The Impact of Women's Employment on Divorce: Real Effect, Selection, or Anticipation?

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Abstract:

The aim of this study is to deepen our understanding of the nexus between women's employment and marital stability. We use data from the Generations and Gender Surveys to examine the impact of women's employment on divorce in Germany, Hungary, Italy, and Poland. Our analytical strategy allows us to account for selection and anticipation mechanisms; i.e., we estimate marital disruption and employment jointly, and look not only at the effects of employment on marital stability, but also at the impact of time since employment entry. We find that women's employment facilitates marital disruption in Italy and Poland, but not in Germany and Hungary, and discuss the results in light of these countries' contextual arrangements. We also show that selection effects play out differently in different contexts. These findings highlight the importance of accounting for selection in divorce studies, especially in comparative studies. Finally, we notice traces of anticipation behaviors in Italy, which we attribute to the low employment levels among Italian women.

Keywords: Marital dissolution, Women's employment, Generations and Gender Survey

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1. Introduction

Women's labor force participation has been increasing across all industrialized economies for at least half a century. Over the same period, rates of marital dissolution have also risen. In response to these trends, social observers have become increasingly interested in examining the effects of women's social and economic independence on divorce[1]. A first line of research, based upon the dominant male breadwinner/female carer economic model of the family, has hypothesized that women's employment represents a potent force that is driving divorce rates (see Hobson 1990; Kalmijn and Poortman 2006; Ruggles 1997; Schoen et al. 2002). However, a second line of research has challenged the microeconomic prediction of a positive association (Cooke 2004; Cooke 2006; Greenstein 2000). The proponents of this second hypothesis have argued that an improvement in women's socioeconomic status does not necessarily increase the risk of marital disruption because men's and women's social roles have been changing (Sayer and Bianchi 2000; Sigle-Rushton 2010), and a woman's earnings can have a stabilizing effect on the family's budget, potentially reinforcing the marriage (Cherlin 2000; Oppenheimer 1997; Stevenson and Wolfers 2007). The empirical findings on these questions are as mixed as the theoretical predictions. One possible explanation for this heterogeneous pattern is that the effects of women's economic resources on the risk of divorce are moderated by the country context, which may shape women's aspirations and decisions about employment and partnership. Recent papers have indeed suggested that the effects of women's employment on marital disruption are stronger in countries in which traditional gender roles remain prevalent, and the welfare state does not sufficiently alleviate work-family tensions for women (e.g., Cooke et al. 2013). Another explanation for the differences in outcomes lies in the methods used in previous studies. A woman's marital stability and employment may be affected by numerous factors, many of which may be unobserved by researchers, such as her level of attachment to family and Catholic values, her degree of professional career orientation, whether she has traditional or egalitarian gender role attitudes, and the extent to which she has various psychological traits that determine personal success in various domains of life (e.g., the ability to resolve interpersonal conflicts, the willingness to invest time in various activities either at home or at work, diligence). A failure to account for these characteristics may lead to a bias in the estimation of the effect of women's

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[1] In the following, we use the terms divorce, marriage disruption, and marriage dissolution interchangeably.

employment on divorce. Furthermore, previous studies rarely accounted for the possibility that a woman who has become dissatisfied in her marriage may intensify her efforts in the labor market in anticipation of a divorce, whereas a woman who does not anticipate a disruption may prefer to work less (e.g., Poortman 2005). Studies that do not account for this kind of anticipation mechanism may overestimate the positive effect of women's employment on the risk of divorce.

The goal of this paper is to deepen our understanding of the nexus between women's employment and marital stability. First, we compare countries that differ in terms of their institutional, cultural, and economic settings to investigate how specific country contexts can shape the relationship between women's employment and marital stability. Second, we propose a new analytical strategy that allows us to take into account some of the shortcomings of the previous studies. Following this strategy, we wash out possible biases due the presence of unobserved time-constant factors that affect women's employment and partnership decisions in parallel through the simultaneous modelling of women's employment and partnership biographies within a common maximum likelihood event-history framework. Third, we monitor the possibility of an anticipatory increase in a woman's involvement in the labor market prior to a divorce by taking into account not only effect of women's employment on the risk of divorce, but also the time since entering employment.

While our analytical strategy is innovative, it clearly involves the implementation of large sample sizes. We opted to use harmonized data from the Generations and Gender Survey (GGS). Because these data contain full partnership and labor market histories, we are able to detect the impact of women's employment on divorce over the life course. We are, however, only able include in our study the countries with samples that are large enough to enable us to implement our planned research strategy: namely, Germany, Hungary, Italy, and Poland. The contextual arrangements that may be expected to moderate the relationship between women's employment and marital stability differ between these countries. In particular, these countries differ with respect to norms regarding women's employment and parenthood, policies that support the economically weaker party in case of a divorce, and the degree to which having a second income is an economic necessity. These differences enabled us to formulate country-specific expectations about the impact of women's employment on fertility.

2. Women's employment and divorce

2.1. Classical narratives and their critics

Several theoretical approaches have argued that women's employment destabilizes marriage. Among these approaches is the economic model of marriage proposed by Becker et al. (1977), which presupposes that a couple will remain married if the gains from marriage, obtained through specialization in domestic work and paid work, exceed the gains from separation. As in many societies women still predominantly specialize in housework and men specialize in income provision, the theory predicts that a woman's entry into the labor market would lower a couple's gains from specialization, and would therefore increase the risk of a marital disruption (see also Becker 1981). A similar conclusion regarding the destabilizing effect of women's economic activity on marital stability can be derived from sociological theories, although the proposed mechanisms are different. Parsons (1940) argued that the labor market involvement of both partners in a couple may lead to status competition between the partners, and, consequently, to divorce. Other scholars have suggested that a woman's involvement in paid work might be indicative of her partner's poor performance as an income provider, which might lead to strains between the spouses and a destabilization of the marriage (Cherlin 1979; Jalovaara 2003). Still other researchers have argued that although a woman's involvement in the labor market does not affect the quality of her union (as was presupposed in all aforementioned approaches), it gives her the economic resources to exit an unhappy marriage (the so called independence hypothesis, see Hobson 1990; Ruggles 1997; Schoen et al. 2002).

The traditional view of women's employment and divorce developed from Becker's and Parsons' seminal works has been criticized for relying on a traditional model of the gendered division of labor, while ignoring the changing economic and social roles of women (Härkönen 2013). A number of scholars has argued that since the time when these theories were formulated, the organization of the household has moved away from a focus on production and role specialization, toward a focus on consumption and the pooling of resources. As a consequence, two incomes may be necessary to satisfy a couple's material aspirations, especially given the ongoing destabilization of men's employment careers (Cherlin 2000; Raz-Yurovich 2012; Sayer and Bianchi 2000; Stevenson and Wolfers 2007). Some of these researchers observed that economic contributions to the household budget by both partners improve a couple's living

standards and allow them to diversify the risk of a job loss by one of the partners, thereby stabilizing their marriage. Other scholars asserted that in contemporary societies, in which women no longer spend most of their time at home, whether the partners in a couple engage in similar economic activities and have similar interests may be more important for the durability of their union than their gains from specialization (Coltrane 2000; Sayer and Bianchi 2000; Simpson and England 1981). Similar arguments were also put forward by the proponents of the social capital transfer approach, who suggested that marriage might be beneficial for both partners' labor market outcomes, as spouses share their skills, knowledge, or networks with each other, and provide reciprocal support in finding a job, preparing for a job interview, or taking work-related courses and exams (Bernardi 1999; Blossfeld and Drobnic 2001; Özcan and Breen 2012). But these researchers also noted that even in modern societies a woman's employment may still destabilize her marriage if she is the main care provider in the family (Becker 2015; Goldscheider 2000). Indeed, several studies have shown that a gradual increase in men's involvement at home can help to reduce the workload and work-family tensions experienced by women, and may lower the risk of divorce among employed women (Mencarini and Vignoli 2014; Sigle-Rushton 2010).

Nevertheless, the findings of empirical studies on the effects of women's economic resources are conflicting, and do not unambiguously support any of the above-mentioned perspectives (for reviews see Lyngstad and Jalovaara 2010; Oppenheimer 1997; Sayer and Bianchi 2000; Spitze 1988). In our view, there are at least three reasons for this considerable degree of inconsistency in the findings. The first reason is related to the cross-country differences in the institutional, cultural, and economic settings of the studied countries, which may moderate the relationship between women's socioeconomic resources and marital stability (Cooke and Gash 2010; Cooke et al. 2013; Kaplan and Stier 2010). The other two reasons are related to methodological characteristics of the previous studies: namely, the failure to control for unmeasured factors that may jointly affect a woman's employment and divorce decisions, and the failure to account for the intensification of a woman's efforts in the labor market in anticipation of marriage disruption. We discuss these factors below.

2.2. The role of the country context

The country context may moderate the relationship between a woman's employment and marital stability because it defines to what extent the traditional division of labor between the partners is socially accepted, supported by the state, and economically viable. According to the "doing gender" approach, gender is constructed, recreated, and reinforced through everyday interactions; it is an accomplishment rather than a fixed attribute (West and Zimmerman 1987, 2009). Thus, the country context affects the extent of a woman's participation in the labor market, and shapes the relationship between the partners. Furthermore, welfare policies may weaken or intensify a woman's financial dependence on her partner, and can thus influence her ability to leave an unsatisfactory marriage, especially if she does not have a (well paid) job.

In general, the literature has identified three major context dimensions that can affect the divorce risks of employed and non-employed women: work-family reconciliation policies (Blossfeld and Mueller 2002; Cooke 2006; Cooke et al. 2013), financial support for single parents (Kaplan and Stier 2010; van Damme, Kalmijn, and Uunk 2009), and the level of men's earnings relative to family maintenance costs (e.g., Cherlin 2000; Oppenheimer 1994; Oppenheimer 1997; Stevenson and Wolfers 2007). In countries with generous reconciliation policies, employed women will experience fewer work-family tensions. Thus, we may expect these women to be less likely to divorce than women in countries where combining paid work and childrearing is less institutionally and culturally supported. In particular, the availability of comprehensive public child care services, flexible parental leave schemes with incentives for men to take career-related breaks and increase their involvement in care (Goldscheider, Bernhardt, and Lappegård 2015), and subsidies for outsourcing household labor (Raz-Yurovich 2014) can ease the workload of women in paid employment, and increase their satisfaction with their marriage (Keizer and Schenk 2012; Sigle-Rushton 2010). Public support for parents may also weaken the link between women's employment and marital stability by providing support to single parents. Having access to special forms of financial assistance or child care arrangements for single parents may weaken a woman's dependence on her (usually higher earning) partner and on the market. Such policies can make it easier for a woman to leave an unhappy marriage even if she does not have a (well paid) job (Kaplan and Stier 2010). Finally, the ability of the male partner to earn enough money to cover his family's maintenance costs and consumption aspirations may also moderate the relationship between his wife's employment and marital

stability. In countries where the man's earnings are often insufficient to cover the household's living expenses and to provide for the family's desired living standards, the financial contribution his wife can make by working may have a more stabilizing effect on the marriage than in countries where families are more likely to be able to afford for the female partner to have no job (Oppenheimer 1997; Stevenson and Wolfers 2007).

Overall, we can expect to find that the effects of a woman's employment on marital disruption will be stronger in country contexts where the state offers little support for working mothers or for the economically dependent spouse in case of a divorce, and where the man's earnings are on average sufficient to satisfy the couple's material aspirations. Consistent with these expectations, a series of studies have indeed found that a woman's employment is more likely to destabilize her marriage in contexts in which the welfare policies do not promote women's independence in the family or in society (Cooke et al. 2013; Kaplan and Stier 2010; Styrc and Matysiak 2012). Taken together, it is clear that these diverse findings on the association between women's employment and divorce challenge Becker's theory, because they suggest that economically independent women are not always the most likely to dissolve an unhappy union.

2.3. The role of unobserved factors

The second explanation for the inconsistency in the empirical findings is that they are biased by the selection of working women into a group with a high/low risk of marital disruption. This selection could be eliminated if researchers were able to control for all of the factors that jointly affect women's employment and marriage choices, but they usually lack access to a full set of such factors. The resulting bias can be either upward or downward. Positive selection leads to upward bias, and can occur if the analyzed women display a high propensity to enter employment and dissolve a union for unobserved reasons (e.g., because they have a strong professional career orientation and a low level of attachment to family values, or are dissatisfied with their marriage). By contrast, negative selection leads to a downward bias in the estimated effect, and takes place if the analyzed women have a high propensity to exit employment and exit a marriage because, for instance, they are unable to engage in paid work while also investing sufficient time in their marriage for some unobserved reasons. This negative selection applies particularly to disadvantaged groups, among whom a "general milieu of social disorganization"

(Billy and Moore 1992) might emerge, and societal norms regarding the "right order" of the life course might lose ground (Bauman 2005). Many empirical studies that were based on panel data and had the opportunity to control for some of the unobserved antecedents of women's employment and marital disruption (such as gender ideology, household division of labor, or marital satisfaction) found that the seemingly positive effect of women's employment on the risk of divorce disappears after these factors are taken into account (Sayer and Bianchi 2000; Sayer et al. 2011; Schoen et al. 2002; Schoen, Rogers, and Amato 2006; Sigle-Rushton 2010). Although these studies constitute an important step forward in investigating the relationship between women's employment and marital stability, they fail to provide us with information on the net effects of this relationship, as they do not control for all of the unobserved factors that might affect these two processes. Importantly, the lack of reliable measurements of values and attitudes is especially common in studies that use retrospective data, because this kind of information is only collected at the time of the interview (Chan and Halpin 2002; De Graaf and Kalmijn 2006; Härkönen and Dronkers 2006; Teachman 2002).

