested to be a consequence of cohabitation without or prior to marriage – which again has been associated with the historical inefficiency of the Christian Church to preach the moral superiority of marriage in the country. In previous centuries, even the leading churchmen and bishops in Iceland had illegitimate children without them having any social stigma attached to it (Gjerset 1925 as cited in Tomasson 1978, 258). Unmarried cohabitation and childbearing within this marriage-like union have thus, presumably, never been considered a deviant behaviour in Iceland (Björnsson 1969; Trost 1978). Nevertheless, even though nonmarital cohabitation has historical strong grounds in Iceland and is integrated into the culture of the country, with high tolerance towards extramarital births attached to it, marriage was, at least during most of the 20th century, still the final destination for the majority of the population. Cohabitation was mainly exercised as a prelude to marriage, during which time couples were establishing themselves economically – a behaviour that was not limited to the lower stratum of society (Björnsson 1969).

Apart from historical and cultural factors, the current frontrunner status of Iceland in terms of the prevalence of cohabitation and the high portion of premarital births can surely be traced to a progressive legislation concerning nonmarital cohabitation as an accepted family form during the past six to seven decades. To a large extent, regulations regarding nonmarital cohabitation in Iceland are similar to what they are in the other Nordic countries. In some matters marriage and cohabitation are indistinguishable, but in others a clear legislative distinction is still made between the two unions (see below). The rationale for maintaining this distinction is twofold: First, to encourage couples to marry as it is considered the desirable *modus vivendi* by the legislative power; and second, to offer couples an alternative way to formalize their union (Alþingistiðindi 2000-2001). Below we discuss the main similarities and differences between marriage and cohabitation in Iceland. For a comprehensive overview see Friðriksdóttir (2010, 2011); Alþingistiðindi 2000-2001; and Waaldijk et al. (2017).

Regulations concerning nonmarital cohabitation in Iceland

Currently, there is no single legislation on nonmarital cohabitation in Iceland (i.e. comparable

to that of the Marriage Act (31/1993)). Nevertheless, since the mid-20th century, various steps have been taken to enhance the rights of cohabiting couples – making this type of union more marriage-like. Already in 1943 nonmarital cohabitation is mentioned in Icelandic legislation as a part of the Act on Social Security, stipulating that cohabiting and married couples share the same obligations and rights in terms of national insurance. Since then legal provisions regarding nonmarital cohabitation have been implemented into various acts – usually next to clauses on marriage. Normally, stipulations regarding nonmarital cohabitation have a requirement about the union being registered; they depend on the length of the co-residence (usually one or two years); or they are conditional on couples having a child together (Alþingistíðindi 2000-2001).

In terms of social and family affairs, regulations pertaining to marriage usually apply to cohabiting couples as well. Thus, the ascribed legal status of cohabiting and married parents is in principle the same: Paternity is automatically registered if couples are cohabiting, i.e. paternity is based on the *pater est quem nuptiae demonstrant*, the same rule that applies to childbearing within marriage (Alþingi 2003a); biological cohabiting parents have the same rights in regard to parental leave as married couples: individual right of three months each and additional three months that can be shared between them (Alþingi 2000); and upon separation/divorce the general rule applies to cohabiting parents as to married parents: joint custody (Alþingi 2003a). Child benefits and other family-related benefits are calculated the same way for both types of union and are usually based on household income (Fjármálaráðuneytið 2004). In terms of taxation, cohabitants can decide whether they are taxed as individuals or as a couple with a joint taxation and thus, depending on the partner's income, being entitled to a tax discount (Alþingi 2003b). To a large extent, the same regulations still apply regardless whether couples are cohabiting or married in regard to the Social Security Act (Alþingi 2007), i.e. in terms of social security benefits, family and maintenance benefits, and pension.

Lone parents are on the other hand, in general, entitled to significantly more financial support than married or cohabiting couples. Social and family benefits are usually income-tested in Iceland (apart from the parental leave benefits which are income related) and are based on the household's income. In this regard, Iceland resembles the Anglo-Saxon countries, rather than the other Nordic countries (Krisjánsson 2011). In addition to the superior rights in terms of social and family benefits, lone parents are in many cases also prioritized when it comes to childcare placements and are entitled to reduced day-care fees (Alþingistíðindi 2000-2001; Kristjánsson 2011).

With some simplification the main differences between marriage and nonmarital cohabitation in Iceland relate to statutes regarding personal finances, in particular in relation to union dissolution and inheritance. There are no specific laws that pertain to financial matters of cohabiters or regulations that stipulate how couples shall split property upon union dissolution. According to principle, each cohabitant is responsible for his or her properties and liabilities, and it is the individual who is the sole owner of what (s)he acquires during the course of the union¹ (Alþingistiðindi 2000-2001). There is no joint maintenance obligation between cohabiters during the course of the union (while both have maintenance obligation towards their children), or general stipulations regarding the division of household work or regulations that encourage egalitarianism within the union as there are for married couples. Cohabitants can make a contract about joint financial affairs, which may include clauses about how to divide any property or debts upon separation, but the validity of such contracts have been contested in court. Cohabiting couples cannot make legally binding contracts which are based on the general rights and obligations of married couples, i.e. such an agreement would not be validated in court (Alþingistiðindi 2000-2001). Alimony payments of any kind after divorce are not common practise in Iceland.

Cohabitants do not have the same mutual reversionary rights upon death of a spouse as married couples. A cohabiting partner is not considered a legal heir, and unless there is a written testament all properties go to whomever is considered next of kin according to law. In cases where there is a written testament, the surviving partner is entitled to an inheritance-tax discount comparable to that of a widow/widower, but only if the union is registered. If the deceased had a child, a maximum of 1/3 of the properties can be reverted to the surviving partner with a written testament, and contrary to those in marriage, the surviving cohabitant does not have the right to retain an undivided estate (Alþingistiðindi 2000-2001; Friðriksdóttir 2011).

It appears that a large part of the population is not aware of many of the differences that exist between the legal statuses of these two unions. In a survey, conducted in 2011, around 50% of the respondents wrongly believed that the same regulations applied to nonmarital cohabitation as to marriage as long as the couple had a child together and/or if the union was registered. This view is also reflected in the small portion of cohabitants that have made any kind of an agreement between them about e.g. financial affairs; and only 2% of the respondents

¹ There are legal precedents where the courts have ruled that a cohabitant is entitled to a share of assets that have been acquired by the partner during the course of the union, albeit with consideration to the length of the cohabitation, any childbearing, and the financial solidarity of the couple (Friðriksdóttir 2011).

who said that they were cohabiting in the aforementioned survey had made a written testament (Friðriksdóttir 2011).

