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JULY 2019

ISSN: 2365-9793

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ABSTRACT

Symbolism Matters: The Effect of Same-Sex Marriage Legalization on Partnership Stability*

We study the effect of marriage on the stability of formal partnerships exploiting same-sex marriage legalization in the Netherlands as a natural experiment. Same-sex marriage legalization allowed registered partnerships to be transformed into marriage. Since registered partnerships and marriages are similar in terms of rights and obligations we can investigate the effect of marital symbolism on the partnership stability. Using rich administrative data, we find that same-sex marriage legalization had two different effects. First, it increased the separation rate of existing same-sex registered partnerships. Second, partnerships that were transformed into marriage had a substantially lower separation rate. We take the second finding as evidence of the symbolic effect of marriage stabilizing partnerships.

JEL Classification: D78, J12, J15, J16, K36

Keywords: same-sex marriage, registered partnership, separation, duration analysis

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* The authors are grateful to seminar participants at EBRD and Tilburg, and conference attendants at EEA/ESEM 2017, ENTER Jamboree 2017, ESPE 2017, and Netherlands Economists Day 2017 for their helpful comments and suggestions on a previous version of this paper. The authors thank Statistics Netherlands (CBS) for making their restricted access micro-data available for analysis through a remote access facility.

1 Introduction

Many single individuals are involved in relationships that become more serious over time, i.e. follow a sequence from dating via cohabitation to marriage. In past decades, partnership formation has been changing. Formal relationships such as marriage have become less popular while informal relationships such as cohabitation are on the rise. Formal relationships are also becoming more diverse. In addition to marriage, some countries have introduced registered partnerships which are similar to marriage though not always exactly the same. Partnership formation is transforming as well in the sense that same-sex registered partnerships have been introduced and same-sex marriages have been legalized. With competing alternative types of partnership, it is interesting to find out whether marriage currently only has a symbolic meaning and whether it has a causal effect on partnership stability.

Whereas traditional different-sex marriage is a century-old institution of which the characteristics have been quite stable, same-sex marriages are an emerging phenomenon. After establishing registered partnerships in 1998, in 2001 the Netherlands was the first country to legalize same-sex marriages (Dee (2008) provides an early overview of same-sex partnership laws in Europe). We exploit same-sex marriage legalization in the Netherlands as a shock to marital institution to investigate the stability of same-sex formal partnerships already existing before the legalization. Our study goes beyond same-sex marriages and deals with understanding partnership formation. Although the difference between registered partnerships and marriages was mainly symbolic, quite a few registered partnerships were transferred to marriages. These transitions allow us to examine how the symbolism of marriage affects the stability of formal partnerships.

In our analysis we use rich administrative data from Statistics Netherlands. Our data facilitate to employ a bivariate mixed proportional hazard (MPH) model to investigate transitions from registered partnerships to marriage simultaneously with separations from registered partnerships. In the same model, we also study whether a partnership became more stable after transforming to marriage. Our method endows us with the capacity to make a distinction between two types of selectivity and "treatment". Selectivity may occur if inherently more stable relationships are more likely to transform into a marriage i.e. positive selection, or less likely to do so i.e. adverse selection. Alternatively, marriage may have a treatment effect if the transition from registered partnership to marriage renders the existing relationship more stable. We take into account these two types of selection effects and different stability of partnerships by allowing both observables and

unobservables to simultaneously affect transitions into marriage and separation. In our model two unobserved heterogeneity terms capture unobservables in the transition-to-marriage hazard and in the separation hazard, respectively. We rely on the correlations of these terms to account for selectivity. Therefore, we can establish a causal treatment effect of getting married on the stability of same-sex relationships.

We find that indeed after transforming into marriage, relationships became more stable than previous registered partnerships. The symbolism of marriage has a clear stabilizing treatment effect on same-sex partnerships even after accounting for the effect of divorce costs. We also find that same-sex marriage legislation increased separation of existing registered partnerships from before the legalization while at the same time initiating the transition to marriage. Comparing the stability of same-sex marriages and same-sex registered partnerships formed post-legalization, we find that marriages are more stable. Our results are robust against a wide range of sensitivity analyses.

The economic literature of partnership dynamics has focused on benefits and costs of marriage. Among them, only a handful of studies are on same-sex partnerships. Zavodny (2008) for example explores whether the earning premium of married men also applies to cohabiting gay men finding that this is not the case. A similar conclusion is drawn by Booth and Frank (2008). Jepsen and Jepsen (2002) compare matching of same-sex male couples, same-sex female couples, different-sex cohabiting couples, and different-sex married couples. Positive assortative mating is found for all traits across all types of couples while this effect is stronger for non-labor-market traits than for labor-market traits, and stronger for different-sex cohabiting couples than for same-sex (cohabiting) couples. Oreffice (2011) estimates the effect of intra-household-bargaining on gay and lesbian couples' labor supply discovering a similar pattern of bargaining for same-sex (cohabiting) couples as for heterosexual cohabiting couples: younger or richer partners in same-sex households have more bargaining power and supply less labor. This pattern is also established by Klawitter (2008). Lee Badgett et al. (2008) analyze data collected among self-identified same-sex couple in California, before the state legalized same-sex marriage, finding that economic motivations to register a partnership were limited.[1]

From an economic point of view, studying the stability of relationships is of importance in that partnership improves health and happiness while partnership dissolution harms

[1]Registered partnership in California was not equivalent to marriage as it was not portable across state lines and was not recognized by the federal government. Nevertheless, the Californian Supreme Court argued that marriage differs from a registered partnership not in its legal rights and responsibilities but only in its symbolic meaning and common understanding.

them (Kohn and Averett, 2014a,b; Chen and van Ours, 2018) and that children benefit from a stable parental relationship (Prickett et al., 2015; Reczek et al., 2016). Our contribution to the economic literature of partnerships is threefold. First, we add to the small literature on the economics of same-sex relationships (Farmer and Horowitz (2015)). Second, we exploit a policy change in marital institutions, i.e. the legal recognition of same-sex marriages as a natural experiment to examine the relationship between marital institutions and partnership stability. Third, our data allow us to study not only the stability of existing partnerships but also whether they evolved into a more advanced stage in terms of symbolic institution, i.e. from a registered partnership to a marriage.

2 Institutional Background

We study partnership formation in the Netherlands because its highly tolerant attitude to same-sex marriages facilitates our identification of the effect of the symbolic significance of marriage.[2] For example, in the Eurobarometer 2015, 91% (the highest proportion among all the EU 28 countries) of the Dutch respondents agreed on the statement that "same sex marriages should be allowed throughout Europe", while the average across the 28 countries of the European Union was only 61% (European Commission, 2015). In such an open-minded society and free atmosphere, compared to other countries, same-sex couples can enter and terminate a formal partnership with much less discrimination and external pressure. This kind of environment helps us to obtain a cleaner estimate of the effects of interest and might also make it possible to provide some implications for different-sex partnerships with our analysis.[3]

As in many other countries, the Netherlands experiences big changes in partnership formation. Marriages are declining while other types of relationships, including informal

[2]In the Netherlands, homosexual acts were decriminalized in 1811 following the integration of the country into the French empire (in France decriminalization occurred in 1791; see Waaldijk (2001)). The cross-country variation in decriminalization of homosexual acts is huge. In England and Wales, sex between two men was illegal until 1967 when it was decriminalized for men over 21 years of age. The decriminalization referred to "in private" meaning for example that men could not have sex in a hotel. A similar decriminalization was introduced in 1980 in Scotland and in 1982 in Northern Island.