2.4. Anticipation mechanisms

Yet another reason why the findings on the relationship between women's employment and divorce have been inconsistent is that these studies relied on the observed order of events (e.g., employment entry and divorce). Such a strategy leads to an upward bias in the effect of women's employment on divorce risk if married women increase their involvement in the labor market in response to a decline in their satisfaction with marriage and a fear of marriage disruption (Oppenheimer 1997; Özcan and Breen 2012). Empirical studies have provided some evidence for such anticipatory adjustments. For instance, applying structural equation modelling to panel data, Rogers (1999) showed that an increase in the perception of marital discord leads to an increase in a wife's income, but not the other way around. Other researchers have demonstrated that a woman tends to increase her labor supply if she faces an increased probability of divorce (Austen 2004; Johnson and Skinner 1986; Papps 2006). Finally, Poortman (2005) estimated the effects of women's employment on the risk of divorce separately for women who did and did not expect to divorce, and found that the effects were significant in both groups, but were weaker in the latter than in the former group. She concluded that anticipatory adjustments affected the

studied estimates, but that even after the anticipatory behaviors were taken into account, the employed women were more likely to divorce than the non-working women.

3. Country contexts

Germany, Hungary, Italy, and Poland have been exposed to different sets of historical, cultural, political and economic circumstances that have resulted in differences in the position of women in society. We aim to highlight these differences and similarities across the four selected countries, and to formulate country-specific distinctions regarding the possible impact of women's employment on divorce. Our reflections refer to more than 30 years of country-specific developments, as our sample of women were exposed to the risk of divorce from the mid-1970s until 2000[2]. In the following, we focus on the country-specific contextual arrangements that may moderate the influence of women's employment on divorce.

3.1. Developments in women's employment and conditions for work-family reconciliation

The perception of women's employment is linked to its prevalence, and to how well it is rooted in the society; i.e., to whether it is a new or an old phenomenon. The current and past levels of women's labor force participation differ across the four countries studied (**Figure 1**). Under the state-socialist systems that lasted until the late 1980s in Hungary and Poland, women had high labor force participation levels: in 1970, the share of women of prime working age (25-54) who were employed was 66% in Hungary and 78% in Poland. Immediately following the collapse of state-socialism, women's labor market participation rates declined in Hungary, but were almost unchanged in Poland, which suggests that Polish women remained determined to find and keep a job (Kotowska and Sztanderska 2007). A few years after the transition to a market economy, the labor force participation rates of women in Hungary began to recover, and nearly reached the levels observed in Poland. In West Germany, women's economic activity levels were much lower than in Poland and Hungary throughout the 1970s and the 1980s, but were still growing steadily. Since 2000, Germany has the highest female labor market participation rates of the four countries, though it should be noted that a large share of this increase is due to an expansion of

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[2] Germany emerged in 1990 from the unification of two state organisms that previously had distinct economic and legal arrangements. The process of unification was accomplished mostly through the incorporation of the former GDR into the political, legal, and economic system of the FRG. This is the first reason why our description focuses mainly on the FRG. The second reason is that the population of the FRG was more numerous than the population of the GDR; hence, the observations referring to the geographical boundaries of the current Germany before 1990 are dominated by the FRG.

part-time employment among women. In Italy, women's labor force participation has been rising gradually since the 1970s, but still remains at low levels. In general, women in Hungary and Poland are much more established as income providers than women in Germany and Italy, primarily because women in the first two countries became integrated into the labor market in the second half of the previous century.

Figure 1. Labor force participation of women aged 25-54; Germany, Hungary, Italy, Poland, 1970-2011
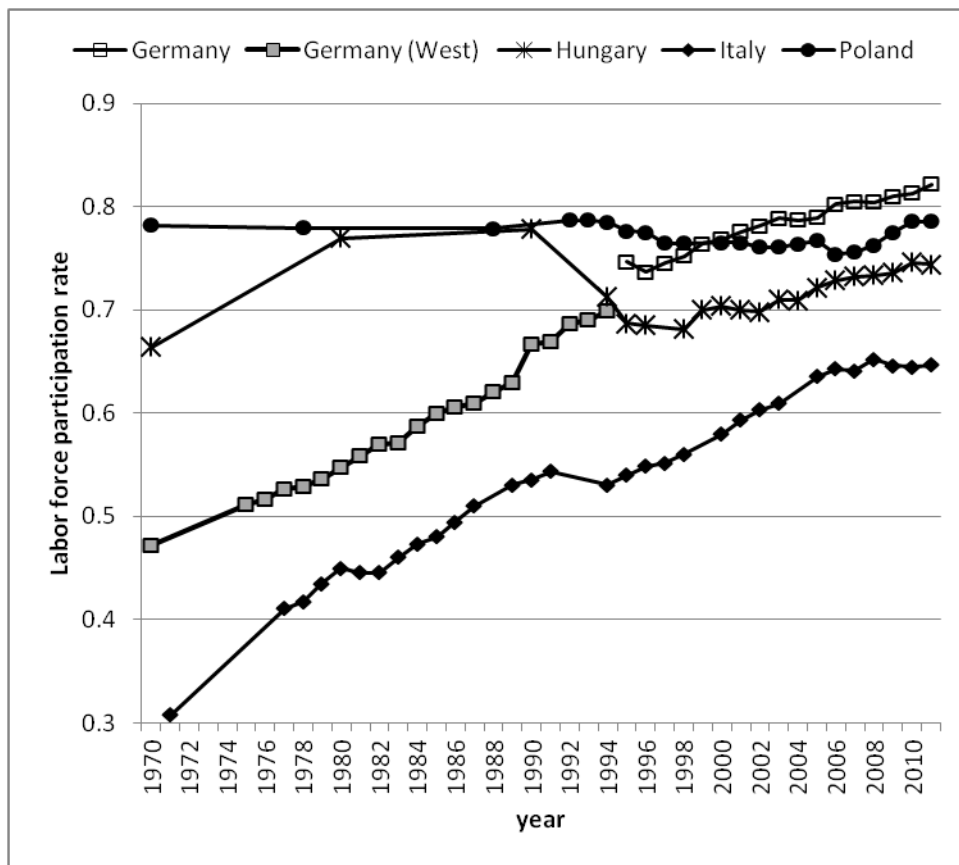
Source: Own elaboration based on ILO LABORSTA (up to 2008) and Eurostat data (2009-2011)
Note: For Italy, the 1977-1980 the rate is for women aged 25-49.

None of the four countries provides good conditions for the reconciliation of paid work and family life. According to the index of the conditions for work and family reconciliation (ICWFR) developed by Matysiak and Węziak-Białowolska (2016), which covers 30 European countries for the period 2008-2010, Hungary, Italy, and Germany rank 17th, 18th, and 19th,

respectively; while Poland ranks 23rd. The ICWFR is based on three domains: family policies, labor market structures, and social norms regarding men's and women's roles. Although the four countries studied are close to each other in the ranking, they differ in terms of the factors that led them to be assigned to these positions. Italy performs relatively well when it comes to child care provision for children of three-to-six years of age. However, Italy has the shortest and worst paid parental leave entitlements of the countries studied, and has a heavily regulated labor market with very high barriers to labor market entry, particularly for young people. Hungary and Germany have more generous leave entitlements (in terms of both payment and duration), but they fare much worse in the area of child care provision. Hungary tends to have rigid working hours, whereas Germany and Italy have highly regulated labor markets. Poland has poor public child care services, and long but largely unpaid leave entitlements. Like Hungary, Poland has very rigid working hours, and low levels of legal employment protection. Attitudes toward women's employment and men's involvement in care are relatively traditional in all of the countries, but are more traditional in Italy and Poland than in Germany and Hungary.

The conditions for the reconciliation of paid work and family life were changing over the study period in all four countries. For example, although the Germans currently have less traditional attitudes than the Italians, in the 1980s the Germans favored gender-specialized work-family arrangements to a much greater extent than other western Europeans (Lück and Hofäcker 2003; Ostner 1993). Since the 1990s, Germany has been gradually expanding its public child care services and has reformed its parental leave system (Evers, Lewis, and Riedel 2005; Rosenfeld, Trappe, and Gornick 2004). While under state-socialism, Poland and Hungary adopted the so-called dual earner/female double burden model, which was common in the socialist planned economies (Pascall and Manning 2000). Women in Poland and Hungary were under social pressure to both provide care and earn income, but were able to meet their work and family obligations because of the generous employment protections and child care services in these countries, especially in Hungary (Fodor et al. 2002; Pascall and Manning 2000). After they transitioned to a market economy, both of these countries reduced their family and parental benefits. However, the family policies of Poland and Hungary diverged (Frejka and Gietel-Basten 2016). Except in the years 1994-1998, Hungary continued to provide universal and rather generous parental and family benefits that tended to reduce a woman's dependence on her labor market position and on her partner, but also discouraged her from working (Matysiak and

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Szalma 2014). Poland, on the other hand, switched to insurance-based maternity payment and means-tested parental and family benefits, which meant that a woman was highly dependent on the market and her spouse's income (Fodor et al. 2002; Matysiak and Szalma 2014; Szelewa 2012; Szikra and Szelewa 2010). Finally, Italy experienced a strong increase in female educational attainment and labor market participation in the last decades, and the dual earner model became increasingly widespread among Italian households (Vignoli, Drefahl, and De Santis 2012). However, the conditions for the reconciliation of family life and paid work did not catch up to the ongoing societal changes (Vignoli 2013). In Italy today, working hours continue to be rigid, public services are limited for children aged zero-three, and the levels of male participation in domestic chores are very low (Anxo et al. 2011).

3.2. State support for single mothers

The relationship between women's employment and marital disruption may also depend on the generosity of welfare state support for single parents. Women who do not have a job or who have a poorly paid job may be more reluctant to leave an unsatisfactory marriage if the level of financial support for single mothers, provided either by the state or by the non-resident parent (in the form of alimony), is low. Across countries, the types, levels, and eligibility requirements of state financial support for single mothers vary widely. Of the four countries, Italy is the only one that offers financial support that is conditional on employment. In Italy, families are entitled to receive family benefits and single mothers are eligible for tax breaks, but all of these transfers depend on employment status. In the remaining three countries, families may be entitled to receive family benefits for children, supplementary payments for single parents, and social assistance for the poor. These payments are made regardless of the parents' employment status, but in Poland they are strongly means-tested, and are paid only to the families with the greatest need.

To compare the generosity of state transfers made to single parents, we summed up all the social transfers received by a single non-working mother with two children aged nine and 11 (i.e., family benefits, social assistance, and housing benefits), and compared this figure with the average national wage (AW) using OECD data (OECD 2008). Our calculations revealed that public financial support for non-working single mothers is highest in Germany, where the received transfers are equal to around 43% of the AW; followed by in Hungary and in Poland,

where the transfers are equal to around 30% of the AW; and, finally, in Italy. It is notable, however, that the size of the received transfers in Germany, Hungary, and Poland declines as women take up employment. Due to means-testing, this decline is the steepest in Poland. If a single mother in Hungary or Germany gets a job in which she earns the AW, her earnings increase by 14% as a result of social transfers. However, a single mother in Poland who is earning the AW does not receive any financial support. For comparison, single mothers who earn 100% of the AW in Italy receive social transfers of around 5% of the AW in addition to tax breaks. In sum, the levels of state support for single mothers are most generous in Germany and Hungary, where support is not conditioned on employment status and is weakly dependent on household income. Women in those two countries are thus least dependent on their partners or the labor market. In Poland, public support for single mothers is quite generous if a woman is unemployed or has a poorly paid job, but it is not provided to single mothers with average or higher earnings. The situation of single mothers in Italy is strongly dependent on the labor market.

Forms of alimony, such as child support payments from the non-resident parent, usually represent the second kind of financial support single parents are entitled to receive. The share of sole parents receiving child support is highest in Germany and Hungary, at nearly 34%; is slightly lower in Poland, at nearly 31%; and is lowest in Italy, at 22% (OECD 2011 - Table 6.4).