Data and Method

Data

In our analysis, we rely on official population-based register data made available to us by Statistics Iceland. Everyone in Iceland is assigned a specific identification number used for, among other things, administrative purposes. By using an encrypted version of this identification number we are able to merge individual-level information from different administrative population registers, which enables us to create full family-life histories of our subjects. This longitudinal data source gives us access to childbearing histories of the 1962-1997 birth cohorts of Icelandic-born women; their formal union histories (registered nonmarital cohabitation and marriage); and the information we need for censoring purposes (migration history, age, and time of death).

The data source ensures that the data are accurate; we do not have to rely on the memory of our subjects; sampling errors are of no concern; and the population-based approach facilitates all statistical inference. Any potential disadvantages are that our data are limited to demographic events (i.e. we do not have access to socioeconomic variables that could be of interest) and we do not have information on men. Also, we should keep in mind that the register data only contain official information. Informal cohabitation and other alternative living arrangements are not registered or covered in our dataset. We do not know when the actual cohabitation in terms of sharing a residence as a couple began, only when it was officially registered.

When constructing the union histories we combined data from two registers: Registry of Change (Breytingarskrá) and the National Registry (Þjóðskrá). The first is our main data source as it includes information about the year and month of change in marital status, while the latter consists of yearly data only. We rely on the latter and assign June as the missing month when information is missing from the Registry of Change (less than 1% of all observations). We follow women from the age of 15 onward, until the exact age of 45 and 11 months, or December 31, 2013, whichever comes first. Our study population consists of 71,006 women who were born in Iceland during 1962-1997.

Method

Our system of annual indices of first-(registered)-cohabitation risks and first-marriage risks

respectively is based on a version of indirect standardization (for details, see Hoem 1991, 1993). We produce these indices by estimating piecewise constant exponential regression models – the risks of entering registered cohabitation and the risks of getting married – relative to the risks in the baseline year 2003, after we have standardized for various demographic factors: age, parity, and cohabitation status (the last applies to first-marriage risks only). This method enables us to investigate the underlying behaviour as its features allow us to account for compositional changes in the study population over time that may influence union formation (Andersson 1998).

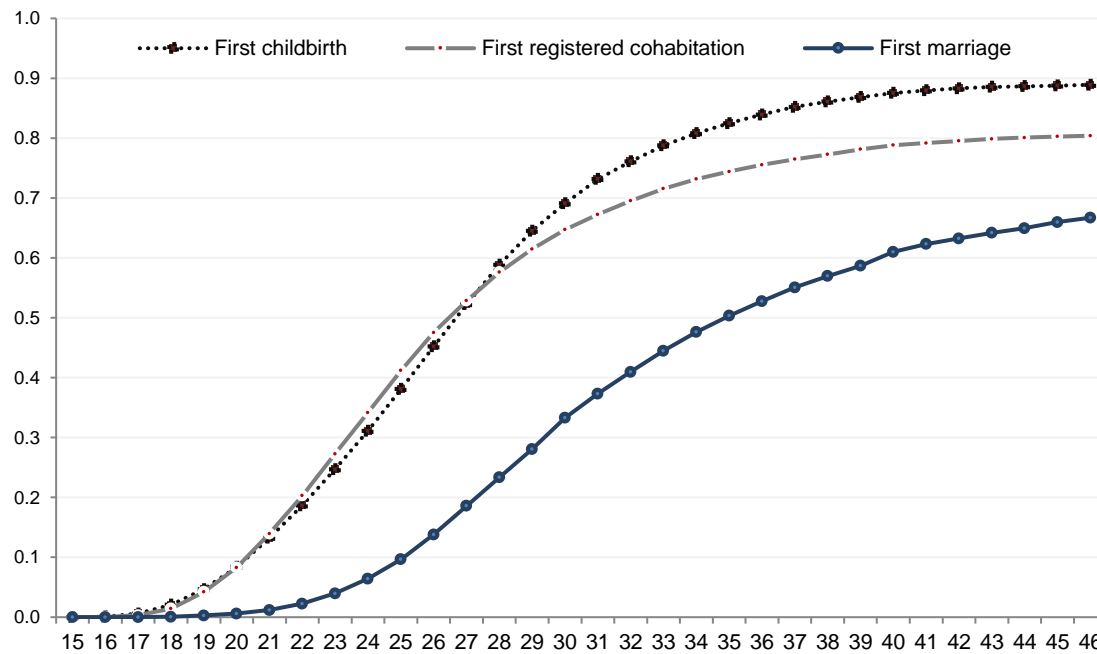
As the risk is dependent on both the exposure time and the number of registered events, any variation in our annual indices can reflect changes in either the timing of union formation, or the portion of women who enters a union (marriage or cohabitation) before age 46. To better distinguish between the two, we also present descriptive cumulative measures of the progressions to first cohabitation and first marriage by calendar-year groups. In all the analyses we study the two processes (first-registered cohabitation and first-marriage formation) independently of one another, with the exception that women are censored at first marriage when estimating the risk of first cohabitation (in cases where marriage precedes any first registered cohabitation).

In all our main-effects models, woman's age is the main duration variable, categorised into single-year groups of ages 15 to 45; and parity is included as a time varying covariate. In the marriage model, cohabitation status is included as a time-varying dummy, measuring whether women are living in registered cohabitation or not in any given month. All the variables are measured with a monthly accuracy. While our choice of baseline year is 2003, it is completely arbitrary as the general trends come out the same, regardless of base year. Our interpretations of the indices are comparable to those of a price index, demonstrating trends in prices relative to a given year (Andersson 1998) – hence, 2003 in our case. Women are right-censored at the time of any emigration after the age of 15, or death, and in our cohabitation-analysis at first marriage – whichever comes first. Observational spells that refer to periods prior to 1994 are left-truncated.