[3]The high tolerance and open mind for same-sex relationships in the Netherlands may generate a concern on external validity of our analysis. In less tolerant countries, difference may appear due to discrimination against sexual minorities. However, the effect of the symbolism of marriage itself is unchanged. Since in this paper we are interested in the effect of the symbolic significance of marriage instead of the composite effect involving discrimination, we prefer a highly tolerant society like the Netherlands as our research context.

cohabitation and formal registered partnership, have become popular. In this section we briefly present the evolution of registered partnership and same-sex marriage in the Netherlands and discuss their similarities and differences.[4]

2.1 Registered Partnerships

Registered partnerships were introduced on January 1st, 1998 in the Netherlands. They have been open to both same-sex and different-sex couples since its initiation. Registered partners had many of the same rights and duties as married couples in for instance tax, property and inheritance. A registered partnership was "almost a clone of marriage" (Waaldijk, 2001). Scherf (1999) provides information from a survey of recently concluded registered partnerships. Same-sex couples were asked whether they would have concluded a marriage if this had been a possibility with over 80% confirming that this would have been preferred. About 60% indicated that they would transfer the registered partnership to a marriage should that become possible in the future. According to Scherf (1999) a registered partnership had the same consequences as a marriage except when children were involved. In a marriage, the birth of a child automatically implies that both partners are parents. In a registered partnership, only the biological mother was a parent in the eyes of the law whereas her partner was not considered as the other parent. Nevertheless, both partners could apply to court for joint custody of a child. On April 1st, 1998 the parenting law ended the privilege of married couples to adopt children. Since then, both individuals and couples in either a formal or an informal relationship regardless of their sexual orientation have been allowed to adopt a child. Thus in combination with this adoption law, the difference between marriage and registered partnership in terms of children disappeared.

From April 1st, 2001 to March 1st, 2009, married couples in the Netherlands were permitted to switch their marriage to a registered partnership. This could be followed by a convenient and less costly divorce process without the need to go to court.[5] Since

[4]For legal details of registered partnerships and marriages we rely heavily on Waaldijk (2001).

[5]From a research point of view, it is inconvenient that two different changes in marriage institutions, i.e. this flash divorce and same-sex marriage legalization, were introduced on the same day. Nevertheless, we are not concerned that this threatens the identification of our main effects of interest, i.e. the effect of same-sex marriage legalization and the effect of the symbolic significance of marriage. The flash divorce focused on the administrative process of transforming a marriage to a registered partnership which was easier to dissolve. However, we study the first registered partnerships of individuals, which were not targeted by the flash divorce. Moreover, if registered partners chose to marry because of the option of flash divorce, this kind of selectivity would be captured by our MPH model.

it was not always recognized abroad as a divorce and lacked the legal arrangements for children born from the marriage, this so called flash divorce procedure was abolished on March 1st, 2009. In part of our analysis, we exploit the flash divorce to estimate the effect of divorce costs cancellation – around 750 euro in total including court fees and legal fees (Government of the Netherlands, 2019; Teurlings Advocaten, 2019) – on the stability of different-sex formal partnerships. By comparing this effect with that of the symbolic significance of marriage, we throw light on the important role the latter plays in stabilizing formal partnerships.

2.2 Same-sex marriages

Waaldijk (2001) provides a detailed description of the characteristics of the same-sex marriage law in the Netherlands. After being approved in the Dutch parliament by the House of Representatives on September 12th, 2000 and the Senate on December 19th, 2000, on April 1st, 2001 same-sex marriage was legalized. Since then "a marriage can be contracted by two persons of different sex or of the same sex" (Article 30 of Book 1 of the Dutch Civil Code). For the first time in human history, same-sex couples were officially and legally offered marriage equality.

Figure 1 shows the annual numbers of new registered partnerships and marriages from 1998 to 2015. Panel a displays the development of same-sex formal relationships. Registered partnerships were popular only in the first year of their existence. After that, the number of new registered partnerships declined rapidly and then remained sort of constant from 2001 onward at the level of about 500 per year. After a spike in the first years of same-sex marriage legalization, there were about 1400 new same-sex marriages per year.

Panel b of Figure 1 illustrates the evolution of new different-sex registered partnerships and marriages. The different-sex couples present a completely different pattern. In 1998, approximately 90,000 marriages were formed. Up to 2001, registered partnerships were not very popular. With the initiation of the flash divorce, the number of new registered partnerships started to rise persisting at a level of around 10,000 per year from 2003 onward. Although initially many registered partnerships occurred because of the transition from marriage, later on new registered partnerships not immediately following a marriage became more dominant. After March 1st, 2009 due to the abolition of the flash divorce, new entries into registered partnerships were not preceded by a marriage.

– Figure 1 about here –

Why would couples transfer their registered partnership to marriage? As discussed previously, there is not much difference between registered partnership and marriage in legal rights and responsibilities as well as economic incentives. A small difference between them is how the relationship legally starts and ends. People that want to marry have to declare "in the presence of the witnesses that they accept each other as husband and wife and that they will faithfully fulfill all duties which the law connects to their marital status" (Article 67 of Book 1 of the Dutch Civil Code). Registered partners formally start by registering through a registrar. A divorce of marriage can be obtained only in court. However, a registered partnership can be dissolved through a contract if both partners consent and there are no minor children involved. If either of these two conditions is not met, the separation from a registered partnership should be dealt with in court too. As we will show below in our empirical analysis of the flash divorce, divorce costs related to court and legal fees had a significant effect but could not explain the whole effect of transition to marriage on the stability of formal partnerships. What still remains is the symbolic significance attached to marriage, i.e. the public commitment and the symbol of individual prestige and personal achievement. When both marriage and registered partnership are options (after 2001 in panel a and all the years in panel b of Figure 1), choosing to enter a marriage rather than a registered partnership may signal a strong public commitment and personal achievement. Figure 1 displays that indeed many more new couples irrespective of sexual orientation preferred marriage to registered partnership.

3 Data

In our analysis, we use rich administrative data from Statistics Netherlands. The high quality individual level data include personal characteristics such as the country where the person was born, gender, immigrant status, birth year and month. There is also detailed information of every marital status of all individuals in the population, such as the beginning and ending dates, the birth year and month of the partner, the country where the partner was born, and the gender of the partner.

In order to make the administrative data available for our analysis we had to address a number of issues. First, we identified the sexual orientation of every person by comparing their gender with the gender of their partner in every formal partnership, i.e. registered partnership or marriage. Second, since the focus of our analysis is on the duration of formal partnerships, we established the start date of every formal relationship and when

applicable the end date. We also constructed some partnership characteristics such as the age difference between the two partners and whether the partners share the same origin, i.e. were born in the same country. Third, we gathered all, around 70,000, same-sex partnership records. In part of our analysis, we also investigate the stability of different-sex partnerships. We randomly sampled approximately the same number of different-sex partnerships for comparison due to the highly demanding computational capacity of our model estimation. Finally, since registered partnerships were legalized in 1998, we use data about partnership formation from January 1st, 1998 onward. We follow only the first partnership of individuals starting until December 31st, 2005 to eliminate that the duration of one's later partnership was influenced by one's experiences of previous partnerships. We trace every partnership for a maximum of ten years until either their termination or the censoring time (death, widowhood, or end of data period). The reasons for such a data tailoring are that (1) partnerships with entry later than December 31st, 2005 are too far away from the year of same-sex marriage legislation, (2) these partnerships only contribute to estimates of short spells, and that (3) censoring every partnership at 10 years makes a comparison easier. The definitions and descriptives of the relevant variables in the baseline model are provided in Appendix A.

– Figure 2 about here –

To illustrate the nature of our data, we present survival functions of same-sex registered partnerships and marriages in Figure 2. Panel a shows same-sex female relationships and panel b displays same-sex male relationships. In both panels the left-hand side graphs present survival functions of registered partnerships that started before the legalization of same-sex marriages. The right-hand side graphs do the same for registered partnerships established after this legalization. Each graph indicates the transition to marriage and the cumulative transition to marriage and separation. There is a clear difference between the left-hand side and right-hand side graphs. Registered partnerships that started before same-sex marriage legalization are less likely to survive. After 10 years, 20 percent of them transformed to marriage and 10 (males) to 15 percent (females) ended in separation. Registered partnerships established after the same-sex marriage law are as likely to separate but less likely to transform to marriage. This is no doubt related to the choice couples had to immediately go for a marriage rather than start with a registered partnership.