3.3. The economic necessity of a second income

The four countries studied also differ greatly in terms of affluence, which in turn determines the extent to which the economic activity of both partners is required to satisfy a household's needs. To exemplify this dimension, we refer to the percentages of household expenditures spent on "basic" goods, a category that encompasses food and non-alcoholic beverages; housing, including water, electricity, gas, and other fuels; and clothing and footwear. This indicator synthesizes the information about the household income and the level of prices and expenditures applicable to a given country, and was computed as the mean proportion over the time points available in the Eurostat database. A relatively high share of expenditures on basic goods means that the members of a typical household struggle to satisfy their basic consumption needs. **Figure 2** shows that the share of basic consumption expenditures is highest in Poland, followed by in Italy and in Hungary. The lowest share of basic consumption expenditures is in Germany,

which indicates that households in Germany experience the lowest degree of economic pressure. The difference in the shares of basic consumption expenditures between households with one and two working persons is relatively small, and is similar in all four countries. The difference is slightly larger in Poland and Hungary than in Italy, and is smallest in Germany. We may expect to find that before 2000, the differences between Hungary and Poland on the one hand, and Germany and Italy on the other were even greater because of the low priority placed on individual consumption under state-socialism, and the economic crisis that Hungary and Poland experienced in the 1990s.

Figure 2. Share of basic consumption expenditures (food, housing, and clothing) in the total household expenditures by the number of working persons, mean over 2005 and 2010.
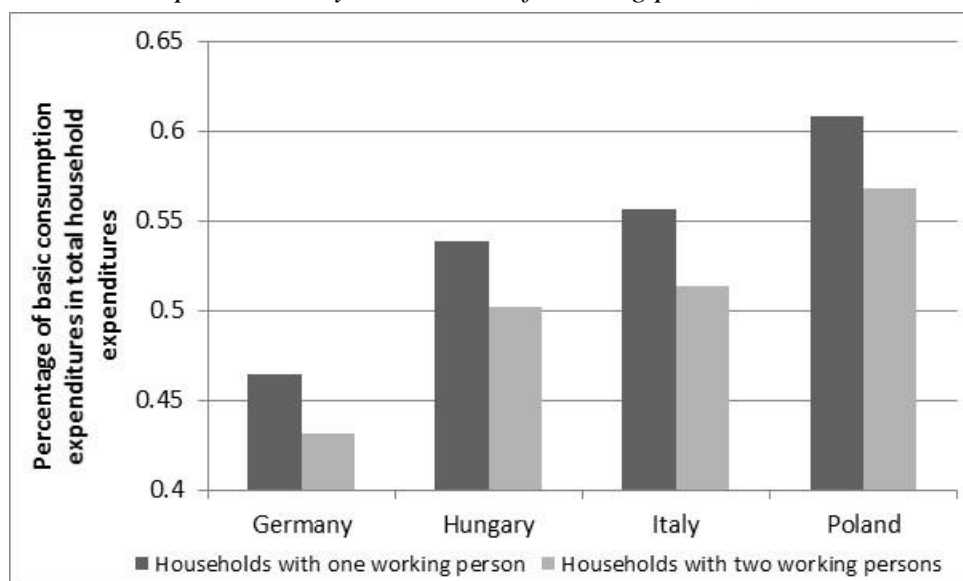
Source: own calculations on Eurostat data.

3.4. The democratization of divorce

Importantly for our study, the four countries also differ in terms of the spread of divorce. As is shown in **Figure 3**, divorce has long been commonplace in Hungary and Germany, and both countries currently have relatively high divorce levels (more than 40% of marriages are expected to dissolve if the current duration-specific divorce rates hold in the future). Poland had rather stable levels of marital dissolution throughout the 1970s and the 1980s, but divorce rates in the

country have risen rapidly since the second half of the 1990s. In Italy, the marked increase in marital disruption began after 1980, and accelerated in the first decade of the 21st century.

In countries where divorce was or still is a relatively rare event, it is intrinsically associated with high social and economic costs. The ability of the partners to bear these costs is a precondition for divorce. Thus, women with more resources—such as a higher level of education and a job—may find it easier to divorce than women with fewer resources (Goode 1993; Matysiak, Styrc, and Vignoli 2014). As time passes and divorce becomes democratized, it also becomes less and less selective with regard to women's social and economic resources. The high levels of divorce in Hungary and Germany suggest that in those countries the divorce process is less selective than in Italy and Poland, where the incidence of marital dissolution is lower.

Figure 3. Trends in the Total Divorce Rate in Germany, Hungary, Italy, and Poland, 1970-2011
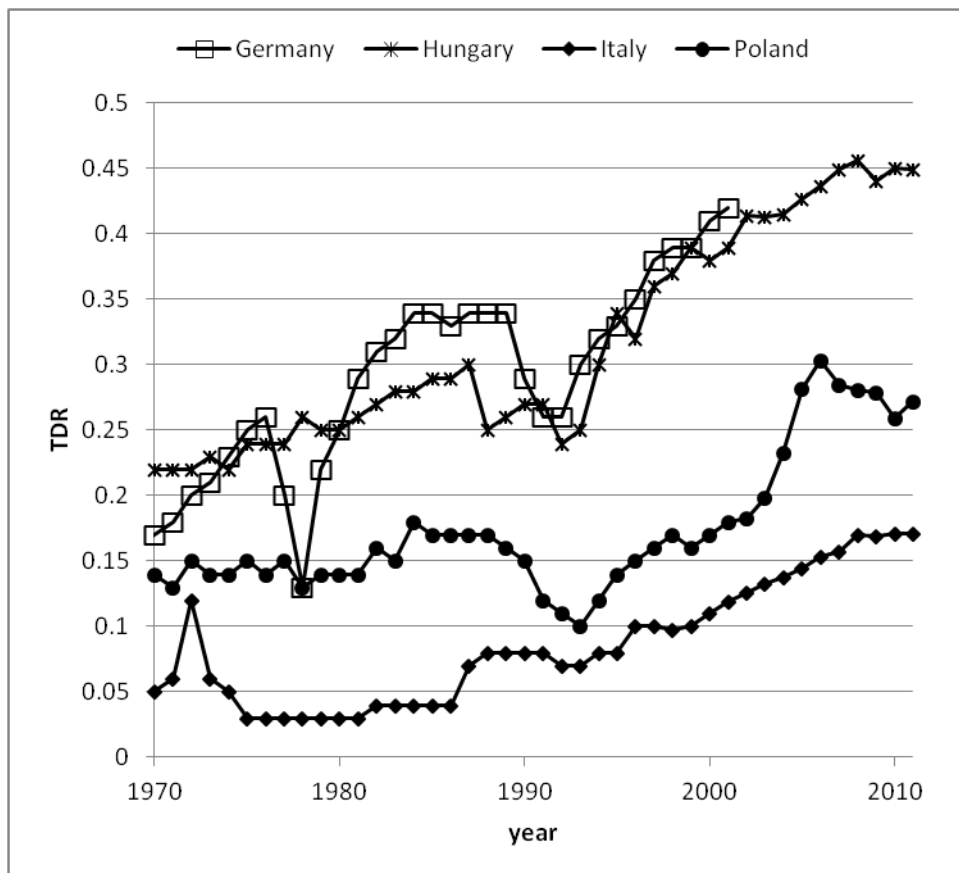
Source: Council of Europe Data up to 2004; own calculations on Eurostat data for 2005-2011

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3.5. Research hypotheses

We expect to find that the magnitude of the association between woman's employment and the divorce risk will differ depending on the contextual setting of each country. We anticipate that it will be strongly positive in Italy because of the weak rooting of women's economic activity, the strong anchoring of the male breadwinner model, the unfavorable conditions for work-family reconciliation, the almost non-existent state support for single mothers, and the perception that women should be the main care providers.

In Hungary and Poland, the high levels of women's employment are historically rooted, and women's labor market activity does not violate institutionalized gender norms. In these countries, a dual earner family model is a prerequisite for satisfying the economic needs of family members. Nonetheless, Hungary and Poland are still characterized by a traditional division of work in the household. Thus, we may expect to find that the association between woman's employment and divorce risk is positive in Hungary and Poland, but with a much smaller magnitude than in Italy. We also anticipate finding differences in the impact of women's employment on divorce in Hungary and Poland. Hungary has more favorable conditions than Poland for family-work reconciliation because of its leave system, child care availability, and generous state support for single mothers. In addition, in Hungary the practice of divorce is more common, making it less selective towards certain socio-economic groups. Hence, we expect to find that the association between woman's employment and divorce is weaker in Hungary than in Poland.

Germany is characterized by high levels of women's labor force participation, but the current levels result from intensive growth since the 1970s, and thus are not long-standing features of the German labor market. Because the norms regarding women's employment have long been rather traditional, and because men tend to have higher earnings than women, the male breadwinner model remains prevalent in Germany. The effects of those unfavorable conditions on the association between woman's employment and marital disruption should be mitigated by the relatively high levels of divorce, which means that the divorce process is less selective in terms of women's empowerment. In addition, German women who opt for a divorce seem to be less dependent on their labor market position because they often rely of financial support from the state. Consequently, in Germany we expect to find that the impact of woman's employment on divorce is positive, but is as weak as in Hungary.

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4. Analytical strategy

In order to address our research objectives, we have developed an analytical model that allows us to account for women's selection and anticipation strategies. We discuss our analytical approach stepwise. First, we present a multi-process hazard model of marital disruption (equation 1), employment entry (equation 2), and employment exit (equation 3); which allows us to account for time-constant unobservables. Second, we extend the model by adding conditional splines of time since employment entry to the equation (1) to account for anticipation.

Our multi-process hazard model consists of three single-process hazard models modeled jointly (the subscripts for an individual were suppressed for the sake of simplicity):

$$\ln h^D(t) = \alpha_0 + \alpha_1 \, DurMar(t) + \alpha_2 \, Z^D(t) + \alpha_3 \, X^D + \alpha_4 Emp(t) + \varepsilon^D \tag{1}$$

$$\ln h_j^{EN}(t) = \gamma_0 + \gamma_1 \, DurNonE(t) + \gamma_2 \, Z^{EN}(t) + \gamma_3 \, X^{EN} + \varepsilon^{EN} \tag{2}$$

$$\ln h_j^{EX}(t) = \delta_0 + \delta_1 \, DurE(t) + \delta_2 \, Z^{EX}(t) + \delta_3 \, X^{EX} + \varepsilon^{EX} \tag{3}$$

where $h^D(t)$ constitutes the hazard of marriage disruption, $h^{EN}(t)$ the hazard of employment entry, and $h^{EX}(t)$ the hazard of employment exit, with time t measured in months. The baseline log hazards are modeled with the use of piecewise linear spline functions of time. A piecewise linear spline function allows for a flexible representation of a continuous variable by connecting a series of functions that are linear within a priori specified intervals, and allowing their slopes to vary across the intervals (for more details see Lillard 1993). The nodes were located using an exploratory ("backwise") approach; i.e., we start with a large number of nodes, and then remove the non-meaningful nodes step by step. The identification of the model is attained through within-person replication—in this specific context, many women have had more than one divorce as well as several employment episodes (Lillard et al. 1995, p. 446).

The process time in the equation (1) is the time elapsed since marriage formation until its disruption, the death of a partner, or the time of the interview; whichever occurred first (DurMar(t)). The date of union disruption was settled at the date of the de facto separation. Our main explanatory variable is woman's employment status Emp(t). A woman was classified as employed when she was officially in employment, which means that she was either working at a given time point t or was on maternity or parental leave. We controlled for a series of time-constant X^D and time-varying $Z^D(t)$ covariates. The first group encompasses the age at a first

marriage and a set of dummies indicating whether the respondent's parents were divorced when the respondent was aged 15[3], whether any of respondent's parents had a tertiary education, whether the respondent had ever experienced a premarital conception or premarital birth, and whether the respondent's first marriage had been preceded by cohabitation with her first husband or another partner. The time-varying covariates include the following: the duration of a marriage (with a spline specification), the marriage order, the calendar time (with a spline specification), the number of the respondent's children, the age of the youngest child (with a spline specification), and the respondent's educational attainment. Finally, the equation (1) contains a random term ε^D which is fixed over a woman's lifetime. It is assumed to follow a normal distribution with a zero mean and a standard deviation σ_ε, and it describes a woman's unobserved time-invariant proneness to dissolve a marriage.

Overall, our main interest is in the estimate of the effect of a woman's employment on her marriage disruption risk; i.e., in parameter α_4. However, this parameter might be biased due to a possible selection of divorce-prone individuals into the pool of the employed/non-employed according to the unobserved woman-specific characteristics. In order to account for the selection, we need to estimate equation (1) jointly with equations (2) and (3) in a common maximum likelihood framework (see Lillard, Brien, and Waite 1995; Lillard and Panis 1996).