Results

First-registered cohabitation, first-marriage formation, and first childbirth during 1994-2013

Figure 2: Kaplan-Meier cumulative probabilities of first childbirth, first-registered cohabitation and first-marriage formation in Iceland, 1994–2013, by age of woman



Source: Icelandic register data, author's calculations

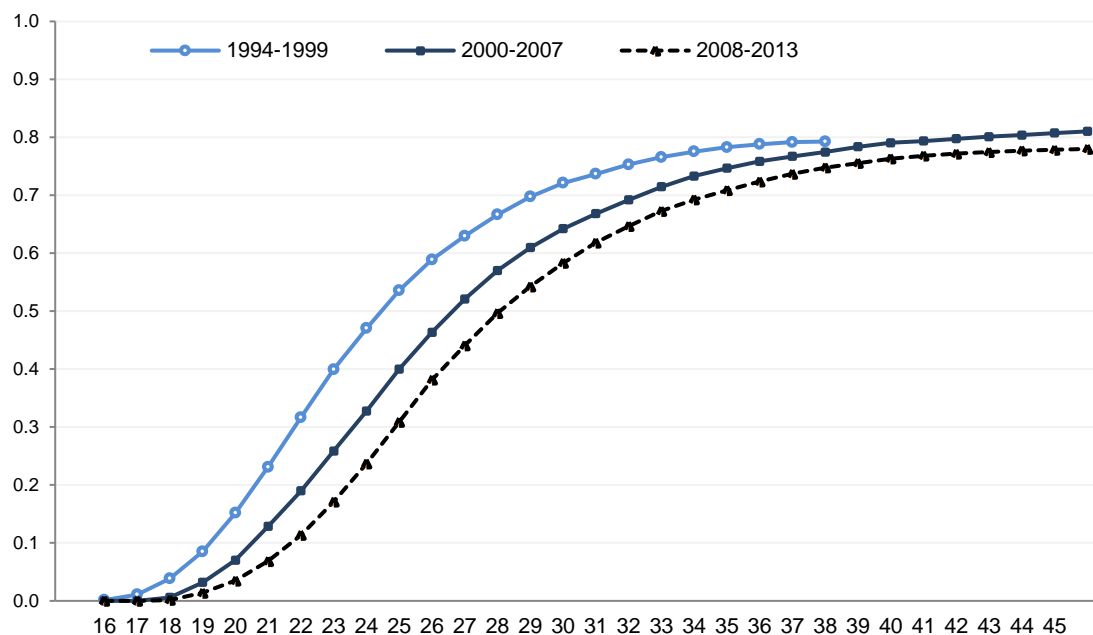
According to Figure 2 with cumulative probability estimates of synthetic cohorts of Icelandic women experiencing childbirth; registered premarital cohabitation; and marriage during 1994-2013, around 90% of women become mothers before age 46. Jónsson (2017) has shown that there is no evidence of increased childlessness in Iceland during the past three to four decades. With a potential risk of “aggregation fallacy”, i.e. the tendency to falsely infer standard sequences in real life courses from median ages (Billari 2001, 124), Figure 2 suggests that first childbearing and first formal cohabitation are closely associated: at age 28, 60% of women have given birth and the same portion has cohabited at least once, and the progressions to these two events, first registered cohabitation and first birth, go hand in hand.

For a large part of Icelandic-born women, registered cohabitation appears to be an intermediate step between childbearing and marriage. Cumulative incidence functions indicate that three in every four women choose registered cohabitation as their first formal union, compared to one-in-ten women who marry without having officially cohabited first (see Appendix: Figure A1); but also, that the majority of first-cohabiting unions are later

transformed into marriages. At age 30, one-in-three women have married according to our estimates, while more than twice as many have become a mother during our study period. At age 35 the portion of women who have married at least once has increased to 50%, and ten years later to almost 70% (Figure 2). This indicates that while the association between first-marriage formation and first childbearing appears weak (demonstrated in more detail below), marriage is indeed part of the more advanced stages of the life course for the majority of women. Any claims about marriage being a critically endangered social institution in Iceland should therefore be treated with caution.

Timing and quantum in the formation of first-registered cohabiting union in Iceland, 1994-2013

Figure 3: First-registered cohabitation Kaplan-Meier cumulative probability estimates, 1994-2013, by age of woman over calendar-year periods in Iceland



Source: Icelandic register data, author's calculations

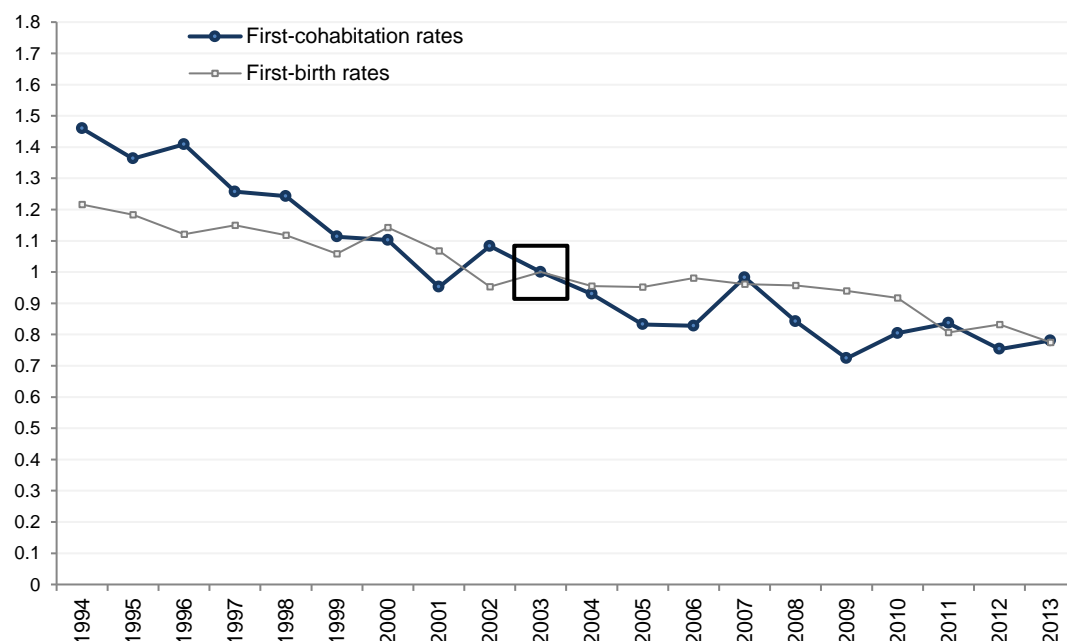
Figure 3 presents Kaplan-Meier synthetic cohort estimates of the cumulative probability of Icelandic women that enter first-registered cohabitation before turning 46 or marrying directly by calendar-year period (1994-1999, 2000-2007, and 2008-2013). The estimates indicate a rather forceful postponement of first-cohabitation formation over time, but only minor changes in terms of the fractions that eventually register cohabitation. On average

during 1994-2013, around 80% of women who do not marry directly cohabit formally before age 46, and this portion remained relatively stable during our study period. Over the 20 years, the age at which 50% of women had registered cohabitation had however increased by almost four years: the age when half of the women had formally cohabited shifted from being around 24 years in 1994-1999 to 28 during 2008-2013. The observed postponement results in an overall decline in the propensity to formally cohabit over time – as shown by the relative risks presented next.