Previous studies on the stability of same-sex partnerships compared this stability with that of different-sex partnerships and explored the reasons for their difference (Carpenter

and Gates, 2008; Kurdek, 2004; Lau, 2012; Manning et al., 2016). The lower stability of same-sex partnerships may be related to the lower degree of household specialization exhibited among same-sex couples, especially female same-sex couples, compared to different-sex couples (Aldén et al., 2015). However, this specialization gap narrows across cohorts (Giddings et al., 2014). Because different-sex and same-sex couples from recent cohorts have become similar in terms of economic incentives such as specialization (Giddings et al., 2014), our result on the effect of divorce costs on the stability of different-sex marriages may shed some light upon same-sex partnerships too. Becker (1991) notes that "homosexual unions are much less stable than heterosexual marriages" and that economic forces are responsible for this. Becker relates this to the higher search costs for homosexuals due to the "opprobrium attached to homosexuality" because of which, there is less information available making it harder to form stable relationships. Furthermore, since same-sex unions are less formalized, they dissolve at lower costs than different-sex marriages. However, when same-sex and different-sex couples face the same formal relationship the difference in terms of stability of the relationship may disappear. Therefore, it is interesting to compare the stability of same-sex and different-sex marriages that were established after same-sex marriage legalization. As shown in Figure 3, during the first years of their existence, different-sex marriages had the lowest divorce risk, but later they were less stable than same-sex male marriages. Same-sex female marriages had the lowest survival probability. Clearly, after same-sex marriage legalization the stability of marriages of same-sex and different-sex couples is not very different.

– Figure 3 about here –

4 Statistical Model

Farmer and Horowitz (2015) present a theoretical model in which same-sex couples follow a sequence in their relationship from dating via cohabitation to marriage. The last transition in their relationship may not occur if they live in a jurisdiction that prohibits same-sex marriage. Over time, partners gain information about the quality of the relationship and over the sequence of relationships both benefits and separation costs increase. Cohabiting same-sex couples can migrate to a jurisdiction that allows for same-sex marriages. Whether or not a cohabiting couple will migrate depends on the migration costs and the probability that in their current jurisdiction same-sex marriages will be legalized. If the probability for same-sex marriage legalization increases, this may lead to

relationships breaking up if one partner desires to marry but the other prefers to remain cohabiting.

Following their model, we investigate the effects of same-sex marriage legalization on the stability of same-sex registered partnerships. Registered partnerships can be terminated through either dissolution or transformation to marriage. We are also interested in whether subsequent marriages are more or less stable than the preceding registered partnerships. To examine both effects, we use a bivariate mixed proportional hazard approach modeling the transition processes to separation and to marriage simultaneously. Marriage entry may exert a treatment effect on the stability of same-sex registered partnerships. Therefore, we account for the possibility that after a transformation to marriage, the separation hazard changes. We begin our analysis with registered partnerships that were established before the introduction of the same-sex marriage law.

We model the transition rate from a registered partnership to marriage as follows. The marriage rate at duration t conditional on a vector of observed characteristics x and unobserved characteristics ν_m is specified as

$$\theta_m(t|x,\nu_m) = \exp(x'\beta_m + \Sigma_k \mu_{mk} I_k(t) + \nu_m). \tag{1}$$

The subscript m denotes transformation to marriage. The vector x includes the absolute age difference between the partners in a couple, whether the couple shares the country of origin, and whether the couple is native or first or second generation immigrant. Furthermore, this vector also includes birth year cohorts, age cohorts of partnership entry, and partnership entry year dummies. The term $\Sigma_k \mu_{mk} I_k(t)$ represents piece-wise constant duration dependence, i.e. duration dependence that is constant in specific intervals where $k = 1, 2, ..., K$ is the subscript for duration intervals and $I_k(t)$ are indicators which are equal to one in corresponding consecutive intervals. The true distribution of duration dependence can be arbitrarily closely approximated with a large number of duration intervals. We employ four duration intervals ($K = 4$; 0-1, 1-3, 3-7, and longer than seven years) and normalize $\mu_1 = 0$ for identification. Note that since a transition to marriage cannot take place before the legalization of same-sex marriage, the duration of transition to marriage is counted from the date of legalization.

The conditional density function of a completed registered partnership duration transitioning to a marriage can be written as:

$$f(t_m|x,\nu_m) = \theta_m(t_m|x,\nu_m) \exp(-\int_0^{t_m} \theta_m(s|x,\nu_m)ds) \tag{2}$$

in which t_m represents the duration of the registered partnership until it transformed to marriage. Likewise, the separation hazard of a registered partnership at time t is as follows:

$$\theta_s(t|x, I_L, I_m, \nu_s) = \exp(x'\beta_s + \delta_L I_L + \delta_m I_m + \Sigma_k \mu_{sk} I_k(t) + \nu_s). \tag{3}$$

Similarly, the subscript s denotes separation. The vector x contains the same observed characteristics and the pattern of duration dependence is the same as before. New elements in the specification of the separation rate are the two indicator variables. The first is $I_L = I(t > t_L)$, which denotes whether or not the duration of the registered partnership was beyond the legalization of same-sex marriage on April 1st, 2001. Although this is a fixed calendar date, registered partnerships started at different points in calendar time. Thus different couples passed the date of legalization at different durations of their registered partnership. Therefore, we are able to distinguish this effect from duration dependence. The parameter δ_L captures the effect of same-sex marriage legalization on the separation hazard. A positive δ_L would indicate that the legalization raised the separation rate possibly due to disagreement between the partners on the next phase of the relationship, i.e. marriage (Farmer and Horowitz, 2015). A negative δ_L would represent a stabilizing effect of same-sex marriage legalization. The second indicator variable in the separation hazard is $I_m = I(t > t_m)$ which denotes whether a registered partnership was transferred to a marriage. The parameter δ_m identifies the change in the separation risk after getting married. A negative δ_m would imply that marriage induced relationships to become more stable while a positive δ_m would imply that marriage was less stable than the preceding registered partnership.

The conditional density function of a completed registered partnership duration ending with a separation can be written as:

$$f(t_s|x, I_L, I_m, \nu_s) = \theta_s(t_s|x, I_L, I_m, \nu_s) \ \exp(-\int_0^{t_s} \theta_s(t|x, I_L, I_m, \nu_s)dt) \tag{4}$$

where t_s denotes the duration of the registered partnership until it dissolved. In our analysis it is important to account for potential selectivity in the transition from registered partnership to marriage. Registered partnerships that were transformed to marriage may be different for unobserved reasons from those that were not. It could be that more stable registered partnerships switched to marriage while less stable ones dissolved. If this were the case and we failed to take such a selectivity into account, we might wrongly interpret a significant negative estimate of δ_m as a treatment effect, i.e. a stabilizing effect of marriage on formal partnerships.

To disentangle the selection effect from the treatment effect of marriage, we model the transitions from registered partnerships to separation and to marriage simultaneously and allow the two corresponding unobserved heterogeneity components ν_s and ν_m to be correlated. These two components represent common unobserved time-invariant confounding factors. A major advantage of utilizing this kind of approach is that, as shown by Abbring and Van den Berg (2003), identification of the treatment effect does not rely on a conditional independence assumption and it is not necessary to have a valid instrumental variable to establish a causal effect. Instead, identification comes from the timing of events, namely the order in which separations and transitions to marriage occurred. To establish whether one event has a causal effect on the hazard of the other event, the key identification assumption is no-anticipation. This assumption imposes a recursive structure on the underlying process. No-anticipation does not imply that forward-looking individuals cannot have an expectation on possible future events. As long as they do not act on this expectation by changing outcomes, the no-anticipation assumption is not violated (Abbring and Van den Berg, 2003). In the context of our study, the no-anticipation assumption allows for the possibility that a couple in a registered partnership planned to marry in the future. This assumption still holds if the couple did not change the duration of their current registered partnership in response to their expectation or plan of marriage. First, it does not make sense that couples brought forward or postponed their previously planned marriage merely because they scheduled this marriage before. Second, if a registered partnership dissolved since one partner proposed marriage while the other did not want it and hence decided to separate, this is taken into account in our model investigating the effect of same-sex marriage legalization.[6] Identification also relies on the mixed proportional structure of the hazard rates. We use a very flexible specification of the hazard rates as we do not impose functional form assumptions on age dependence or on the distributions of unobserved heterogeneity in the hazards of marriage and separation.