The two equations (2) and (3) model the transitions to and out of employment, respectively. In equation (2), a woman is observed from the age 15 until her first entry into employment, and later after she exits a job and until she enters another one. Likewise, in equation (3) a woman is followed from her first entry into a job until her exit from that job, and later from the point at which she starts a second or subsequent job until she exits it. The variables DurNonE(t) and DurE(t) represent the baseline hazards; i.e., the time since entering non-employment and employment, respectively; and are introduced as piecewise linear splines. They are assumed to shift proportionally by a series of time-constant X and time-varying Z(t) covariates: namely, her parents' education and her mother's employment when she was aged 15, her age (with a spline specification), the calendar period (with a spline specification), the age of her youngest child (with a spline specification), her parity, her educational level, her work experience (with a spline specification in (3)), the spell order, and her marital status. Both

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[3] For Germany and Hungary, this covariate indicates whether the respondent's parents dissolved any union.

equations also contain woman-specific unobserved heterogeneity terms, ε^{EN} and ε^{EX}, which are assumed to be normally distributed (with zero means and standard deviations $\sigma_{\varepsilon EN}$ and $\sigma_{\varepsilon EX}$ respectively), and which represent woman-specific, time-constant, unobserved propensity terms for entering and exiting employment.

The simultaneous estimation of equations (1)-(3) implies that the woman-specific unobserved heterogeneity terms are jointly distributed:

$$
\begin{pmatrix} \varepsilon^{D} \\ \varepsilon^{EN} \\ \varepsilon^{EX} \end{pmatrix} \sim N \left(\begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma^{2}_{\varepsilon^{D}} & \rho_{\varepsilon^{D}\varepsilon^{EN}} & \rho_{\varepsilon^{D}\varepsilon^{EX}} \\ & \sigma^{2}_{\varepsilon^{EN}} & \rho_{\varepsilon^{EN}\varepsilon^{EX}} \\ & & \sigma^{2}_{\varepsilon^{EX}} \end{pmatrix} \right) \tag{4}
$$

To control for the effect of potentially common unobserved antecedents of both processes, we allow for the most flexible specification: namely, individual unobserved characteristics and correlated equations. A positive correlation between the unobserved propensity of women to divorce and enter employment ($\rho_{\varepsilon^{D}\varepsilon^{EN}}$ >0) and a negative correlation between the unobserved propensity of women to divorce and exit employment ($\rho_{\varepsilon^{D}\varepsilon^{EX}}$ <0) are signs of the selection of divorce-prone women into the pool of employed (positive selection) due to time-constant unobserved characteristics. This may mean, for instance, that women with a weak family orientation might also be strongly work-oriented. Conversely, a negative correlation between the unobserved propensity of women to divorce and enter employment ($\rho_{\varepsilon^{D}\varepsilon^{EN}}$ <0) and a positive correlation between the unobserved propensity of women to divorce and exit employment ($\rho_{\varepsilon^{D}\varepsilon^{EX}}$ >0) implies that divorce-prone women select themselves to the pool of the non-employed, because, for instance, they are unsuccessful both in their marriage and in the labor market due to some unobserved factors.

In the equation (1) of the multi-process model outlined above, the employment variable is introduced as a binary covariate. It does not, however, account for any possible adjustments in a woman's labor market status in anticipation of a divorce, which biases upward the estimated effect of women's employment on the divorce risk. Therefore, in the second step we replaced the binary variable describing a woman's employment status with a conditional spline for the time since her entry into employment in order to account for such adjustments. The spline switches on

at employment entry, and allows us to verify whether and how the risk of marriage disruption changes over time after a woman has entered employment. Symptoms of anticipatory adjustments can be detected if the risk of divorce increases abruptly after employment entry and starts to decline after a relatively short period, when the women who entered employment in response to an upcoming divorce are separated. After that time, the shape of the conditional spline and its values are our main interest. On the one hand, if the spline function indicates that there was a decline in the risk of marriage disruption for women in employment to one or even below one, we can assume that women's employment does not destabilize marriage, and that the positive effect of employment on the divorce risk obtained from a model in which women's employment is entered as a binary covariate is fully driven by anticipatory behaviors. On the other hand, if after some time following entry into employment the risk of divorce remains significantly higher than one, we can conclude that women's employment increases the hazard of marriage disruption.

5. Data

At the start of our study, we considered the possibility of applying the modeling strategy described above to all of the GGS countries that provide information on both partnership and employment histories: namely, Bulgaria, the Czech Republic, France, Georgia, Germany, Hungary, Italy, Lithuania, and Poland. But as we noted in the previous section, the identification of multi-process models is attained through within-person replications (i.e., women may experience several partnerships and labor market events). We therefore ultimately selected those datasets that have reasonably large samples and enough repeated events in the respondents' partnership and employment careers to ensure that our estimates would be stable and robust. Specifically, we used data from the GGS for Germany, Hungary, and Poland; and from the Multipurpose Household Survey "Family and Social Subjects" (FSS) for Italy. For Germany and Hungary, we used the first two waves of the GGS, which were carried out in 2004-2005 and 2008-2009 for both countries, because the employment history of each respondent was recorded in the second wave only. For Germany, the whole sample consisted of 10,017 respondents aged 18-79 in the first wave and 3,227 respondents of the same age in the second wave; for Hungary, the sample was made up of 13,540 respondents aged 18-79 in the first wave and 10,641

respondents of the same age in the second wave. The Italian FSS was conducted in 2009 on a sample of 48,083 respondents of all ages; it was intended to serve as a replication of the 2003 Italian GGS. For Poland, we used the first wave of the GGS, which was carried out at the turn of 2010 and 2011 on a sample of 20,000 respondents aged 18-79. The overall response rates were 55% (first wave) and 50% (second wave) for the German GGS, 83% for both waves of the Hungarian GGS, 55% for the Polish GGS, and 81% for the Italian FSS. From these datasets we extracted the women who were born in 1955 or later to eliminate any bias caused by mortality of older cohorts. The analytical sample is displayed in **Table 1**.

The advantage of using these surveys is that they cover the partnership and the employment histories of the respondents, as well as enough basic information on the respondents' education to allow us to reconstruct their educational histories. The disadvantage of using these datasets is, however, that they do not give us access to information on the partners' educational and employment histories. This information is not available at all for Germany, Hungary, and Poland; and for Italy it is available only for couples who were still together at the time of the interview. We are aware that it would have been useful to have distinguished between East and West Germany in the analysis. However, the German GGS provides us with information on the place of residence at the time of the interview only. Given the massive East-to-West migration movements after the fall of the communist system, we could not use this information in a retrospective manner.

Table 1. Analytical sample: overall samples and subsamples of first and higher order marriages, Germany, Hungary, Italy, and Poland.

	Women who entered:		
	Overall sample	first marriage	second and higher order marriage
Germany	1340	1038	61
Hungary	2938	2222	171
Italy	10586	6709	143
Poland	6352	4731	135

6. Empirical findings

Our modelling strategy consists of three steps. First, we estimate the single-process hazard models of marriage disruption, entry into employment, and exit from employment (M1). The

single-process hazard models are the equations (1)-(3) modeled separately. Second, we estimate the multi-process hazard model, which means that we allowed the unobserved person-specific characteristics to correlate across equations (M2). Third, the explanatory variable in the regression equation of marital disruption indicating woman's employment in model M2 is replaced by a combination of variables that captured both the effect of entering employment and its change over time (M3). By comparing the results obtained in the first and second step, we are able to assess to what extent the relationship between employment and marital instability is affected by the selection of women oriented toward employment into the pool of women at high/low risk of divorce due to time-constant unobserved characteristics. By comparing the results obtained in the second and third step, we evaluate whether the estimated effect of employment on marital instability results from women's anticipatory behavior. In the following we focus on a selection of results, but the full set of outcomes are available in the appendix.

6.1. Selection effects

The estimates of the parameters of the unobserved heterogeneity terms from the multi-process model M2 are reported in **Table 2**. The significant estimates of the residuals' standard deviations indicate that there is considerable variability in the person-specific unmeasured characteristics in all of the processes under consideration in three of the four countries studied: namely, Hungary, Italy, and Poland. For Germany, the standard deviation of unobserved heterogeneity term for the marital disruption equation is insignificant. Few of the correlations between the unobserved heterogeneity terms turned out to be significant; this means that we were quite successful in controlling for important antecedents of divorce and employment processes, which influence the two processes jointly. Nonetheless, some correlations between unobserved heterogeneity terms are revealed to be significant. For example, we found that the unobserved heterogeneity term of marital disruption correlates positively with the unobserved heterogeneity term of employment exit in Poland. This finding implies that women with an above-average unobserved propensity to terminate employment also have an above-average propensity for marital break-up. Thus, in Poland the estimate of the impact of women's employment on marital disruption derived from standard single-process model M1 provides us with biased estimates. Furthermore, we found a significant correlation between unobserved heterogeneity terms in the equations for employment entry and exit in Germany and Italy, but in the opposite direction. For Italy, the correlation was

found to be positive, which means that women who, for unobserved reason, have a higher propensity to start employment also have a higher propensity to quit. Hence, the employment careers of Italian women appear to be relatively unstable for some unobserved reasons. By contrast, the correlation between the two processes was found to be negative in Germany, which suggests that the women entering employment are less likely to exit it, perhaps because of human capital characteristics not considered in our model. In Hungary, none of the correlations between the unobserved heterogeneity terms were shown to be significant.

Table 2. Unobserved heterogeneity terms from regressions of marital disruption, entry into employment, and exit from employment: standard deviations and correlations, Germany, Hungary, Italy, and Poland

	Germany		Hungary		Italy		Poland	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Standard deviations of unobserved heterogeneity terms								
marital disruption	0.86	0.64	0.60 *	0.34	0.83 **	0.40	0.81 ***	0.30
employment entry	1.10 ***	0.07	0.69 ***	0.03	0.91 ***	0.03	0.87 ***	0.03
employment exit	1.01 ***	0.14	0.62 ***	0.06	0.77 ***	0.04	1.08 ***	0.06
Correlations between unobserved heterogeneity terms								
marital disruption and employment entry	0.51	0.31	0.01	0.13	0.14	0.10	0.13	0.10
marital disruption and employment exit	0.12	0.23	0.17	0.18	0.04	0.10	0.41 ***	0.15
employment entry and exit	-0.43 ***	0.11	-0.03	0.09	0.21 ***	0.06	-0.01	0.05

* significant at 10 percent; ** significant at five percent; ***significant at one percent

Next, we discuss the effects of women's employment on divorce risks. We first look at the findings from the single-process model (M1), then from the multi-process models without the adjustment for anticipatory behaviors (M2), and finally from the multi-process models with the adjustment for anticipatory behaviors (M3).

The single-process hazard models yield positive effects of employment on marital disruption in all countries but Hungary, where the impact is insignificant (**Table 3**, M1). The magnitude of the effect appears to be strongest in Italy, where employed women have a risk of marital disruption that is 50 percent higher than that of non-employed women. The risk of divorce for women in employment is, relative to that of non-employed women, 35 percent higher in Germany and 20 percent higher in Poland. After the correlation between processes is allowed

for, the positive effect of employment holds in Italy and Poland only, whereas it disappears in Germany (**Table 3**, M2). Importantly, for Poland the effect intensifies from over 20 percent to over 40 percent. This indicates that the estimates from a single-process model in Poland are downward biased, and that the direct risk-increasing effect of employment is intensified after we account for endogeneity between the employment and the partnership spheres. This change in the effect of women's employment on marital disruption after controlling for the influence of common unobserved factors affecting the two processes is a sign of a selection of non-employed women into marital disruption, and is in line with the results presented in Table 2. In Germany, the previously positive effect of women's employment on divorce risks (obtained in M1) becomes insignificant in M2, even though the correlations between unobserved heterogeneity terms in the processes for marital disruption and employment entry/employment exit are insignificant. Nonetheless, the size of the correlation between the unobserved heterogeneity terms in the processes of marital disruption and employment entry is quite large (see Table 2), and its non-significance might be attributable to the scarcity of within-person replications (i.e., second and higher order divorces). Hence, a positive selection mechanism seems to emerge in Germany: women with a weak family orientation may also be strongly work-oriented. Altogether, the findings from the multi-process model suggest that women's employment has a strongly positive effect on marital disruption in Italy and Poland, and has no effect in Germany and Hungary.

Table 3. Relative risks of women's employment to marital disruption; estimates from single-process and multi-process hazard models, Germany, Hungary, Italy, and Poland

Indicator of being employed (ref. = not employed)	Single-process model (M1)	Multi-process model with indicator of being employed (M2)
	Germany	
Employed	1.35 *	1.11
	Hungary	
Employed	1.14	1.16
	Italy	
Employed	1.49 ***	1.38 ***
	Poland	
Employed	1.22 **	1.42 ***

* significant at 10 percent; ** significant at five percent; ***significant at one percent
Note: Estimates are controlled for duration of marriage, age at marriage, marriage order, calendar time, number of children, age of the youngest child, educational level, parental divorce, parental education, premarital cohabitation.