Period trends in first-registered cohabitation formation

In Figure 4 we display the annual index of the propensity to register entry into cohabitation, relative to the baseline year 2003. These standardized rates provide robust estimates of any behavioural changes over time as we control for compositional changes in the study population in terms of age and parity. For illustration purposes, we also present similar age-standardized rates of first-birth fertility (cf. Jónsson 2017).

Figure 4: Relative risks of first-registered cohabitation and first-birth fertility in Iceland 1994–2013. Standardized for age of woman (and parity). Rates are relative to the rates in 2003

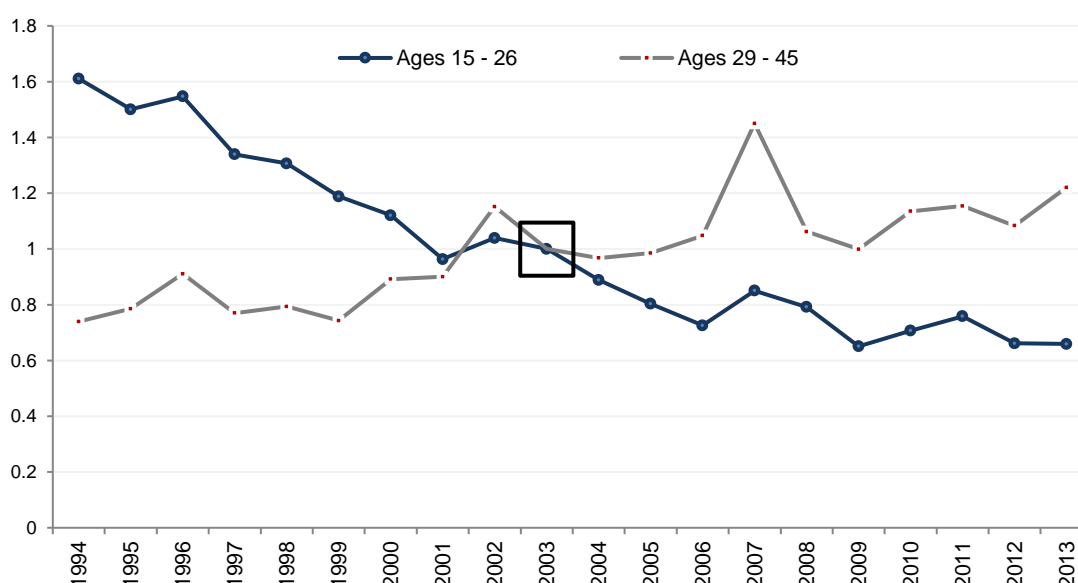


Source: Icelandic register data, author's calculations

As expected from previous accounts of postponed cohabitation patterns, we find a trend

of declining propensity to register first cohabitation between 1994 and 2006 (Figure 4), which are parallel to equally declining first-birth intensities, but also a subsequent period of relatively stable risks of entering first cohabitation at the end of our study period. At the beginning of our period, after we have standardized for age and parity, women had roughly 70% higher risk of registering cohabitation than they had in 2006, and almost 90% higher risk than in 2013. However, as was already established in Figure 3, the declining propensity to cohabit is merely a consequence of postponement of first registered cohabitation over time, and does not reflect a retreat from this type of union. Figure 5 depicts the same estimates from two separate age-specific models, which captures this development in more detail.

Figure 5: Relative risk of first-registered cohabitation in Iceland 1994–2013. Standardized for age of woman and parity, two age groups. Rates are relative to first-cohabitation rates in 2003 for each age group (separate models).



Source: Icelandic register data, author's calculations

Each of the annual indices presented in Figure 5 is comparable to the relative risks in the specific age group (15-26 and 29-45) it belongs to and does not tell us about differences in cohabitation-formation risks between the two aggregate groups. As before, we standardize for parity and age within each model. The estimates indicate a forceful decline in the propensity to register first cohabitation among women aged 15-26, and especially so between 1994 and 2006. Compared to 2003, these women had around 60% higher risk of entering cohabitation in 1994, and about 35% lower risk in 2013. Parallel to the declining propensity among younger

women to register cohabitation, there has been an increase at older ages. In 1994, the intensities of women aged 29-45 to formally cohabit were around 75% of the intensities in 2003, but ten years later, in 2013, they were roughly 20% higher (Figure 5). Next, we investigate any association between parity and registered cohabitation, and whether there are indications that this parity gradient has changed over time.