The joint conditional density function of completed durations of registered partnerships that end with either separation or with marriage can be specified as

$$f(t_m, t_s|x, I_L, I_m) = \int_{\nu_m} \int_{\nu_s} f(t_s|x, I_L, I_m, \nu_s) f(t_m|x, \nu_m) dG(\nu_s, \nu_m) \tag{5}$$

in which $G(\nu_s, \nu_m)$ is the joint discrete distribution of the two unobserved heterogeneity

[6] As a sensitivity analysis to further alleviate concerns on anticipation effects, we employ a subsample in which we discard registered partnerships that were established between one quarter before and one quarter after same-sex marriage legislation. The parameter estimates are very similar.

components each of which is supposed to take two values. Because we also estimate constants, we normalize $\nu_{s1} = \nu_{m1} = 0$. The associated probabilities are

$$p_1 = \text{Prob}(\nu_s = \nu_{s1}, \nu_m = \nu_{m1}) \qquad p_2 = \text{Prob}(\nu_s = \nu_{s2}, \nu_m = \nu_{m1})$$
$$p_3 = \text{Prob}(\nu_s = \nu_{s1}, \nu_m = \nu_{m2}) \qquad p_4 = \text{Prob}(\nu_s = \nu_{s2}, \nu_m = \nu_{m2})$$

where p_j is assumed to follow a multinomial logit distribution: $p_j = \frac{\exp(\alpha_j)}{\sum_j \exp(\alpha_j)}$, in which α_j is a set of parameters, for $j = 1, ..., 4$ with α_4 normalized to zero. In this MPH-structure the assumption is that the unobserved components are random effects, i.e. they are orthogonal to the explanatory variables. Since both the separation hazard and the transition-to-marriage rate are assumed to have two types, in combination there may be four types. Modeling the selection effects, these two sets of unobserved heterogeneity are able to capture some important elements of a partnership such as preferences of a couple and quality of a partnership. A combination of easy separation and easy marriage indicates an impulsive couple that is usually in a low quality partnership, while a combination of low separation and difficult marriage refers to a cautious type. Both of these represent adverse selection. The remaining two combinations imply types with positive selection — partnerships with low separation risk more likely transform to a marriage and unstable partnerships also have a low marriage rate. Equation (5) is used as basis for our log-likelihood function that is maximized over all parameters. We perform separate estimations for male and female same-sex couples.

5 Parameter Estimates

5.1 Duration of Same-Sex Partnerships

Table 1 provides an overview of the main parameter estimates based on same-sex registered partnerships that were formed before same-sex marriage legalization.[7] Panel a reports the results of competing risks models, while panel b displays the outcomes of single risk models that ignore the correlation between the unobserved heterogeneity components of the two transition rates.

Our main interest is twofold. First, we explore the effect of same-sex marriage legalization on the separation hazard. Second, we want to know whether or not marriage stabilized its preceding registered partnership. Although the magnitudes of the effects differ between female and male partnerships, our main findings are very similar. The

[7] All parameter estimates are presented in Appendix B.

same-sex marriage law increased separation rates by almost 50% ($\exp(0.39) - 1$) for female partnerships and about 200% for male partnerships. Moreover, registered partnerships that were replaced by marriages were more stable than before. Getting married reduced the separation hazard by 68% for female partnerships and 98% for male ones. Both effects are significantly different from zero.

We also find positive duration dependence in the separation hazard. After their first year, registered partnerships were more likely to dissolve. In later years, the separation rate did not change much. The transition rate from registered partnership to marriage shows a strong negative duration dependence. In the first year after same-sex marriage legalization, the marriage rate was high. In later years the transition rate was substantially lower.

The distribution of unobserved heterogeneity according to the estimates in panel a is presented at the bottom of the table. As shown, we can identify three combinations of separation rates and marriage rates. There is no group which conditional on observed characteristics and duration dependence has a low separation hazard and a high marriage rate.[8] The main difference between females and males is that the largest group for males is the one that has low transition rates to both separation and marriage whereas for females there is also a substantial group with a combination of low transition rate to marriage and high separation hazard.

– Figure 1 about here –

Panel b of Table 1 shows the relevant parameter estimates if we do not take the correlation between the unobserved heterogeneity components of the two transition rates into account. The results for female same-sex couples are similar to those in panel a.[9] Therefore, we cannot reject the hypothesis that there is no correlation between the unobserved heterogeneity components. For male same-sex partnerships the difference between the competing risks and single risks estimates is significant.[10] Apparently, selectivity is an

[8]The associated probability of the group which conditional on observed characteristics and duration dependence has a low separation hazard and a high marriage rate converges to zero. A low separation rate signals a stable relationship. For these relationships there is no urgent need to transfer into a marriage. Hence for this group the marriage rate is low across the board. For relationships with a high separation rate, there are two types: one impulsive type very likely to transform to a marriage, the other type not very likely to make this transition.

[9]The absolute sum of the log-likelihoods of the separation estimates in panel b is 4081.0, which is almost identical to the minus log-likelihood of the joint estimate in panel a that has a value of 4080.7.

[10]Since the absolute sum of the log-likelihoods in panel b is 4374.5 and in panel a it is 4370.0, the

issue for male same-sex registered partnerships. There is adverse selection, i.e. partnerships that were less likely to dissolve were also less likely to transform into a marriage, and partnerships that would have been more likely disrupted were more likely to enter a marriage.

How can we interpret our main findings? For those that made the transition to marriage, the relationship became more stable. Note that according to our estimates this is not due to the selection effect such that more stable registered partnerships transferred to marriage. It is even the other way around. Less stable male same-sex partnerships were more likely to enter a marriage. Providing that marriage and registered partnership are equivalent in legal and economic functions, we attribute this stabilizing treatment effect of marriage to its symbolic significance and higher separation costs.

We think that the effect of same-sex marriage legalization on the stability of same-sex partnerships may be caused by disagreement between couple on future marital arrangement. Perhaps, after the law one partner wanted to marry while the other preferred to keep the current status. The disagreement between them may have induced a dissolution of the registered partnership. As suggested by Farmer and Horowitz (2015), escalation to a more advanced relationship requires agreement. When through legalization, marriage becomes an option for same-sex couples, the costs of marriage entry drop. Thus, there are two possibilities for low quality same-sex registered partnerships. First, one but not both partners passes a threshold in his or her utility function. So, one partner prefers to enter a marriage while the other partner prefers to stay in a registered partnership. This induces conflict increasing the separation rate, which is captured by our parameter estimate of same-sex marriage legalization. The second possibility is that both partners in a low quality registered partnership pass their marriage threshold in their utility function and hence agree to marry. However, the essence of their marriage, its inherent low quality, determines the separation in the future. This is reflected in the adverse selection captured by the correlated unobserved heterogeneity in our model.

Table 2 confirms that same-sex marriages were more stable than same-sex registered partnerships. It presents parameter estimates of the same model using a sample of the first marriages and registered partnerships that started after same-sex marriage legalization. These first partnerships are tracked until the abolition of flash divorce. We simply compare the stability of these first marriages and registered partnerships. A registered partnership was censored at the time when it transformed to marriage. As shown in

value of the Likelihood Ratio test equal to 9.0, which with one degree of freedom is significantly different from zero.

the table, the separation risk of marriages was significantly lower than that of registered partnerships (reference group). After the legalization of same-sex marriages, more stable couples decided to marry while less stable couples went for registered partnership.

– Figure 2 about here –

5.2 Flash Divorce and Duration of Marriages

In this subsection, we explore the effect of canceling the higher divorce costs of marriage on the stability of different-sex marriages. In the highly tolerant Dutch society for sexual minorities, different-sex and same-sex couples are even more similar. The result may imply that divorce costs do not account for the whole stabilizing effect of marriage identified in the previous subsection.

From April 1st, 2001 to March 1st, 2009, both different-sex and same-sex married couples could terminate their marriage through a convenient and less costly process, the so called flash divorce. These couples first changed their marital status to registered partnership. Then they chose whether to end the registered partnership or not without going to court. It may save up to around 750 euro by divorcing through this special procedure. We exploit the flash divorce to analyze how divorce costs affected the separation hazards of different-sex marriages. The effect of flash divorce cannot be identified for same-sex marriages since this type of marriages did not exist before April 1st, 2001. The model specification is slightly adjusted based on equation (3). The separation rate of marriages is defined as:

$$\theta_s(t|x, I_{FD}, I_{BFD}, \nu_s) = \exp(x'\beta_s + \delta_{FD} I(t > t_{FD}) + \delta_{BFD} I(t > t_{BFD}) + \Sigma_k \mu_k I_k(t) + \nu_s) \quad (6)$$

in which the indicator variables I_{FD} and I_{BFD} denote the time of the introduction and the abolition of flash divorce. Furthermore, δ_{FD} captures the effect of flash divorce introduction and δ_{BFD} is the effect of abolishing the flash divorce. The density function of completed durations of marriage, i.e. the durations until a separation took place can be written as:

$$f_s(t|x, I_{FD}, I_{BFD}, \nu_s) = \theta_s(t_m|x, I_{FD}, I_{BFD}, \nu_s) \ \exp(-\int_0^{t_s} \theta_s(t|x, I_{FD}, I_{BFD}, \nu_s)dt). \quad (7)$$

We remove the unobserved heterogeneity by integration

$$f_s(t|x, I_{FD}, I_{BFD}) = \int_{\nu_s} f_s(t_s|x, I_{FD}, I_{BFD}, \nu_s) dH(\nu_s) \quad (8)$$

where $H(\nu_s)$ is the distribution of unobserved heterogeneity which we assume to be discrete with two points of support following a logistic distribution.