6.2. Anticipation effects

Next, we investigated how the risk of marital disruption is related to the time since the entry into employment. Our aim was to determine whether the effects of women's employment on divorce risks found in model M2 were biased by the anticipation mechanism. If our results showed that the disruption risk increases soon after employment entry and declines thereafter, we would expect to find that anticipatory behaviors drive—at least in part—the effects presented in the second column of Table 3. In order to verify whether anticipatory behaviors are present, we introduced a conditional piecewise linear spline into the multi-process hazard model. The results of the spline estimate are presented in **Figure 4**. Our findings indicated that for all countries, a woman's entry into employment is associated with an increase in the risk of marital disruption. In Germany and Hungary, the risk of marital disruption increases only slightly and insignificantly after employment entry, and remains close to zero thereafter. This finding confirms our result that women's employment does not affect marital disruption in those two countries. In Poland, the risk of marital disruption increases strongly after a woman's employment entry, but remains at this level thereafter. This suggests that marital disruption in Poland is positively related to women's employment in general, but that it does not depend on the time since employment entry, which excludes anticipatory behaviors. Finally, in Italy we found that the risk of marital disruption increases strongly after a woman enters employment, and decreases visibly with time. This decline in the risk of marital disruption suggests that some women entered employment because they feared their union might dissolve. This finding points to the presence of anticipatory adjustments in Italy, and suggests that the positive effect of women's employment on marital disruption seen in Table 3 (M2) is partly driven by reverse causation. Nevertheless, it appears that the anticipatory behavior does not explain the overall effect of employment on marital stability in Italy, as the positive relationship between the two processes is still observed several years after a woman has entered employment. Thus, the risk of marital disruption declines after a woman enters employment, but even 10 years after employment entry her risk of divorce is more than 20 percent higher than that of a not employed woman.

Figure 4. Duration-dependent effect of employment on marital stability, estimates from a multi-process hazard model with time since employment entry in equation (1) (Model M3), Germany, Hungary, Italy, and Poland
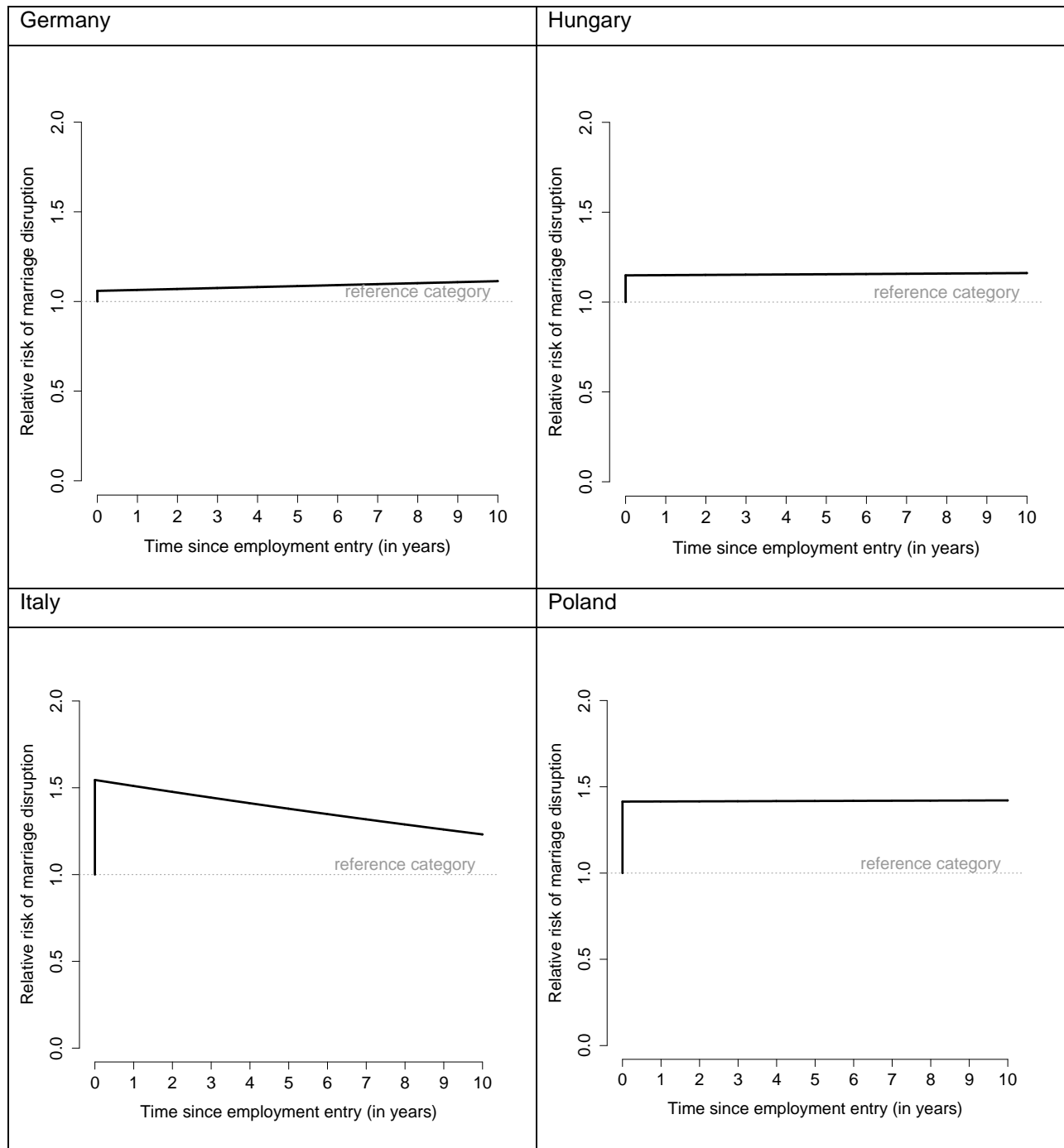
Note: Estimates are controlled for duration of marriage, age at first marriage, marriage order, calendar time, number of children, age of the youngest child, educational level, parental divorce, parental education, premarital cohabitation, premarital conception/birth.

7. Conclusions

In this study, we investigated the impact of women's employment on marriage stability in four European countries—Germany, Hungary, Italy, and Poland—using a novel solution that accounted for two potentially interfering mechanisms that have been overlooked in previous research: first, estimation bias due to women's unobserved characteristics that may jointly affect the two processes; and, second, the anticipatory employment behaviors of women who might expect to divorce in the near future. The first issue was resolved by estimating a multi-process hazard model that took into account a potential correlation between marital disruption and employment processes. The second issue was addressed by introducing a duration-dependent effect of employment in the model for marital disruption to examine whether the divorce risk is elevated soon after employment entry and declines thereafter; a pattern that could signal anticipatory behavior.

The first key result of our study is that there is spatial variation in the impact of women's employment on divorce even after controlling for selection and endogeneity mechanisms. Our findings show that women's employment has a strongly positive effect on marital disruption in Italy and Poland, and no effect in Germany and Hungary. These findings confirm our expectations, and may be interpreted as being as anticipated given the country-specific contextual arrangements, particularly each country's gender norms, policies supporting the economically weaker party in case of divorce, and the economic necessity for a second income. Today, Italy is still a male breadwinner society characterized by unfavorable conditions for work-family reconciliation and relatively low female employment rates. In Poland the dual earner family model is much more prevalent than in Italy, but the country continues to be characterized by a traditional division of unpaid work within couples, and women's employment is not sufficiently supported by public policies (Matysiak and Vignoli 2013). State support for single mothers is rather weak in Poland and is residual in Italy. The elevated divorce risks of employed women in Italy and Poland are thus in line with traditional microeconomic perspectives (independence hypothesis)—women's employment status was hypothesized to destabilize marriage by overturning traditional marriage norms and by facilitating divorce in case of conflicts in the relationship, as employed women have greater economic independence and are better able to cope with family breakdown. The findings we obtained for Italy and Poland are also largely consistent with previous research on the topic for the two countries (De Rose 1992;

Liefbroer and Dourleijn 2006; Salvini and Vignoli 2011; Styrc and Matysiak 2012; Vignoli and Ferro 2009), which also found a positive association between women's employment and marital disruption, even though these studies did not consider selection and anticipation mechanisms.

By contrast, in contemporary Hungary and Germany the impact of women's employment on divorce appears to be negligible. Despite the country's shared legacy with Poland, we found no significant impact of women's employment on divorce in Hungary. The effect of women's employment on divorce is not detectable in the country for a number of reasons. In Hungary, the incidence of divorce is set at relatively high levels, and the (full-time) dual earner family model has been dominant for over 50 years. Moreover, compared to Poland, Hungary represents a more favorable setting for reconciling work and family, and places less economic pressure on women to be economically active after divorce because of the country's relatively generous state support for single mothers. Incidentally, these results are in line with previous empirical evidence for Hungary (e.g. Liefbroer and Dourleijn 2006; Oláh 2001). Our finding that divorce and women's employment are not causally related in Germany is consistent with the relatively high levels of divorce in the country, which implies that the divorce process has become less selective for women. In addition, state support for single mothers is relatively high in Germany, which reduces women's dependence on their labor market position after separation.

The second important contribution of our article is that we formally tested whether the correlation between employment and marital instability results from selection and endogeneity mechanisms. Before we controlled for selection effects, women's employment seemed to be associated with higher marital instability in all of the countries except Hungary, where the effect was insignificant. In Germany, however, the slightly significant higher risk of marital disruption for employed women vanished in the multi-process variant of the model. Hence, our findings indicate that the impact of women's employment on divorce in Germany is largely driven by positive selection effects: e.g., by women who have a weak family orientation or a low-quality marriage, or who are strongly work-oriented or successful in the labor market. This finding is in line with our knowledge of the German context, in which childrearing and employment are barely compatible, and women are often forced to choose between having a family life and having an employment career (Kreyenfeld 2002). Interestingly, Germany is the only country among the countries we studied for which the effect of women's employment on marital disruption changed from significantly positive to non-significant after we accounted for selection

effects. This may explain why previous studies on the topic for Germany generated conflicting messages: e.g., Cooke (2006) and Cooke et al. (2013) showed that the two processes were not significantly related, while Liefbroer and Dourleijn (2006) found a significantly positive association between women's employment and union disruption in West Germany, and no significant relationship in East Germany. In Italy, we found that the risk of divorce among employed women remained substantial even in the multi-process variant of the model. This result reinforces our interpretation of the Italian context in light of the independence hypothesis. The same multi-process specification for Poland yielded estimates that were negatively biased due to the selection of divorce-prone women out of employment. This finding suggests that in Poland unobserved factors simultaneously affect the propensity to exit employment and the propensity to exit a marriage. Such behavior may be reinforced by the structure of the financial support available to single mothers in Poland, which is fairly generous for non-working or low-paid single mothers, but is not provided to single mothers with average or higher earnings. Finally, in Hungary the multi-process specification confirmed the insignificant impact of women's employment on divorce.

The third key finding in our study is derived from our question of whether the positive correlation between employment and divorce results from the wife's attempt to secure her own source of income in anticipation of marital disruption. We found traces of anticipation strategies in Italy only. This finding may be interpreted in light of the still low female labor force participation rates in the country. A woman whose marriage is unhappy may decide to enter the labor market because she senses that she will soon divorce. Indeed, in some cases a separation is probably the underlying cause for a woman to take up a new labor market activity, which appears to represent a prerequisite for a "new start." This scenario is also likely to apply to mothers, as almost all of the state support available to single mothers is conditional on being employed (through tax breaks or reconciliation policies, like enhanced access to public child care). Although we found a pattern of anticipation behavior in Italy, it is worth noting that this pattern does not fully explain the elevated levels of disruption risk for employed women, as these levels remained high even several years after employment entry.

Our study has its limitations. First, for data-related reasons we focused on four countries only. However, it would have been interesting to have compared our outcomes with results for settings where the conditions for reconciling paid work and family life are better, the levels of

gender equality in the public and private spheres are higher, and the state support for single mothers is more generous. We hope that our research strategy will be applied to such country contexts when suitable data are available. Second, as the surveys we used do not include information on ex-partners, we were unable to adopt a couple perspective in the analysis; thus, we could control only for the respondent information in predicting the marital separation risk. It has, however, been suggested that information on both partners' contributions to paid and unpaid work are needed to properly assess the impact of women's employment on a union dissolution (Mencarini and Vignoli 2014; Oláh and Gähler 2014; Sigle-Rushton 2010). Third, it is possible to argue that group-specific differences matter: for instance, selection and anticipation mechanisms may play even larger roles among younger cohorts, in more recent time periods, or among certain social classes. Due to the sample's limitations—i.e., we had a limited number of repeated events; namely, marriages and divorces of second and higher orders—we could not explore these possibilities using our data because of the risk of ending up a number of cases that was too small in certain combinations. Finally, our method of controlling for anticipatory behaviors does not take into account the possibility that women who are already employed may intensify their efforts to preserve their employment if they expect to divorce. If we could account for the anticipatory adjustments of this kind as well, we might find signs of anticipatory behaviors in other countries with more widespread female employment than in Italy.