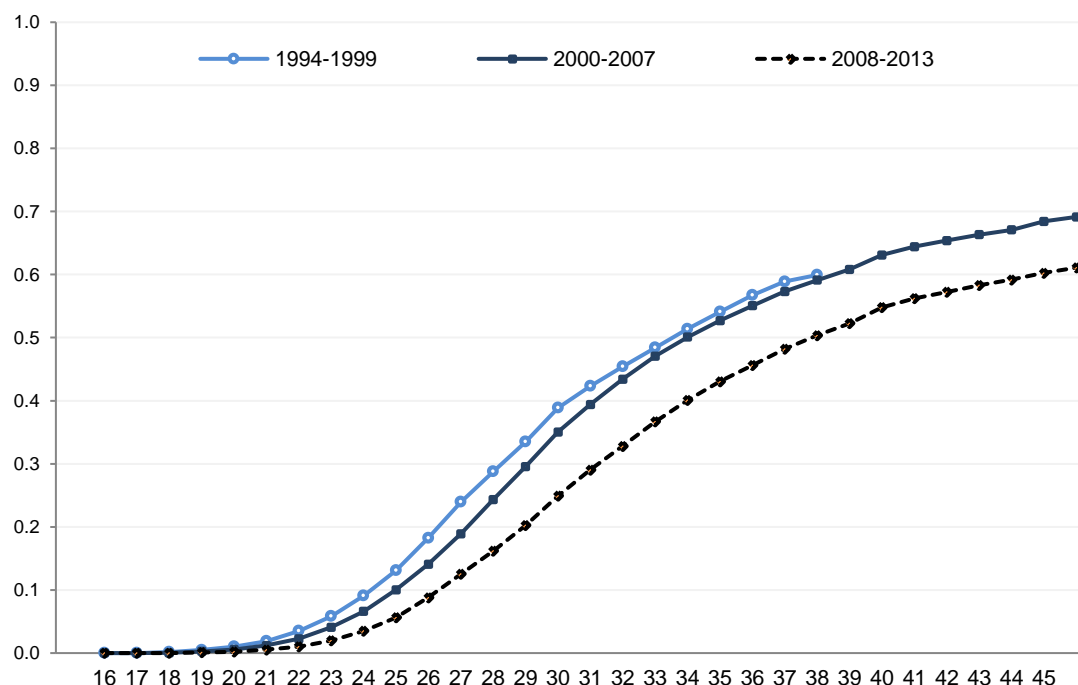
Table 1: Relative risk of first-registered cohabitation formation in Iceland, 1994–2013, by parity. Standardized for age of woman and calendar year

	Haz.ratio	P>z
Parity 0	0.53	0.000
Parity 1	1	...
Parity 2	0.84	0.000
Parity 3	0.59	0.000
Parity 4	0.28	0.000
Parity 5	0.21	0.029

Source: Icelandic register data, author's calculations

On average during the period, one-child mothers have almost 90% higher intensities to start cohabitation than childless women (Table 1). This manifests that the official registration of the union is often associated with first childbirth. After that, the propensities to formally start cohabiting decrease with each additional child. Further analysis reveals a declining propensity over time to register cohabitation among childless women (see Appendix, Figure A2), which suggests that unions are increasingly being registered post-birth rather than before becoming a mother. It is not inconceivable that family policies that enhance the rights of single parents, such as an income-threshold for child benefits or admission qualifications for day-care, might act as an incentive for couples to postpone union registration until later stages in the process of family building. We also detect a parallel trend of increase over time in the intensities to register cohabitation after the birth of the second child (Appendix, Figure A2). For discussion of related patterns in other European countries, see Noack (2001), Knijn et al. (2007).

Figure 6: Kaplan-Meier cumulative probability estimates of first-marriage formation, 1994–2013, by age of woman over calendar-year periods in Iceland



Source: Icelandic register data, author's calculations

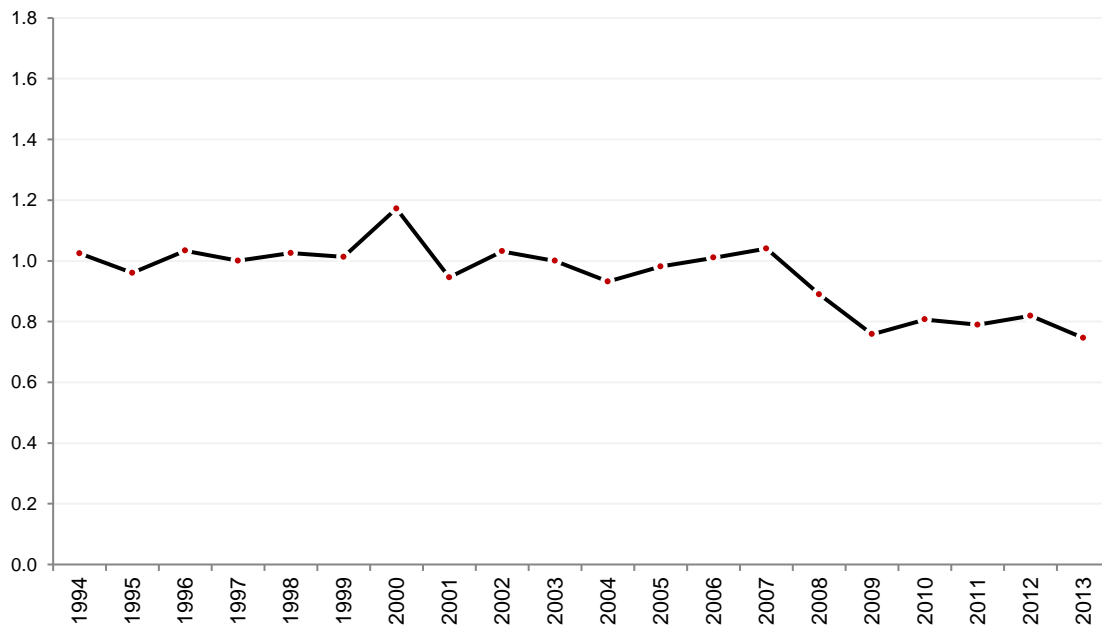
On the aggregate level, the observed increase in the age at which women register their first cohabitation appears to have had only marginal effects on the medium age at first-marriage formation during the first two periods we study, ranging from 1994 to 2007. Contrary to what we observed in Figure 3, the estimates in Figure 6 indicate that postponement of marriage was only minor during those initial years, and that the age at which 50% of women had married was roughly the same (34 years) during 1994-1999 and 2000-2007 respectively. Also, the shape of the two curves, depicting the cumulative probability estimates of women entering marriage, do not demonstrate any retreat from marriage during 1994-2007 (with the reservation that ages 39-46 are missing from our first-period).

A more palpable change occurs during the economic-crisis period, i.e. during 2008-2013. During and in the aftermath of the crisis, we both observe a forceful postponement of marriage, and, at age 46, that only 60% of women would eventually marry compared to around 70% in the preceding periods (Figure 6). In order to better depict these changes in nuptiality behaviour over time, we next present annual marriage rates that are standardized for age, parity,

and cohabitation status.