Column (1) of Table 3 displays the parameter estimates of different-sex marriages that began from 1998 onward.[11] The introduction of flash divorce significantly raised the separation hazard of different-sex married couples by 48% ($\exp(0.39) - 1$). Quite a few different-sex couples who got married between January 1st, 1998 and April 1st, 2001, took advantage of this convenient divorce procedure to end their marriage right after this procedure was available.[12]

– Figure 3 about here –

The flash divorce procedure was abolished on March 1st, 2009. In the first column of Table 3 the flash divorce ban had an insignificant effect on the divorce rate of different-sex couples, which was due to the gradual decline in separation between the flash divorce introduction and its abolition. The second column reports the parameter estimates for different-sex marriages that started after the introduction of the flash divorce law. Also for them, the effect of flash divorce abolition was not significantly different from zero. Just for comparison, we present the estimates for same-sex marriages too in the third and fourth columns. For these marriages, the flash divorce ban had no significant effect on the separation rate either.

One of the issues that remain is the importance of children. Children may be a vital factor influencing a couple's decision of whether or not to separate. However, children will not be a big issue in our main analysis since the sample consists of the first registered partnerships only. The vast majority of same-sex couples (81% for females and 99% for males) did not have a child living at home.[13] Still, we used information about the number of children living at home in another dataset (household administrative data) and added it to our baseline model. The main parameter estimates shown in Appendix C are hardly affected.

[11] We estimated a version with unobserved heterogeneity but both ν and α were very imprecisely estimated. Also, the LR test did not reject the version reported. The complete estimation results of Table 3 are presented in Appendix B.

[12] In a sensitivity analysis we notice that from the second year onward the flash divorce had no significant effect on the separation hazard.

[13] In the descriptives table of Appendix A, the average number of children is 0.31 in the household of lesbian women and 0.01 in that of gay men.

6 Conclusions

Over the past decades, marriage has been deinstitutionalized in the sense that its legal and economic functions have been impaired or replaced by other types of relationships. Moreover, registered partnership and marriage have been available in many countries to same-sex couples who had been excluded from this kind of legal institution. In these countries, differences between registered partnership and marriage are small or basically non-existent except for the divorce costs and symbolic significance attached to marriage, including enforceable public commitment and marker of personal achievement.

Same-sex marriage legalization is a recent phenomenon that provides an opportunity to study how the symbolism of marriage affects the stability of formal partnerships. Thanks to its symbolic significance, marriage may stabilize its preceding registered partnership by enforcing its unique public commitment and marking the personal prestige of the married couple. Opening up the possibility for same-sex couples to transfer their registered partnership to marriage does not necessarily imply that this is the only possible response. It may be also that the reduced costs of marriage entry due to same-sex marriage legalization have different impacts on the utility function of two partners of the couple: one partner passes its threshold of marriage while the other does not or at least not immediately. Such disagreement could indicate that the introduction of same-sex marriages stimulated separation from registered partnerships.

We study how the Dutch same-sex marriage legalization in 2001 affected the stability of same-sex registered partnerships which were introduced in the Netherlands in 1998. We find that same-sex marriage legalization indeed caused quite a few registered partnerships to separate. Nevertheless, many other registered partnerships transferred into marriages. We also investigate whether marriages that consecutively followed registered partnerships were more stable than they originally were. In theory, marriages could be more stable because of selectivity, i.e. the inherently more stable registered partnerships transformed into marriages while the unstable ones did not. Using a bivariate hazard rate model with marriage and separation as competing risks and allowing marriage to directly affect the separation rate, we find that for females selectivity is not an issue while for males there is adverse selection. Apparently, same-sex male partnerships that were less likely to dissolve were also less likely to transform into a marriage. For both females and males, we find strong and significant effects of marriage on the stability of their relationship. Once turned into a marriage, relationships were much more stable than they were before as registered partnerships. Studying the effect of the flash divorce arrangement on the

duration of different-sex marriages, we conclude that the separation costs cannot explain the whole effect of transition to marriage on the stability of formal partnerships. This is all the more surprising since the main remaining difference between registered partnerships and marriages seems to be merely symbolic. Apparently, the symbolism of marriage has powerful stabilizing effects on interpersonal relationships.

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Tables and Graphs

Table 1: Parameter estimates transition rates of same-sex registered partnerships to marriage and separation (either directly or through marriage as an intermediate state)

	Two Women				Two Men			
	(1) Separation		(2) to Marriage		(3) Separation		(4) to Marriage	
a. Competing risks								
Same-sex marriage law	0.39	(0.18)**			1.11	(0.22)***		
Married	-1.13	(0.30)***			-3.72	(0.42)***		
Duration dependence								
1-3 years	1.13	(0.23)***	-0.65	(0.21)***	0.89	(0.22)***	-1.07	(0.21)***
3-7 years	1.10	(0.28)***	-0.80	(0.25)***	1.21	(0.33)***	-0.62	(0.25)**
7+ years	1.02	(0.32)***	-3.14	(0.58)***	0.87	(0.38)**	-3.24	(0.49)***
Unobserved heterogeneity								
ν	$-\infty$	(—)	-5.68	(0.18)***	-3.12	(0.40)***	-6.04	(0.14)***
α_1		-0.88	(0.22)***			-1.76	(0.05)***	
α_3		0.13	(0.43)			-3.40	(0.62)***	
-Loglikelihood		4080.7				4370.0		
b. Single risks								
Same-sex marriage law	0.31	(0.18)*			0.67	(0.21)***		
Married	-0.53	(0.16)***			-1.36	(0.27)***		
Duration dependence								
1-3 years	1.13	(0.23)***	-0.63	(0.20)***	0.97	(0.24)***	-1.00	(0.21)***
3-7 years	1.09	(0.28)***	-0.77	(0.25)***	1.18	(0.33)***	-0.57	(0.27)**
7+ years plus	1.04	(0.32)***	-3.13	(0.58)***	0.85	(0.37)**	-3.21	(0.50)***
Unobserved heterogeneity								
ν	$-\infty$	(—)	-5.67	(0.18)***	-3.89	(0.40)***	-6.09	(0.14)***
α	0.00	(0.36)	-1.68	(0.06)***	-3.04	(0.31)***	-1.94	(0.05)***
-Loglikelihood	2398.0		1683.0		2251.0		2123.5	

Note: Based on 3,147 women and 4,404 men. Other covariates are included in every model but not shown for parsimony. Standard errors in parentheses; * p < 0.1; ** p < 0.05; *** p < 0.01. The distributions of unobserved heterogeneity in panel a is as follows

	Women	Men	Separation	Transition to Marriage
p_1	0.16	0.14	High	High
p_2	–	–	Low	High
p_3	0.45	0.03	High	Low
p_4	0.39	0.83	Low	Low

Table 2: Parameter estimates separation rates from same-sex relationships (both registered partnerships and marriages) starting after the same-sex marriage law

	(1) Two women		(2) Two men	
Marriage	-0.55	(0.13)***	-1.00	(0.16)***
Duration dependence				
1-3 years	1.33	(0.20)***	0.85	(0.20)***
3-7 years	1.56	(0.27)***	1.27	(0.26)***
7+ years	1.49	(0.57)***	0.89	(0.66)
Unobserved heterogeneity				
ν	-2.16	(0.95)**	-3.42	(0.60)***
α	-2.01	(1.57)	-1.67	(0.84)**
Observations	9,061		11,069	