In all, our study has yielded new results for Germany, Hungary, Italy, and Poland that are empirically robust and theoretically coherent; and thus adds important insights to our knowledge of the relationship between women's employment and divorce. We conclude that the country context is essential for filtering the impact of women's employment on divorce. At the same time, we proved that common unobserved antecedents that influence both women's employment and divorce risks induce selection and endogeneity mechanisms, and that these mechanisms may operate differently in different contexts. In addition, we found that women's anticipatory employment adjustments are country-specific. Removing these biases is crucial for generating valid and meaningful comparisons. Hence, with this study we hope to encourage the consideration in future (comparative) divorce research of the potentially distorting effects of selection and endogeneity forces, and of anticipation strategies.

References

Anxo, D., Mencarini, L., Pailhé, A., Solaz, A., Tanturri, M.L., and Flood, L. (2011). Gender differences in time use over the life course in France, Italy, Sweden, and the US. *Feminist economics* 17(3): 159-195.

Austen, S. (2004). Labour supply and the risk of divorce: An analysis of Australian data. *Australian Economic Review* 37(2): 153-165.

Bauman, Z. (2005). *Liquid life.* Cambridge: Polity Press.

Becker, G.S., Landes, E.M., and Michael, R.T. (1977). An Economic Analysis of Marital Instability. *Journal of Political Economy* 85(6): 1141-1188.

Becker, G.S. (1981). *A treatise on the family.* Cambridge, MA: Harvard University Press.

Becker, O.A. (2015). Determinanten und Konsequenzen von Trennung und Scheidung. In: Hill, P. B. and Kopp, J. (ed.). *Handbuch Familiensoziologie*. Wiesbaden: Springer Fachmedien Wiesbaden: 527-561.

Bernardi, F. (1999). Does the husband matter? Married women and employment in Italy. *European Sociological Review* 15(3): 285-300.

Billy, J.O.G. and Moore, D.E. (1992). A Multilevel Analysis of Marital and Nonmarital Fertility in the United-States. *Social Forces* 70(4): 977-1011.

Blossfeld, H.-P. and Drobnic, S. (2001). *Careers of couples in contemporary society: From male breadwinner to dual-earner families: From male breadwinner to dual-earner families.* New York: Oxford University Press.

Blossfeld, H.-P. and Mueller, R. (2002). Guest Editors' Introduction: Union Disruption in Comparative Perspective: The Role of Assortative Partner Choice and Careers of Couples. *International Journal of Sociology* 32(4): 3-35.

Chan, T.W. and Halpin, B. (2002). Union dissolution in the United Kingdom. *International Journal of Sociology* 32(4): 76-93.

Cherlin, A.J. (1979). Work life and marital dissolution. In: Levinger, G. and Moles, O. C. (ed.). *Divorce and Separation. Context, Causes and Consequences* New York: Basic Books: 151-166.

Cherlin, A.J. (2000). Toward a new home socioeconomics of union formation. In: Waite, L. J., Bachrach, C., Hindin, M., Thomson, E., and Thornton, A. (ed.). *The Ties that Bind - Perspectives on Marriage and Cohabitation*. Hawthorne, New York: Aldine De Gruyter: 126-144.

Coltrane, S. (2000). Research on household labor: modeling and measuring the social embeddedness of routine family work. *Journal of Marriage and Family* 62(4): 1208-1233.

Cooke, L.P. (2004). The gendered division of labor and family outcomes in Germany. *Journal of Marriage and Family* 66(5): 1246-1259.

Cooke, L.P. (2006). "Doing" Gender in Context: Household Bargaining and Risk of Divorce in Germany and the United States. *American Journal of Sociology* 112(2): 442-472.

Cooke, L.P. and Gash, V. (2010). Wives' Part-time Employment and Marital Stability in Great Britain, West Germany and the United States. *Sociology* 44(6): 1091-1108.

Cooke, L.P., Erola, J., Evertsson, M., Gähler, M., Härkönen, J., Hewitt, B., Jalovaara, M., Kan, M.-Y., Lyngstad, T.H., Mencarini, L., Mignot, J.-F., Mortelmans, D., Poortman, A.-R., Schmitt, C., and Trappe, H. (2013). Labor and Love: Wives' Employment and Divorce Risk in its Socio-Political Context. *Social Politics: International Studies in Gender, State & Society* 20(4): 482-509.

De Graaf, P.M. and Kalmijn, M. (2006). Change and stability in the social determinants of divorce: A comparison of marriage cohorts in the Netherlands. *European Sociological Review* 22(5): 561-572.

De Rose, A. (1992). Socio-Economic Factors and Family Size as Determinants of Marital Dissolution in Italy. *European Sociological Review* 8(1): 71-91.

Evers, A., Lewis, J., and Riedel, B. (2005). Developing child-care provision in England and Germany: problems of governance. *Journal of European Social Policy* 15(3): 195-209.

Fodor, E., Glass, C., Kawachi, J., and Popescu, L. (2002). Family policies and gender in Hungary, Poland, and Romania. *Communist and Post-Communist Studies* 35(4): 475-490.

Frejka, T. and Gietel-Basten, S. (2016). Fertility and Family Policies in Central and Eastern Europe after 1990. *Comparative Population Studies* 41(1): 3-56.

Goldscheider, F., Bernhardt, E., and Lappegård, T. (2015). The Gender Revolution: A Framework for Understanding Changing Family and Demographic Behavior. *Population and Development Review* 41(2): 207-239.

Goldscheider, F.K. (2000). Men, children and the future of the family in the third millennium. *Futures* 32(6): 525-538.

Goode, W.J. (1993). *World Changes in Divorce Patterns.* New Haven: Yale University Press.

Greenstein, T.N. (2000). Economic dependence, gender, and the division of labor in the home: A replication and extension. *Journal of Marriage and Family* 62(2): 322-335.

Härkönen, J. and Dronkers, J. (2006). Stability and change in the educational gradient of divorce. A comparison of seventeen countries. *European Sociological Review* 22(5): 501-517.

Härkönen, J. (2013). Divorce: Trends, Patterns, Causes, Consequences. Stockholm: Stockholm University (Stockholm Research Report in Demography).

Hobson, B. (1990). No Exit, No Voice: Women's Economic Dependency and the Welfare State. *Acta Sociologica* 33(3): 235-250.

Jalovaara, M. (2003). The joint effects of marriage partners' socioeconomic positions on the risk of divorce. *Demography* 40(1): 67–81.

Johnson, W.R. and Skinner, J. (1986). Labor supply and marital separation. *The American Economic Review*: 455-469.

Kalmijn, M. and Poortman, A.-R. (2006). His or her divorce? The gendered nature of divorce and its determinants. *European Sociological Review* 22(2): 201-214.

Kaplan, A. and Stier, H. (2010). *Political Economy of Family Life: Welfare Regimes, Economic Resources and Divorce*. Paper presented at European Population Conference, Wien, Austria, September 1-4 2010.

Keizer, R. and Schenk, N. (2012). Becoming a Parent and Relationship Satisfaction: A Longitudinal Dyadic Perspective. *Journal of Marriage and Family* 74(4): 759-773.

Kotowska, I.E. and Sztanderska, U. (2007). Zmiany demograficzne a zmiany na rynku pracy w Polsce [Population changes and labour market developments in Poland]. In: Kotowska, I. E., Sztanderska, U., and Wóycicka, I. (ed.). *Aktywność zawodowa i edukacyjna a obowiązki rodzinne w Polsce w świetle badań empirycznych [Economic and Educational Activity versus Family Obligations in Poland]*. Warsaw: Scholar Publishing: 13-46.

Kreyenfeld, M. (2002). Time-squeeze, partner effect or self-selection? An investigation into the positive effect of women's education on second birth risks in West Germany. *Demographic Research* 7(2): 15-48.

Liefbroer, A.C. and Dourleijn, E. (2006). Unmarried cohabitation and union stability: Testing the role of diffusion using data from 16 European countries. *Demography* 43(2): 203-221.

Lillard, L.A. (1993). Simultaneous equations for hazards: marriage duration and fertility timing. *Journal of econometrics* 56(1-2): 189-217.

Lillard, L.A., Brien, M.J., and Waite, L.J. (1995). Premarital cohabitation and subsequent marital dissolution: a matter of self-selection? *Demography* 32(3): 437-457.

Lillard, L.A. and Panis, C.W. (1996). Marital status and mortality: The role of health. *Demography* 33(3): 313-327.

Lück, D. and Hofäcker, D. (2003). Rejection and acceptance of the male breadwinner model: which preferences do women have under which circumstances? Bamberg: University of Bamberg (Globalife Working Paper).

Lyngstad, T.H. and Jalovaara, M. (2010). A review of the antecedents of union dissolution. *Demographic Research* 23(10): 257-291.

Matysiak, A. and Vignoli, D. (2013). Diverse Effects of Women's Employment on Fertility: Insights From Italy and Poland. *European Journal of Population/Revue Europeenne De Demographie* 29(3): 273-302.

Matysiak, A., Styrc, M., and Vignoli, D. (2014). The educational gradient in marital disruption: A meta-analysis of European research findings. *Population Studies* 68(2): 197-215.

Matysiak, A. and Szalma, I. (2014). Effects of Parental Leave Policies on Second Birth Risks and Women's Employment Entry. *Population, English edition* 69(4): 599-636.

Matysiak, A. and Węziak-Białowolska, D. (2016). Country-Specific Conditions for Work and Family Reconciliation: An Attempt at Quantification. *European Journal of Population*: 1-36.

Mencarini, L. and Vignoli, D. (2014). Women's employment makes unions more stable, if the male partners contribute to the unpaid household work. Florence: university of Florence (DiSIA Working Paper 2014/06).

OECD (2008). Benefits and Wages. Paris: OECD.

OECD (2011). Doing Better for Families. Paris: OECD.

Oláh, L.S. (2001). Gender and family stability: Dissolution of the first parental union in Sweden and Hungary. *Demographic Research* 4(2): 29-96.

Oláh, L.S. and Gähler, M. (2014). Gender equality perceptions, division of paid and unpaid work, and partnership dissolution in Sweden. *Social Forces* 93(2): 571-594.

Oppenheimer, V.K. (1994). Women's rising employment and the future of the family in industrial societies. *Population and Development Review* 20(2): 293-342.

Oppenheimer, V.K. (1997). Women's Employment and the Gain to Marriage: The Specialization and Trading Model. *Annual Review of Sociology* 23: 431-453.

Ostner, I. (1993). Slow motion: women, work and the family in Germany. In: Lewis, J. (ed.). *Women and Social Policies in Europe*. Cheltenham, UK: Edward Elgar Pub: 92-115.

Özcan, B. and Breen, R. (2012). Marital instability and female labor supply. *Annual Review of Sociology* 38: 463-481.

Papps, K.L. (2006). The Effects of Divorce Risk on the Labour Supply of Married Couples. Bonn: Institute for the Study of Labour (IZA) (IZA Discussion Paper).

Parsons, T. (1940). An analytical approach to the theory of social stratification. *American Journal of Sociology* 45(6): 841-862.

Pascall, G. and Manning, N. (2000). Gender and social policy: comparing welfare states in Central and Eastern Europe and the former Soviet Union. *Journal of European Social Policy* 10(3): 240–266.

Poortman, A.-R. (2005). How Work Affects Divorce The Mediating Role of Financial and Time Pressures. *Journal of Family Issues* 26(2): 168-195.

Raz-Yurovich, L. (2012). Economic determinants of divorce among dual-earner couples: Jews in Israel. *European Journal of Population/Revue européenne de Démographie* 28(2): 177-203.

Raz-Yurovich, L. (2014). A Transaction Cost Approach to Outsourcing by Households. *Population and Development Review* 40(2): 293-309.

Rogers, S.J. (1999). Wives' income and marital quality: Are there reciprocal effects? *Journal of Marriage and Family* 61(1): 123-132.

Rosenfeld, R.A., Trappe, H., and Gornick, J.C. (2004). Gender and Work in Germany: Before and after Reunification. *Annual Review of Sociology* 30: 103-124.

Ruggles, S. (1997). The rise of divorce and separation in the United States, 1880–1990. *Demography* 34(4): 455-466.

Salvini, S. and Vignoli, D. (2011). Things change: Women's and men's marital disruption dynamics in Italy during a time of social transformations, 1970-2003. *Demographic Research* 24(5): 145-174.

Sayer, L.C. and Bianchi, S.M. (2000). Women's Economic Independence and the Probability of Divorce: A Review and Reexamination. *Journal of Family Issues* 21(7): 906-943.

Sayer, L.C., England, P., Allison, P., and Kangas, N. (2011). She left, he left: How employment and satisfaction affect men's and women's decisions to leave marriages. *American Journal of Sociology* 116(6): 1982.

Schoen, R., Astone, N.M., Kim, Y.J., Rothert, K., and Standish, N.J. (2002). Women's employment, marital happiness, and divorce. *Social Forces* 81(2): 643-662.