Changes in the force of marriage formation over time

Figure 7: Relative risks of first-marriage formation in Iceland 1994–2013. Standardized for age of woman, parity, and cohabitation status. Rates are relative to the rate in 2003



Source: Icelandic register data, author's calculations

According to the standardized first-marriage rates in Figure 7, the propensity to marry was relatively stable during 1994–2007. There are hardly any fluctuations in the rates between these calendar years, with the exception of a noticeable increase in year 2000, which is similar to millennium peaks observed in other Nordic countries (Ohlsson-Wijk 2011). Further analyses reveal only minor changes in the age schedule of first-marriage formation during 1994–2007 (not shown), and little evidence of the gradient of parity changing over time. With some good will, a small decline over time in the propensity to marry among childless and one-child mothers can be detected, and, similarly, a minor increase can be observed in marriage intensities among women at the higher parities (see Appendix, Figure A3).

In contrast, between 2007 and 2009 we observe a relatively sharp decrease in first-marriage rates (Figure 7). The propensity to marry during and in the aftermath of the crisis is only around 70–80% of what it was prior to the economic crash. A further inspection of our estimates indicates that the drop between 2007 and 2009 was a result of declining marriage intensities across all our parameters – age, parity, and cohabitation status – and that it was

sustained in subsequent years by lower marriage intensities among women under age 33 (not shown), at parities 0 and 1, and by women not yet in a formal cohabiting status (see Appendix, Figures A3 and A4 respectively). We conclude our battery of analyses with a closer look at the gradients of parity and cohabitation status in the marriage risks of Icelandic women.

Table 2: Relative risk of first-marriage formation in Iceland, 1994–2013, by parity and cohabitation status. Standardized for age of woman, and calendar year

	Haz. Ratio	P>z
Parity 0	0.86	0.000
Parity 1	1	...
Parity 2	1.30	0.000
Parity 3	1.36	0.000
Parity 4	1.36	0.000
Parity 5	1.67	0.000
Not in cohabitation	1	...
In cohabitation	5.27	0.000

Source: Icelandic register data, author's calculations

In general, and contrary to what we found regarding registered cohabitation, the propensity to marry increases with each additional child: on average, two- three- and four-child mothers have around 30-40% higher risks of getting married compared to one-child mothers, and around 50-60% higher risks than childless women, after we have standardized for calendar year, age, and cohabitation status (Table 2). Further, women who formally cohabit have on average a five-fold risk of marrying, compared to women not living in registered cohabitation. A further inspection reveals that these increased over time (see Appendix, Figure A4). This underlines that cohabitation is the main family-building institution in Iceland, while marriage appears to be more of a later-in-life venue of family change.

Discussion

Counter to expectations, we do not observe any increase over time in the propensity to enter registered cohabitation. The most palpable change in family formation that we observe during

the 20-year long study period is that of postponed entry into cohabitation (and thus decreasing risk of registering cohabitation), which goes in parallel with a trend of delayed parenthood (see Jónsson 2017). Presumably, the lack of increases in cohabitation can be traced to the pervasiveness of cohabitation that existed already at the beginning of our study period. According to our estimates, four in five women register nonmarital cohabitation before turning 46, and this portion remained constant throughout the study period (1994-2013).

Nonmarital cohabitation is integrated into Icelandic culture, and this family form is supported by legislation to the extent that almost no distinction is made between cohabiting and married couples in regard to childbearing and childrearing. In terms of Heuveline and Timberlake's (2004) ideal types of cohabitation with respect to family formation, Iceland appears to represent a country where cohabitation is indistinguishable from marriage. Nonmarital cohabitation enjoys general social acceptance and considerable institutional support; it does not seem to be viewed antithetical to marriage. The majority of first-cohabitation episodes are eventually followed by the transition to marriage (Heuveline and Timberlake 2004, 1217).

When it comes to first-marriage formation our findings are somewhat non-spectacular as the most interesting discovery is the stability in standardized first-marriage rates over time. We find scarce evidence of behavioural changes in first-marriage formation and we had to wait for an economic collapse before observing any notable decline in standardized first-marriage rates. Also, contrary to what one might expect: the postponement observed over time in the formation of first-registered cohabitation did not lead to decreases in first-marriage intensities – at least when we focus on the decade-and-a-half long period prior to the economic crisis in 2008. The median age at first-marriage formation remained largely the same during 1994-2007.

Our results suggest that marriage and cohabitation are motivated somewhat differently in Iceland. Registered cohabitation appears very child related as this family formation event appears to centre upon the arrival of children. This does not hold for marriage to the same extent. Within a context such as the Icelandic one, where the majority of children are born to unwed mothers and cohabitation has been semi-regulated, registered cohabitation should perhaps not be seen solely from the perspective of union formation. It should also be viewed from the perspective that registered cohabitation provides a semi-regulated status for prospective parents in relation to childbearing. Marriage on the other hand could be seen as providing an elevated union status to long-term couples.

Our conclusions do not necessarily contradict the ideological engine of the second demographic transition thesis: any decision to marry might still be very egocentric and

associated with one's self-fulfilment. Marriage may be a symbolic declaration (Strandell 2017), or even a way to show off social status (Cherlin 2004). In case of union dissolution or the death of a spouse, married couples still have rights that exceed those of cohabitants, which may act as an incentive for couples to eventually marry. Decisions to marry may thus be associated with the provision of legal benefits in relations to joint financial affairs, such as buying a home together (Holland 2012), especially if one cohabitant brings more to the table in terms of finances while the other has more responsibility for household chores and childrearing.

Our findings harmonize with views that most people may want to marry, regardless of the diffusion of cohabitation within a country, and, in the long-run, that the expansion of policies that regulate nonmarital cohabitation may have limited impact on propensities to marry (Parelli-Harris and Sánchez Gassen 2012). Nevertheless, albeit marriage appears to be a standard stage in family formation in Iceland, it is not a universal institution. According to our estimates a handsome portion of 30% of women had never married at age 45. At the onset of the economic crisis in 2008, marriage intensities declined quite sharply, and during 2009-2013 the propensity to marry was only 70%-80% of what it was prior to the crisis. This was mainly sustained by lower marriage intensities of younger women at lower parities, who were not in any formal union. Hence, the odds are positive that we will see recuperation in first-marriage rates in the years to come.