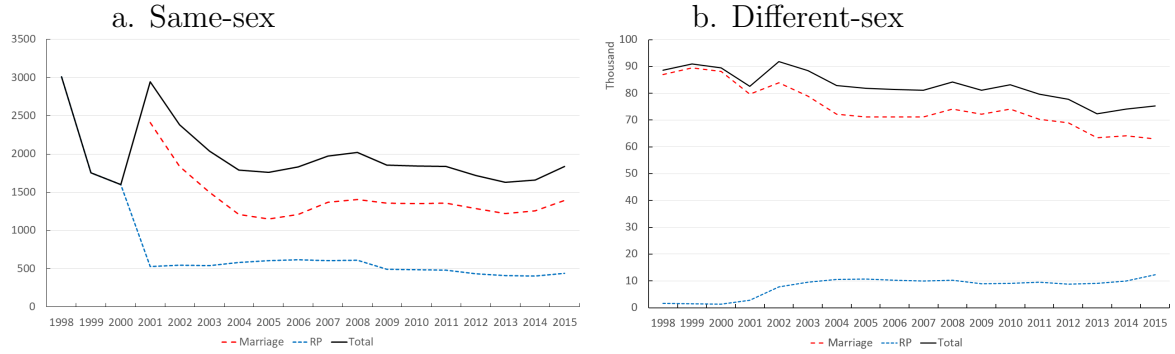
Note: All covariates and constant in previous models are included in every model but not shown for parsimony. Both columns use first marriage or registered partnership of every individual that started after the law and are right censored at the flash divorce ban; standard errors in parentheses; * p < 0.1; ** p < 0.05; *** p < 0.01

Table 3: Parameter estimates effects of flash divorce on separation rates from marriages

	Different-sex Marriages				Same-sex Marriages			
	From 1998 onward		After SSM-law		Two women		Two men	
Flash divorce	0.39	(0.16)**						
Flash divorce ban	-0.01	(0.08)	-0.09	(0.09)	-0.02	(0.09)	-0.13	(0.09)
Duration dependence								
1-3 years	0.81	(0.10)***	0.67	(0.11)***	0.76	(0.09)***	0.14	(0.09)
3-7 years	1.03	(0.11)***	0.95	(0.12)***	0.86	(0.11)***	0.32	(0.12)***
7+ years	0.99	(0.12)***	1.03	(0.16)***	0.64	(0.16)***	0.32	(0.18)*
Unobserved heterogeneity								
ν			$-\infty$	(—)	-2.19	(1.36)	-2.04	(0.65)***
α			2.06	(3.88)	0.19	(1.22)	-2.07	(1.23)*
Observations	15,574		12,444		15,152		16,210	

Note: All covariates and constant in previous models are included in every model but not shown for parsimony. Column (1) shows the estimates for different-sex marriages starting from 1998 onward; columns (2) to (4) contain marriages that were set up after the introduction of same-sex marriage and flash divorce. Standard errors in parentheses; * p < 0.1; ** p < 0.05; *** p < 0.01

Figure 1: New marriages and registered partnerships; 1998-2015



Source: Statistics Netherlands

Figure 2: Survival probabilities of same-sex registered partnerships that started before and after the introduction of the same-sex marriage law

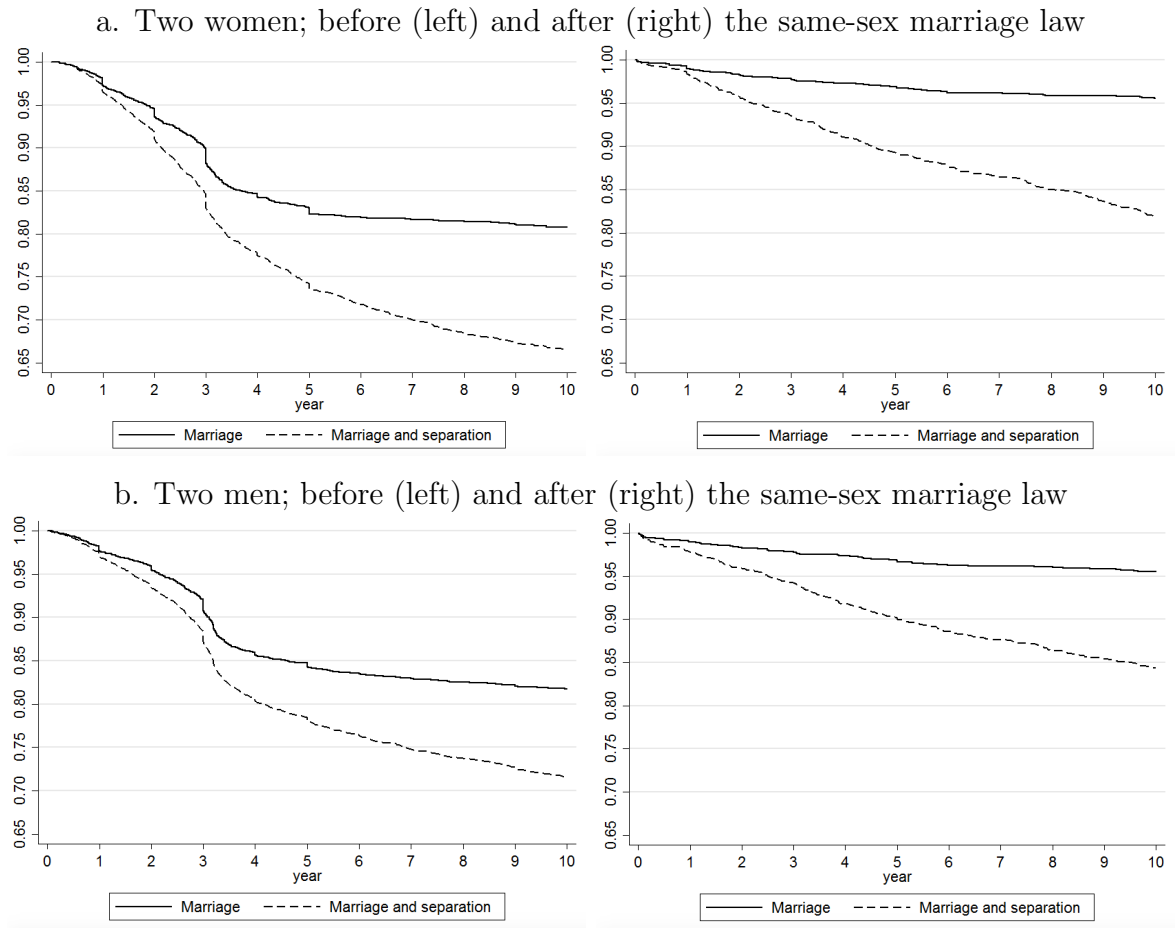
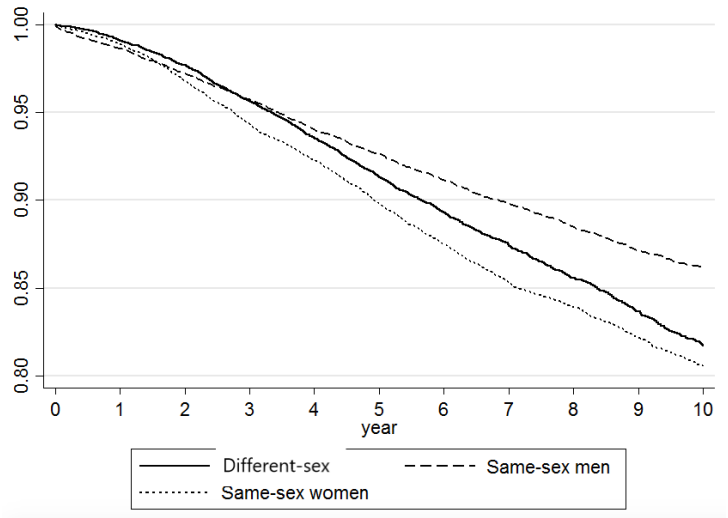


Figure 3: Survival probabilities of marriages that started after same-sex marriage legalization



Appendix A: Definition of Variables and Descriptives

Variable	Definition
Same-sex marriage law	Dummy variable of the same-sex marriage legalization
Heterosexual	Dummy variable if classified as straight partnership
Gay man	Dummy variable if classified as gay men partnership
Lesbian	Dummy variable if classified as lesbian partnership
Age difference	Absolute age difference between a couple
Same origin	Dummy variable if both partners of a couple were born in the same country
Native	Dummy variable if both parents born in the Netherlands
First generation immigrant	Dummy variable if born abroad with at least one parent born abroad too
Second generation immigrant	Dummy variable if born in the Netherlands with at least one parent born abroad too
Year dummies of partnership entry	Dummy variables of the year when the partnership started
Duration	Proceeding duration of partnership in years
Birth year cohorts	Dummies of birth year cohorts, the larger the younger cohort
Age cohorts of partnership entry	Dummy variables for age cohorts of partnership entry
Children number	Number of children living at home
Children missing	Dummy variable if number of children is missing