Schoen, R., Rogers, S.J., and Amato, P.R. (2006). Wives' Employment and Spouses' Marital Happiness Assessing the Direction of Influence Using Longitudinal Couple Data. *Journal of Family Issues* 27(4): 506-528.

Sigle-Rushton, W. (2010). Men's unpaid work and divorce: Reassessing specialization and trade in British families. *Feminist economics* 16(2): 1-26.

Simpson, I.H. and England, P. (1981). Conjugal work roles and marital solidarity. *Journal of Family Issues* 2(2): 180-204.

Spitze, G. (1988). Women's employment and family relations: A review. *Journal of Marriage and Family* 50(3): 595-618.

Stevenson, B. and Wolfers, J. (2007). Marriage and divorce: Changes and their driving forces. *Journal of Economic Perspectives* 21(2): 27-52.

Styrc, M. and Matysiak, A. (2012). Women's employment and marital stability: the role of the context. *Studia Demograficzne* 1(161): 81-101.

Szelewa, D. (2012). Childcare policies and gender relations in Eastern Europe: Hungary and Poland compared. Berlin: Harriet Taylor Mill-Institute.

Szikra, D. and Szelewa, D. (2010). Do Central and Eastern European countries fit the "Western" picture? The example of family policies in Hungary and Poland. In: Klenner, C. and Leiber, S. (ed.). *Welfare states and gender inequality in Central and Eastern Europe*. Brussels: ETUI: 81-116.

Teachman, J.D. (2002). Stability across cohorts in divorce risk factors. *Demography* 39(2): 331-351.

van Damme, M., Kalmijn, M., and Uunk, W. (2009). The Employment of Separated Women in Europe: Individual and Institutional Determinants. *European Sociological Review* 25(2): 183-197.

Vignoli, D. and Ferro, I. (2009). Rising marital disruption in Italy and its correlates. *Demographic Research* 20(4): 11-36.

Vignoli, D., Drefahl, S., and De Santis, G. (2012). Whose job instability affects the likelihood of becoming a parent in Italy? A tale of two partners. *Demographic Research* 26(2): 41-62.

Vignoli, D. (2013). The Role of Work Experience in Shaping the Entry into Motherhood: A Study for Italy. *Population Review* 52(2): 99-118.

West, C. and Zimmerman, D.H. (1987). Doing gender. *Gender and Society* 1(2): 125-151.

West, C. and Zimmerman, D.H. (2009). Accounting for doing gender. *Gender and Society* 23(1): 112-122.

Appendix

Table A1. Parameter estimates for marital disruption, Germany

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-4.04	*	2.18	-3.69		2.49	-3.71		2.52
Duration of marriage									
0-2 years (slope)	0.64	*	0.33	0.66	*	0.36	0.66	*	0.37
2-4 years (slope)	-0.01		0.23	0.00		0.24	0.01		0.24
4-7 years (slope)	-0.17		0.13	-0.15		0.14	-0.15		0.14
7-10 years (slope)	0.08		0.11	0.08		0.12	0.08		0.12
> 10 years (slope)	-0.05		0.04	-0.04		0.04	-0.04		0.04
Calendar time									
1971-79 (slope)	-0.13		0.26	-0.17		0.30	-0.16		0.30
1980-89 (slope)	-0.03		0.05	-0.03		0.06	-0.04		0.06
1990-99 (slope)	0.08	**	0.03	0.08	**	0.04	0.08	**	0.04
2000-04 (slope)	-0.05		0.06	-0.05		0.07	-0.05		0.07
2005-11 (slope)	0.04		0.10	0.04		0.11	0.04		0.11
Age of the youngest child (duration since conception)									
pregnancy: 0-9 months (slope)	1.17		1.30	1.19		1.41	1.18		1.44
child aged 0-3 years (slope)	0.24		0.15	0.23		0.16	0.23		0.16
child aged 3-7 years (slope)	0.03		0.08	0.03		0.09	0.03		0.09
child over 7 years old (slope)	-0.01		0.04	-0.01		0.04	-0.01		0.04
Number of children									
one (ref. = no children)	-2.10	**	0.87	-2.19	**	0.97	-2.21	**	0.99
two (ref. = one child)	-0.20		0.21	-0.24		0.23	-0.25		0.24
three or more (ref. = one child)	-0.14		0.27	-0.16		0.30	-0.16		0.30
Parental divorce (ref. = no divorce)									
yes	0.33		0.35	0.34		0.39	0.35		0.40
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	-0.04		0.22	-0.07		0.25	-0.07		0.26
Age at first marriage (ref. = 19 years or younger)									
20-23 years	-0.39		0.26	-0.44		0.30	-0.46		0.31
24-27 years	-0.56	*	0.30	-0.57	*	0.34	-0.60	*	0.35

28 or more years	-1.01	**	0.39	-1.04	**	0.44	-1.09	**	0.46
Marriage order (ref. = first marriage)									
higher order marriage	0.12		0.81	-0.17		0.82	-0.27		0.82
Fertility prior to first marriage (ref. = no conception prior to marriage)									
first conception prior to first marriage	0.38	*	0.22	0.39		0.26	0.40		0.26
first birth prior to first marriage	0.68	**	0.26	0.72	**	0.29	0.73	**	0.30
Cohabitation prior to first marriage (ref. = no)									
yes	0.53	**	0.21	0.54	**	0.23	0.55	**	0.24
Education level (ref. = tertiary)									
secondary	0.01		0.23	-0.08		0.26	-0.08		0.27
vocational/primary	-0.17		0.33	-0.31		0.40	-0.33		0.42
in education	0.49		0.33	0.17		0.38	0.16		0.39
Indicator of being employed (ref. = no)									
yes	0.30	*	0.17	0.10		0.24			
Duration since entry into employment									
entry into employment (intercept)							0.06		0.28
change over time (slope)							0.01		0.02

Table A2. Parameter estimates for marital disruption, Hungary

Explanatory variables	Single-process multi-level model (Model 1)				Multi-process model with indicator of being employed (Model 2)				Multi-process model with duration dependence since entry into employment (Model 3)			
	Coeff.			SE	Coeff.			SE	Coeff.			SE
Intercept	-4.25	***		0.89	-4.29	***		0.92	-4.28	***		0.92
Duration of marriage												
0-2 years (slope)	1.02	***		0.20	1.02	***		0.21	1.02	***		0.21
2-4 years (slope)	-0.15			0.12	-0.15			0.13	-0.16			0.13
4-7 years (slope)	0.14	*		0.08	0.14	*		0.08	0.14	*		0.08
7-10 years (slope)	-0.04			0.07	-0.04			0.07	-0.04			0.07
> 10 years (slope)	-0.01			0.02	-0.01			0.02	-0.01			0.02
Calendar time												
1971-79 (slope)	-0.12			0.10	-0.12			0.10	-0.12			0.10
1980-89 (slope)	-0.01			0.03	-0.01			0.03	-0.01			0.03
1990-99 (slope)	0.03			0.02	0.03			0.02	0.03			0.02
2000-04 (slope)	-0.05			0.04	-0.05			0.04	-0.05			0.04
2005-11 (slope)	0.08			0.06	0.08			0.06	0.08			0.06
Age of the youngest child (duration since conception)												
pregnancy: 0-9 months (slope)	0.94			0.67	0.93			0.68	0.93			0.68
child aged 0-3 years (slope)	0.04			0.08	0.05			0.09	0.04			0.09
child aged 3-7 years (slope)	0.07			0.05	0.07			0.05	0.07			0.05
child over 7 years old (slope)	-0.02			0.02	-0.02			0.02	-0.02			0.02
Number of children												
one (ref. = no children)	-1.69	***		0.44	-1.70	***		0.45	-1.70	***		0.46
two (ref. = one child)	-0.65	***		0.13	-0.64	***		0.13	-0.65	***		0.13
three or more (ref. = one child)	-0.72	***		0.19	-0.73	***		0.19	-0.73	***		0.19
Parental divorce (ref. = no divorce)												
yes	0.48	***		0.14	0.47	***		0.14	0.47	***		0.14
Parental education (ref. = none parent with higher education)												
at least one parent with tertiary education	0.40	***		0.15	0.41	***		0.15	0.41	***		0.15
Age at first marriage (ref. = 19 years or younger)												
20-23 years	-0.26	**		0.12	-0.24	**		0.12	-0.24	**		0.12
24-27 years	-0.54	***		0.17	-0.53	***		0.17	-0.53	***		0.18
28 or more years	-0.92	***		0.27	-0.91	***		0.27	-0.91	***		0.27
Marriage order (ref. = first marriage)												
higher order marriage	0.52	*		0.30	0.53	*		0.30	0.53	*		0.30
Fertility prior to first marriage (ref. = no conception prior to marriage)												
first conception prior to first marriage	0.25	**		0.12	0.25	**		0.12	0.25	**		0.12
first birth prior to first marriage	0.60	***		0.22	0.59	***		0.22	0.59	***		0.22
Cohabitation prior to first marriage (ref. = no)												

yes	0.68	***	0.13	0.67	***	0.13	0.67	***	0.13
Education level (ref. = tertiary)									
secondary	-0.15		0.14	-0.11		0.15	-0.11		0.15
vocational/primary	-0.18		0.18	-0.13		0.18	-0.14		0.19
in education	0.13		0.16	0.16		0.17	0.16		0.18
Indicator of being employed (ref. = no)									
yes	0.13		0.12	0.15		0.14			
Duration since entry into employment									
entry into employment (intercept)							0.14		0.15
change over time (slope)							0.00		0.01

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Table A3. Parameter estimates for marital disruption, Italy

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-3.34	***	0.97	-3.39	***	0.98	-3.38	***	0.99
Duration of marriage									
0-2 years (slope)	-0.40	***	0.10	-0.39	***	0.10	-0.39	***	0.10
2-4 years (slope)	0.11		0.10	0.11		0.10	0.12		0.10
4-7 years (slope)	-0.01		0.06	0.00		0.07	0.01		0.07
7-10 years (slope)	0.01		0.06	0.01		0.06	0.02		0.06
> 10 years (slope)	-0.06	***	0.02	-0.06	***	0.02	-0.05	***	0.02
Calendar time									
1971-79 (slope)	-0.10		0.11	-0.09		0.11	-0.10		0.11
1980-89 (slope)	0.06	**	0.02	0.06	**	0.02	0.06	**	0.02
1990-99 (slope)	0.05	***	0.01	0.05	***	0.02	0.05	***	0.02
2000-04 (slope)	-0.05		0.03	-0.04		0.03	-0.05		0.03
2005-11 (slope)	0.01		0.04	0.01		0.04	0.01		0.04
Age of the youngest child (duration since conception)									
pregnancy: 0-9 months (slope)	0.52		0.44	0.50		0.44	0.51		0.44
child aged 0-3 years (slope)	-0.08		0.06	-0.08		0.06	-0.09		0.06
child aged 3-7 years (slope)	-0.01		0.04	-0.01		0.04	-0.01		0.04
child over 7 years old (slope)	-0.02		0.02	-0.02		0.02	-0.02		0.02
Number of children									
one (ref. = no children)	-0.84	***	0.29	-0.83	***	0.29	-0.83	***	0.29
two (ref. = one child)	-0.41	***	0.11	-0.41	***	0.11	-0.42	***	0.11
three or more (ref. = one child)	-0.38	**	0.17	-0.39	**	0.17	-0.43	**	0.18
Parental divorce (ref. = no divorce)									
yes	0.80	***	0.15	0.81	***	0.16	0.80	***	0.16
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	0.58	***	0.16	0.58	***	0.17	0.57	***	0.17
Age at first marriage (ref. = 19 years or younger)									
20-23 years	-0.21		0.14	-0.21		0.14	-0.19		0.14
24-27 years	-0.65	***	0.16	-0.65	***	0.16	-0.60	***	0.16
28 or more years	-0.96	***	0.18	-0.94	***	0.19	-0.85	***	0.19
Marriage order (ref. = first marriage)									
higher order marriage	-0.59		0.55	-0.69		0.57	-0.55		0.57
Fertility prior to first marriage (ref. = no conception prior to marriage)									
first conception prior to first marriage	0.57	***	0.11	0.58	***	0.11	0.57	***	0.11
first birth prior to first marriage	0.71	***	0.16	0.71	***	0.17	0.71	***	0.17

Cohabitation prior to first marriage (ref. = no)									
yes	0.31	***	0.12	0.30	**	0.12	0.30	**	0.12
Education level (ref. = tertiary)									
secondary	-0.16		0.13	-0.18		0.13	-0.15		0.13
vocational	-0.25		0.16	-0.27		0.17	-0.24		0.17
primary	-0.42	***	0.14	-0.46	***	0.15	-0.44	***	0.15
in education	0.34		0.21	0.31		0.22	0.32		0.22
Indicator of being employed (ref. = no)									
yes	0.40	***	0.08	0.32	***	0.10			
Duration since entry into employment									
entry into employment (intercept)							0.43	***	0.11
change over time (slope)							-0.02	**	0.01