As a concluding remark: our estimates indicate that the high nonmarital birth rate in Iceland is mainly a consequence of women having children before marriage, but it does not signal any retreat from marriage. Marriage still is a later-in-life event and we find scarce evidence that the intensities to marry decline over time. Also, the vast majority of children appear to be born to unmarried couples but not to single women, an important distinction when analysing nonmarital childbearing (Thomson 2005). Most children will spend part of their childhood within the realm of marriage, but the extent to which this happens with two married biological parents or with a parent and step-parent awaits further analyses. In this study we painted the family-formation patterns with a broad brush in order to capture the main trends and development over time, at the expense of any other underlying trajectories and detailed sequences of events. Future research should investigate the extent to which union dissolution, especially with regard to cohabitation, and subsequent childbearing contribute to the diversity in family forms in Iceland, and to the relatively high fertility of the country.

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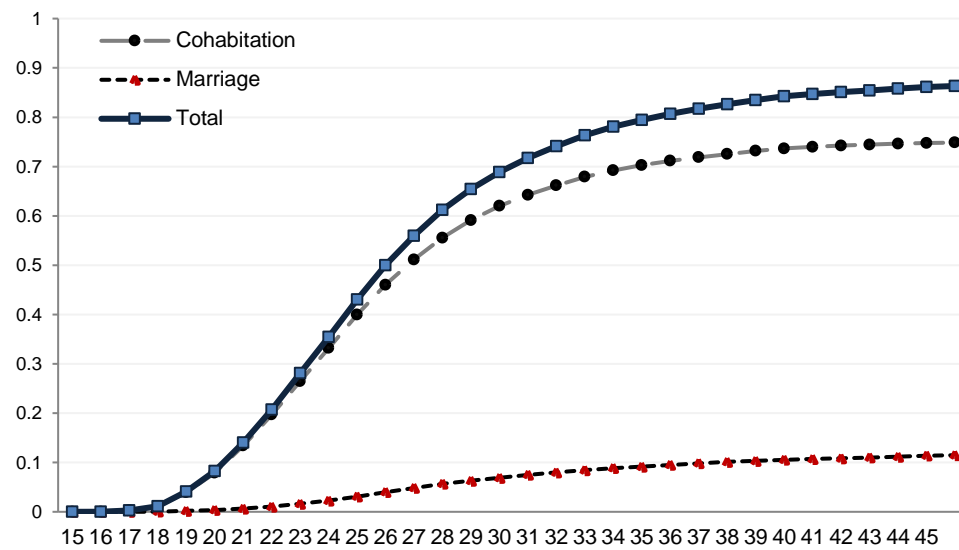
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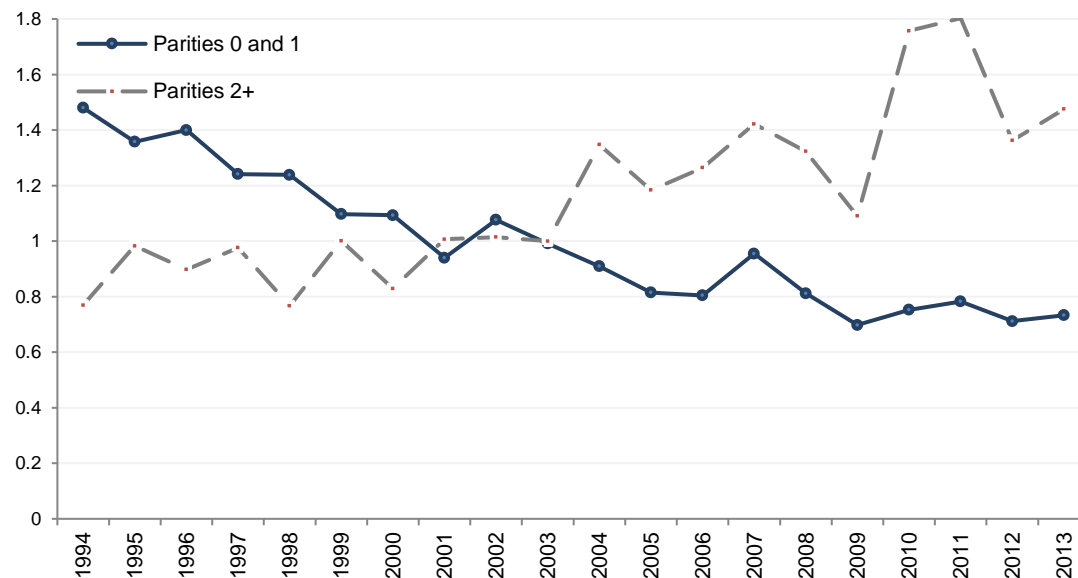
Appendix

Figure A1: Cumulative incidence functions: Marriage vs. cohabitation in Iceland 1994-2013, by age of woman. Competing-risks setup.



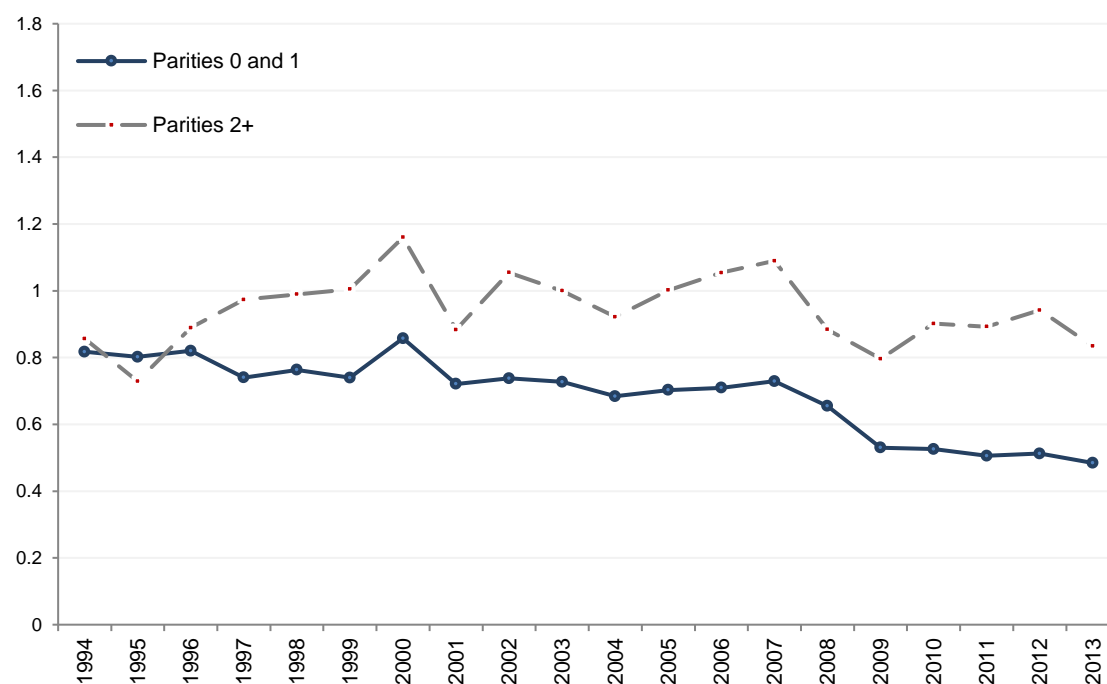
Source: Icelandic register data, author's calculations

Figure A2: Relative risk of first-registered cohabitation in Iceland, 1994-2013, by parity. Standardized for age. Rates are relative to the rates of women in parity 2+ in 2003.