	Lesbian Women			Gay Men		
Variable	Mean	Min	Max	Mean	Min	Max
Age difference	5.32	0	38	7.19	0	56
Children number	0.31	0	6	0.01	0	3
Percentages						
Same origin	89.96	0	100	77.27	0	100
Natives	88.18	0	100	80.72	0	100
First generation	4.16	0	100	12.58	0	100
Second generation	7.66	0	100	6.70	0	100
Partnership years≤ 1	2.19	0	100	3.13	0	100
$1 <$Partnership years≤ 3	6.93	0	100	6.63	0	100
$3 <$Partnership years≤ 7	10.23	0	100	10.15	0	100
Partnership years> 7	80.65	0	100	80.09	0	100
$1902 <$ Birth year ≤ 1912	0.22	0	100	0.09	0	100
$1912 <$ Birth year ≤ 1922	0.48	0	100	0.50	0	100
$1922 <$ Birth year ≤ 1932	2.67	0	100	3.97	0	100
$1932 <$ Birth year ≤ 1942	5.91	0	100	10.08	0	100
$1942 <$ Birth year ≤ 1952	16.75	0	100	21.93	0	100
$1952 <$ Birth year ≤ 1962	35.53	0	100	32.61	0	100
$1962 <$ Birth year ≤ 1972	34.13	0	100	26.68	0	100
$1972 <$ Birth year ≤ 1982	4.32	0	100	4.13	0	100
Age partnership entry ≤ 20	0.19	0	100	0.17	0	100
$20 <$ Age partnership entry ≤ 30	13.22	0	100	11.81	0	100
$30 <$ Age partnership entry ≤ 40	43.66	0	100	34.97	0	100
$40 <$ Age partnership entry ≤ 50	26.06	0	100	27.18	0	100
$50 <$ Age partnership entry ≤ 60	10.90	0	100	16.33	0	100
Age partnership entry > 60	5.97	0	100	9.54	0	100
Children missing	8.45	0	100	14.74	0	100

Based on 3,147 lesbian women and 4,404 gay men

Appendix B: Full Parameter Estimates

Table 4: Parameter estimates transition rates of same-sex registered partnerships; competing risks

	Two Women				Two Men			
	(1) Separation		(2) To Marriage		(3) Separation		(4) To Marriage	
Same-sex marriage law	0.39	(0.18)**			1.11	(0.22)***		
Married	-1.13	(0.30)***			-3.72	(0.42)***		
Entry in 1999	0.06	(0.13)	-0.37	(0.16)**	0.29	(0.13)**	-0.19	(0.14)
Entry in 2000	-0.02	(0.14)	-0.90	(0.22)***	0.01	(0.16)	-1.05	(0.22)***
Entry in 2001 pre-law	0.19	(0.38)	-0.33	(0.37)	0.63	(0.32)**	-0.84	(0.44)*
Duration dependence								
1-3 years	1.13	(0.23)***	-0.65	(0.21)***	0.89	(0.22)***	-1.07	(0.21)***
3-7 years	1.10	(0.28)***	-0.80	(0.25)***	1.21	(0.33)***	-0.62	(0.25)**
7+ years	1.02	(0.32)***	-3.14	(0.58)***	0.87	(0.38)**	-3.24	(0.49)***
$1942 <$ Birth year ≤ 1952	0.80	(0.78)	0.39	(0.48)	0.64	(0.58)	-0.04	(0.25)
$1952 <$ Birth year ≤ 1962	1.46	(0.83)*	-0.11	(0.57)	0.99	(0.64)	-0.20	(0.34)
$1962 <$ Birth year ≤ 1972	1.79	(0.84)**	0.67	(0.60)	1.21	(0.66)*	0.01	(0.40)
Birth year > 1972	2.36	(0.89)***	2.53	(0.68)***	1.21	(0.70)*	-0.01	(0.52)
$20 <$ Age partnership entry ≤ 30	-0.67	(0.73)	-0.86	(1.06)	-0.47	(0.65)	-1.06	(0.74)
$30 <$ Age partnership entry ≤ 40	-1.00	(0.74)	0.40	(1.08)	-1.31	(0.67)*	-1.33	(0.77)*
$40 <$ Age partnership entry ≤ 50	-1.46	(0.76)*	0.28	(1.11)	-1.89	(0.71)***	-1.31	(0.80)*
$50 <$ Age partnership entry ≤ 60	-1.88	(0.85)**	0.13	(1.15)	-2.42	(0.79)***	-1.45	(0.84)*
Age partnership entry > 60	-3.16	(1.49)**	-3.40	(1.33)**	-2.86	(1.08)***	-1.66	(0.88)*
Age difference	0.01	(0.01)	0.02	(0.01)	0.01	(0.01)	0.01	(0.01)
Same origin	-0.49	(0.18)***	-0.58	(0.24)**	-0.34	(0.16)**	-0.13	(0.17)
First generation	-0.59	(0.30)**	-1.31	(0.34)***	-0.23	(0.20)	-0.21	(0.22)
Second generation	0.27	(0.18)	-0.25	(0.23)	0.22	(0.21)	-0.17	(0.26)
Constant	-4.50	(1.15)***	1.74	(1.30)	-3.01	(0.96)***	3.87	(0.88)***
Unobserved heterogeneity								
ν	$-\infty$	(—)	-5.68	(0.18)***	-3.12	(0.40)***	-6.04	(0.14)***
α_1		-0.88	(0.22)***			-1.76	(0.05)***	
α_3		0.13	(0.43)			-3.40	(0.62)***	
-Loglikelihood		4080.7				4370.0		

Note: Based on 3,147 women and 4,404 men. Standard errors in parentheses; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. The distributions of unobserved heterogeneity in panel a is as follows

	Women	Men	Separation	Transition to Marriage
p_1	0.16	0.14	High	High
p_2	–	–	Low	High
p_3	0.45	0.03	High	Low
p_4	0.39	0.83	Low	Low

Table 4 presents a full set of parameter estimates corresponding to Table 1 panel a. Table 5 displays a full set of parameter estimates corresponding to Table 2. Table 6 shows a full set of parameter estimates corresponding to Table 3.

Table 5: Parameter estimates separation rates from same-sex relationships (both registered partnerships and marriages) starting after legalization of same-sex marriages

	(1) Two women		(2) Two men	
Marriage	-0.55	(0.13)***	-1.00	(0.16)***
Entry in 2002	-0.01	(0.17)	-0.11	(0.22)
Entry in 2003	-0.07	(0.18)	0.22	(0.22)
Entry in 2004	-0.19	(0.20)	0.24	(0.24)
Entry in 2005	-0.11	(0.22)	-0.09	(0.27)
Entry in 2006	0.07	(0.23)	0.06	(0.30)
Entry in 2007	-0.52	(0.33)	-0.63	(0.44)
Entry in 2008-9	-0.11	(0.56)	-0.32	(0.65)
Duration dependence				
1-3 years	1.33	(0.20)***	0.85	(0.20)***
3-7 years	1.56	(0.27)***	1.27	(0.26)***
7+ years	1.49	(0.57)***	0.89	(0.66)
$1942 <$ Birth year ≤ 1952	-0.86	(1.07)	-0.43	(1.23)
$1952 <$ Birth year ≤ 1962	0.16	(1.16)	-0.20	(1.38)
$1962 <$ Birth year ≤ 1972	0.73	(1.20)	0.26	(1.42)
Birth year > 1972	0.90	(1.23)	0.42	(1.47)
$20 <$ Age partnership entry ≤ 30	-1.12	(0.61)*	-2.71	(0.62)***
$30 <$ Age partnership entry ≤ 40	-2.06	(0.72)***	-3.12	(0.67)***
$40 <$ Age partnership entry ≤ 50	-2.14	(0.77)***	-3.78	(0.74)***
$50 <$ Age partnership entry ≤ 60	-1.68	(0.90)*	-4.58	(0.99)***
Age partnership entry > 60	-4.34	(1.68)***	-4.81	(1.57)***
Age difference	0.01	(0.01)	0.03	(0.01)***
Same origin	-0.11	(0.19)	-0.88	(0.18)***
First generation	0.02	(0.24)	-0.61	(0.21)***
Second generation	0.35	(0.19)*	-0.37	(0.31)
Constant	-2.22	(1.65)	0.38	(1.61)
Unobserved heterogeneity				
ν	-2.16	(0.95)**	-3.42	(0.60)***
α	-2.01	(1.57)	-1.67	(0.84)**
Observations	9,061		11,069	