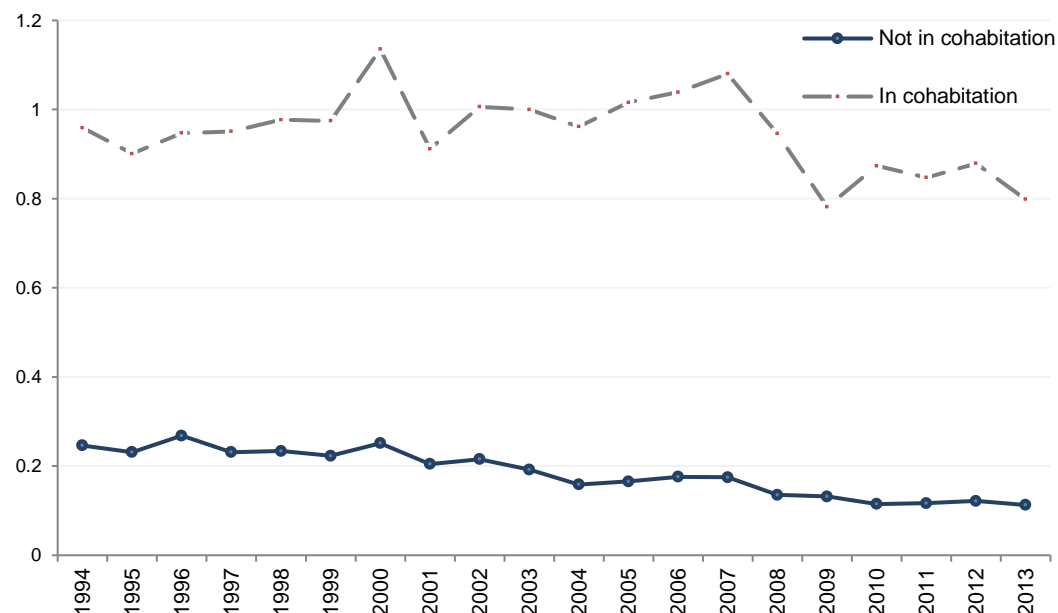
Source: Icelandic register data, author's calculations

Figure A3: Relative risk of first-marriage formation in Iceland, 1994-2013, by parity. Standardized for age and cohabitation status. Rates are relative to the rates of women in parity 2+ in 2003.



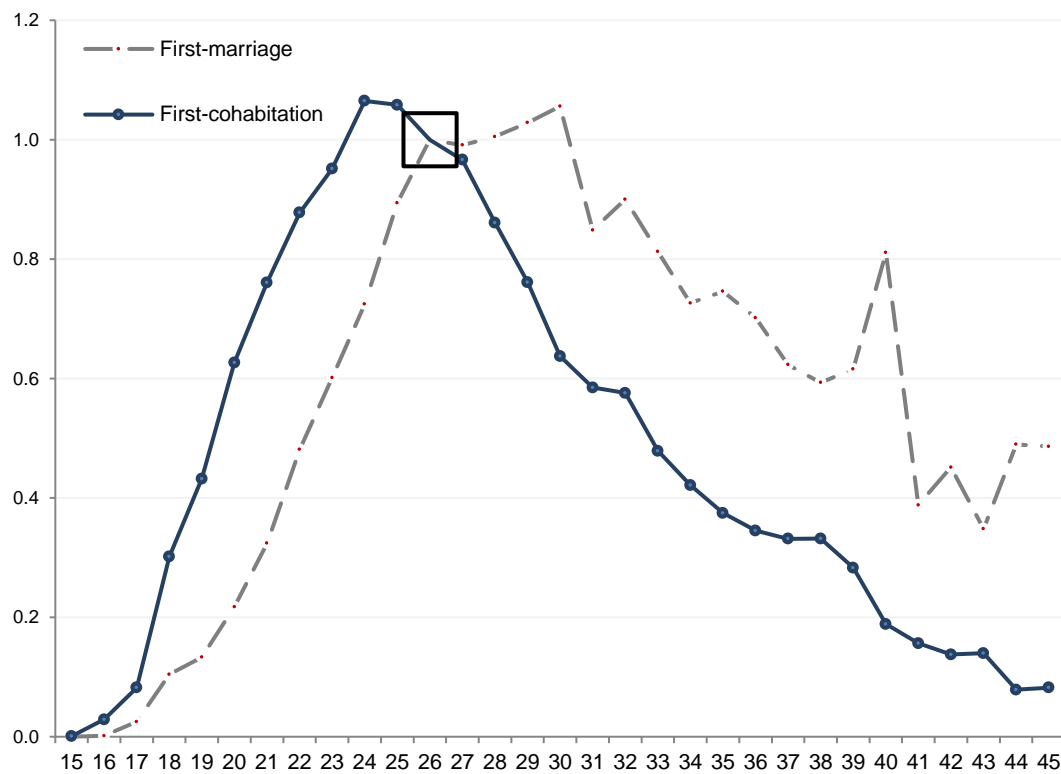
Source: Icelandic register data, author's calculations

Figure A4: Relative risk of first-marriage formation in Iceland, 1994-2013, by cohabitation status. Standardized for age and parity. Rates are relative to the rates of women in registered cohabitation in 2003.



Source: Icelandic register data, author's calculations

Figure A5: Relative risk of first-registered cohabitation and first-marriage formation in Iceland, 1994-2013, by age of woman. Standardized for calendar year and parity (both models), and cohabitation status in marriage-formation model. Rates are relative to the age of 26 for each union type (separate models)



Source: Icelandic register data, author's calculations

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