Note: Both columns use first marriage or registered partnership of every individual that started after the law and are right censored at the flash divorce ban; standard errors in parentheses;
* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 6: Parameter estimates effects of flash divorce on separation rates from marriages

	Different-sex Marriages				Same-sex Marriages			
	From 1998 onward		After SSM-law		Two women		Two men	
Flash divorce	0.39	(0.16)**						
Flash divorce ban	-0.01	(0.08)	-0.09	(0.09)	-0.02	(0.09)	-0.13	(0.09)
Entry in 1999	0.09	(0.10)						
Entry in 2000	-0.00	(0.10)						
Entry in 2001 pre-FD	0.26	(0.19)						
Entry in 2001 post-FD	-0.09	(0.11)						
Entry in 2002	0.05	(0.11)	0.16	(0.11)	0.02	(0.10)	0.10	(0.10)
Entry in 2003	-0.15	(0.12)	-0.04	(0.11)	-0.08	(0.11)	0.31	(0.11)***
Entry in 2004	-0.15	(0.13)	-0.05	(0.12)	-0.09	(0.12)	0.23	(0.12)*
Entry in 2005	-0.05	(0.13)	0.09	(0.12)	-0.03	(0.12)	0.08	(0.13)
Entry in 2006	-0.13	(0.14)	0.02	(0.13)	-0.04	(0.12)	0.15	(0.13)
Entry in 2007	-0.41	(0.16)***	-0.26	(0.15)*	-0.29	(0.14)**	0.06	(0.14)
Entry in 2008	-0.15	(0.16)	0.04	(0.15)	-0.20	(0.15)	0.11	(0.15)
Entry in 2009 pre-ban	0.37	(0.29)	0.54	(0.29)*	-0.13	(0.37)	0.16	(0.38)
Entry in 2009 post-ban	0.08	(0.17)	0.27	(0.16)	-0.33	(0.16)**	-0.01	(0.18)
Entry in 2010	-0.17	(0.18)	0.05	(0.18)	-0.30	(0.17)*	0.01	(0.18)
Entry in 2011	-0.14	(0.20)	0.03	(0.19)	-0.38	(0.18)**	0.11	(0.20)
Entry in 2012	0.03	(0.22)	0.22	(0.21)	-0.38	(0.19)**	0.17	(0.22)
Entry in 2013	0.02	(0.26)	0.24	(0.25)	-0.59	(0.23)***	0.09	(0.25)
Entry in 2014	-0.51	(0.41)	-0.24	(0.39)	-0.36	(0.26)	-0.08	(0.31)
Entry in 2015	-0.18	(0.73)	-0.13	(0.73)	-1.44	(0.73)**	0.51	(0.38)
Duration dependence								
1-3 years	0.81	(0.10)***	0.67	(0.11)***	0.76	(0.09)***	0.14	(0.09)
3-7 years	1.03	(0.11)***	0.95	(0.12)***	0.86	(0.11)***	0.32	(0.12)***
7+ years	0.99	(0.12)***	1.03	(0.16)***	0.64	(0.16)***	0.32	(0.18)*
$1932 <$ Birth year ≤ 1942	-0.90	(0.24)***	-0.90	(0.35)***	-1.11	(0.44)**	-1.19	(0.23)***
$1942 <$ Birth year ≤ 1952	-0.75	(0.28)***	-0.63	(0.36)*	-1.80	(0.49)***	-1.32	(0.25)***
$1952 <$ Birth year ≤ 1962	-0.77	(0.32)**	-0.62	(0.42)	-1.69	(0.51)***	-1.40	(0.29)***
$1962 <$ Birth year ≤ 1972	-0.77	(0.34)**	-0.53	(0.44)	-1.63	(0.52)***	-1.34	(0.32)***
Birth year > 1972	-0.83	(0.36)**	-0.69	(0.46)	-1.41	(0.53)***	-1.42	(0.36)***
$20 <$ Age partnership entry ≤ 30	0.04	(0.14)	0.13	(0.18)	-1.29	(0.36)***	-1.45	(0.31)***
$30 <$ Age partnership entry ≤ 40	0.00	(0.15)	0.00	(0.19)	-1.75	(0.38)***	-1.94	(0.33)***
$40 <$ Age partnership entry ≤ 50	0.10	(0.19)	0.18	(0.24)	-2.08	(0.40)***	-2.40	(0.35)***
$50 <$ Age partnership entry ≤ 60	-0.05	(0.25)	0.02	(0.31)	-2.02	(0.41)***	-2.07	(0.38)***
Age partnership entry > 60	0.48	(0.33)	0.70	(0.41)*	-1.99	(0.49)***	-1.41	(0.42)***
Age difference	0.02	(0.00)***	0.02	(0.01)***	0.01	(0.01)**	0.02	(0.00)***
Same origin	-0.29	(0.06)***	-0.24	(0.07)***	-0.12	(0.09)	-0.31	(0.07)***
First generation	0.01	(0.06)	-0.07	(0.07)	-0.21	(0.12)*	-0.46	(0.10)***
Second generation	0.25	(0.08)***	0.23	(0.09)**	0.22	(0.09)**	0.01	(0.11)
Constant	-4.23	(0.40)***	-4.00	(0.72)***	-0.48	(0.92)	0.57	(0.86)
Unobserved heterogeneity								
ν			$-\infty$	(—)	-2.19	(1.36)	-2.04	(0.65)***
α			2.06	(3.88)	0.19	(1.22)	-2.07	(1.23)*
Observations	15,574		12,444		15,152		16,210	

Note: Column (1) shows the estimates for different-sex marriages starting from 1998 onward; columns (2) to (4) contain marriages that were set up after the introduction of same-sex marriage and flash divorce. Standard errors in parentheses; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Appendix C: More Parameter Estimates

Table 7 presents the main parameter estimates including number of children living at home for the baseline model in panel a of Table 1. The results are virtually identical.

Table 7: Transition rates of same-sex registered partnerships to marriage and separation (either directly or through marriage as an intermediate state); Children number included

	Two Women				Two Men			
	(1) Separation		(2) to Marriage		(3) Separation		(4) to Marriage	
Competing risks								
Same-sex marriage law	0.35	(0.18)**			1.14	(0.21)***		
Married	-0.86	(0.35)**			-3.78	(0.40)***		
Duration dependence								
1-3 years	1.11	(0.23)***	-0.66	(0.21)***	0.90	(0.22)***	-1.07	(0.21)***
3-7 years	1.00	(0.28)***	-0.82	(0.25)***	1.23	(0.33)***	-0.69	(0.25)***
7+ years	0.86	(0.32)***	-3.19	(0.58)***	0.89	(0.38)**	-3.34	(0.49)***
Children number	-0.15	(0.07)**	-0.04	(0.09)	0.65	(0.17)***	0.02	(0.37)
Children missing	-0.79	(0.30)***	-4.37	(0.64)***	-3.92	(0.64)***	-4.84	(0.25)***
Unobserved heterogeneity								
ν	$-\infty$	(—)	-5.60	(0.18)***	-3.07	(0.39)***	-5.87	(0.14)***
α_1		-0.45	(0.58)			-1.61	(0.05)***	
α_3		0.76	(0.88)			-3.46	(0.67)***	
-Loglikelihood		4051.2				4264.4		

Note: Based on 3,147 women and 4,404 men. Other covariates are included in every model but not shown for parsimony. Standard errors in parentheses; * p < 0.1; ** p < 0.05; *** p < 0.01. The distributions of unobserved heterogeneity in panel a is as follows

	Women	Men	Separation	Transition rate to Marriage
p_1	0.17	0.16	High	High
p_2	–	–	Low	High
p_3	0.57	0.03	High	Low
p_4	0.26	0.81	Low	Low