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Table A4. Parameter estimates for marital disruption, Poland

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE.	Coeff.		SE
Intercept	-6.36	**	2.00	-6.51	***	2.18	-6.51	***	2.47
Duration of marriage									
0-2 years (slope)	0.32	*	0.18	0.32	*	0.18	0.32	*	0.18
2-4 years (slope)	0.24	**	0.12	0.25	**	0.12	0.25	**	0.12
4-7 years (slope)	-0.13	*	0.07	-0.13	*	0.07	-0.13	*	0.07
7-10 years (slope)	0.13	**	0.06	0.14	**	0.06	0.14	**	0.06
> 10 years (slope)	-0.03	**	0.02	-0.03	**	0.02	-0.03	*	0.02
Calendar time									
1971-79 (slope)	0.13		0.23	0.11		0.25	0.11		0.28
1980-89 (slope)	-0.01		0.04	-0.01		0.04	-0.01		0.04
1990-99 (slope)	-0.14	*	0.08	-0.13	*	0.08	-0.13	*	0.08
2000-04 (slope)	0.10	**	0.01	0.10	***	0.01	0.10	***	0.01
2005-11 (slope)	-0.06	**	0.03	-0.05	*	0.03	-0.05	*	0.03
Age of the youngest child (duration since conception)									
pregnancy: 0-9 months (slope)	1.79	**	0.75	1.80	**	0.76	1.80	**	0.77
child aged 0-3 years (slope)	0.02		0.07	0.01		0.08	0.01		0.08
child aged 3-7 years (slope)	0.10	**	0.04	0.09	**	0.04	0.09	**	0.04
child over 7 years old (slope)	-0.05	**	0.02	-0.05	***	0.02	-0.05	***	0.02
Number of children									
one (ref. = no children)	-1.71	**	0.53	-1.70	***	0.54	-1.70	***	0.54
two (ref. = one child)	-0.47	**	0.11	-0.49	***	0.11	0.34	***	0.11
three or more (ref. = one child)	-0.72	**	0.16	-0.72	***	0.17	-0.49	***	0.11
Parental divorce (ref. = no divorce)									
yes	0.67	**	0.12	0.64	***	0.13	0.64	***	0.13
parents never lived together	0.11		0.37	0.11		0.39	0.11		0.39
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	0.50	**	0.14	0.51	***	0.15	0.51	***	0.15
Age at first marriage (ref. = 19 years or younger)									
20-23 years	-0.45	**	0.11	-0.46	***	0.12	-0.46	***	0.12
24-27 years	-0.66	**	0.14	-0.68	***	0.15	-0.68	***	0.15
28 or more years	-0.74	**	0.19	-0.78	***	0.20	-0.78	***	0.21
Marriage order (ref. = first marriage)									
higher order marriage	0.31		0.37	0.02		0.35	0.01		0.36

first conception prior to first marriage	0.19	**	0.10	0.18	*	0.10	0.18	*	0.10
first birth prior to first marriage	0.67	**	0.16	0.67	***	0.16	0.67	***	0.16
Cohabitation prior to first marriage (ref. = no)									
yes	0.36	**	0.10	0.34	***	0.11	0.34	***	0.11
Education level (ref. = tertiary)									
secondary	-0.15		0.12	-0.14		0.12	-0.14		0.12
vocational	-0.27	**	0.14	-0.27	*	0.15	-0.27	*	0.15
primary	0.06		0.17	0.12		0.18	0.12		0.18
in education	0.08		0.18	0.05		0.19	0.05		0.19
Indicator of being employed (ref. = no)									
yes	0.20	**	0.09	0.35	***	0.12			
Duration since entry into employment									
entry into employment (intercept)							0.35	***	0.12
change over time (slope)							0.00		0.01

Table A5. Parameter estimates for employment entry, Germany

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	1.20	***	0.44	1.37	***	0.47	1.36	***	0.47
Time since entering non-employment									
0-0.5 years (slope)	-2.63	***	0.40	-2.58	***	0.44	-2.58	***	0.44
0.5-1 years (slope)	0.24		0.33	0.23		0.35	0.23		0.35
1-3 years (slope)	0.09		0.06	0.10		0.07	0.10		0.07
3-5 years (slope)	0.05		0.05	0.05		0.05	0.05		0.05
> 5 years (slope)	-0.01		0.01	-0.01		0.01	-0.01		0.01
Age									
15-19 years (slope)	0.20	***	0.04	0.20	***	0.04	0.20	***	0.04
20-24 years (slope)	-0.05	*	0.03	-0.05	*	0.03	-0.05	*	0.03
25-29 years (slope)	0.02		0.03	0.02		0.03	0.02		0.03
30-39 years (slope)	-0.02		0.02	-0.02		0.02	-0.02		0.02
40-44 years (slope)	0.06		0.04	0.06		0.04	0.07		0.05
45 or more years (slope)	-0.17	***	0.06	-0.16	**	0.07	-0.17	**	0.07
Calendar time									
1970-89 (slope)	-0.02	**	0.01	-0.02	**	0.01	-0.02	**	0.01
1990-93 (slope)	-0.12	***	0.03	-0.12	***	0.03	-0.12	***	0.03
1994-97 (slope)	0.01		0.04	0.00		0.04	0.00		0.04
1998-03 (slope)	0.03		0.03	0.03		0.03	0.03		0.03
2004-07 (slope)	-0.08	*	0.04	-0.08	*	0.05	-0.08	*	0.05
2008-11 (slope)	0.20		0.23	0.20		0.24	0.19		0.24
Age of the youngest child (duration since conception)									
0-0.5 years (slope)	-0.15		0.71	-0.15		0.78	-0.15		0.79
0.5-1.25 years (slope)	-0.08		0.34	-0.08		0.36	-0.08		0.37
child aged 0.5-3 years (slope)	0.45	***	0.08	0.45	***	0.08	0.45	***	0.08
child aged 3-5 years (slope)	-0.12		0.08	-0.12		0.08	-0.12		0.08
child aged over 5 years (slope)	0.00		0.02	0.00		0.02	0.01		0.02
Number of children									
one (ref. = no children)	-1.35	***	0.23	-1.36	***	0.26	-1.36	***	0.26
two (ref. = one child)	-0.19	**	0.09	-0.19	**	0.10	-0.20	**	0.10
three or more (ref. = one child)	-0.41	***	0.13	-0.45	***	0.13	-0.44	***	0.13
Mother's employment (ref. = no)									
yes	0.04		0.42	-0.08		0.44	-0.09		0.44
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	-0.13		0.11	-0.14		0.11	-0.15		0.11
Order of non-employment spell (ref. = first)									

second	-0.40		0.40	-0.39		0.43	-0.40		0.43
third	-0.39		0.41	-0.23		0.44	-0.25		0.44
fourth or next	-1.01	**	0.42	-0.75		0.47	-0.76		0.46
Marital status (ref. = married)									
single	0.63	***	0.08	0.62	***	0.09	0.63	***	0.09
divorced	0.50	***	0.12	0.31	**	0.14			
divorce (intercept)							0.74	***	0.23
duration since divorce (slope)							-0.09	***	0.03
widowed	/		/	/		/	/		/
Education level (ref. = tertiary)									
secondary	-0.70	***	0.09	-0.74	***	0.10	-0.74	***	0.10
vocational/primary	-2.17	***	0.14	-2.22	***	0.15	-2.21	***	0.15
in education	-3.82	***	0.10	-3.88	***	0.11	-3.87	***	0.11
Work experience (ref. = none)									
0-3 years	-0.21		0.40	-0.04		0.43	-0.01		0.43
3-6 years	-0.50		0.40	-0.42		0.44	-0.40		0.44
6-10 years	-0.48		0.41	-0.45		0.45	-0.43		0.45
10 years or more	-0.50		0.44	-0.53		0.48	-0.50		0.48

Table A6. Parameter estimates for employment entry, Hungary

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-1.21	***	0.11	-1.30	***	0.12	-1.30	***	0.12
Time since entering non-employment									
0-0.5 years (slope)	-2.86	***	0.14	-2.85	***	0.17	-2.84	***	0.17
0.5-1 years (slope)	0.44	***	0.14	0.44	***	0.16	0.44	***	0.16
1-3 years (slope)	0.27	***	0.03	0.27	***	0.03	0.27	***	0.03
3-5 years (slope)	-0.28	***	0.03	-0.28	***	0.03	-0.28	***	0.03
> 5 years (slope)	0.03	***	0.01	0.03	***	0.01	0.03	***	0.01
Age									
15-19 years (slope)	0.10	***	0.02	0.09	***	0.02	0.10	***	0.02
20-24 years (slope)	-0.12	***	0.01	-0.12	***	0.02	-0.12	***	0.02
25-29 years (slope)	-0.08	***	0.02	-0.07	***	0.02	-0.07	***	0.02
30-39 years (slope)	0.04	***	0.01	0.04	***	0.01	0.04	***	0.01
40-44 years (slope)	-0.18	***	0.02	-0.18	***	0.03	-0.18	***	0.03
45 or more years (slope)	0.03		0.03	0.03		0.03	0.03		0.03
Calendar time									
1970-89 (slope)	0.15	***	0.01	0.15	***	0.01	0.15	***	0.01
1990-93 (slope)	-0.22	***	0.02	-0.22	***	0.02	-0.22	***	0.02
1994-97 (slope)	0.04	*	0.02	0.04	*	0.02	0.04	*	0.02
1998-03 (slope)	0.02		0.01	0.02		0.01	0.02		0.01
2004-07 (slope)	-0.02		0.02	-0.01		0.02	-0.01		0.02
2008-11 (slope)	-1.86	***	0.24	-1.86	***	0.25	-1.86	***	0.25
Age of the youngest child (duration since conception)									
0-0.5 years (slope)	0.68	***	0.23	0.67	***	0.24	0.67	***	0.24
0.5-1.25 years (slope)	-1.39	***	0.17	-1.39	***	0.17	-1.39	***	0.17
child aged 0.5-3 years (slope)	-0.06		0.05	-0.06		0.05	-0.06		0.05
child aged 3-5 years (slope)	-0.09	**	0.05	-0.10	**	0.05	-0.10	**	0.05
child aged over 5 years (slope)	-0.03	***	0.01	-0.03	***	0.01	-0.03	***	0.01
Number of children									
one (ref. = no children)	0.49	***	0.08	0.48	***	0.08	0.48	***	0.08
two (ref. = one child)	-0.20	***	0.05	-0.20	***	0.05	-0.20	***	0.05
three or more (ref. = one child)	-0.43	***	0.07	-0.44	***	0.07	-0.45	***	0.07
Mother's employment (ref. = no)									
yes	0.00		0.00	0.00		0.00	0.00		0.00
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary	-0.24	***	0.07	-0.22	***	0.07	-0.22	***	0.07

education

Order of non-employment spell (ref.
= first)

second	-0.42	***	0.16	-0.44	***	0.17	-0.44	***	0.17
third	-0.14		0.16	-0.15		0.17	-0.16		0.17
fourth or next	-0.15		0.17	-0.17		0.18	-0.17		0.18

Marital status (ref. = married)

single	-0.04		0.05	-0.04		0.05	-0.04		0.05
divorced	-0.15	**	0.07	-0.15	*	0.08			
divorce (intercept)							-0.05		0.11
duration since divorce (slope)							-0.02		0.01
widowed	-0.57	***	0.14	-0.56	***	0.15	-0.57	***	0.15

Education level (ref. = tertiary)

secondary	-0.62	***	0.05	-0.56	***	0.05	-0.56	***	0.05
vocational/primary	-1.52	***	0.07	-1.47	***	0.07	-1.47	***	0.07
in education	-2.30	***	0.06	-2.25	***	0.06	-2.26	***	0.06

Work experience (ref. = none)

0-3 years	1.15	***	0.16	1.17	***	0.17	1.17	***	0.17
3-6 years	1.46	***	0.17	1.47	***	0.18	1.47	***	0.18
6-10 years	1.57	***	0.18	1.56	***	0.18	1.56	***	0.18
10 years or more	1.44	***	0.19	1.41	***	0.19	1.41	***	0.20

Table A7. Parameter estimates for employment entry, Italy

Explanatory variables	Single-process multi-level model (Model 1)		Multi-process model with indicator of being employed (Model 2)		Multi-process model with duration dependence since entry into employment (Model 3)	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Intercept	-1.95***	0.09	-1.96***	0.09	-1.96***	0.09
Time since entering non-employment						
0-0.5 years (slope)	-1.04***	0.09	-1.06***	0.10	-1.06***	0.10
0.5-1 years (slope)	-0.88***	0.09	-0.87***	0.09	-0.87***	0.09
1-3 years (slope)	-0.44***	0.03	-0.44***	0.03	-0.44***	0.03
3-5 years (slope)	-0.10***	0.02	-0.11***	0.02	-0.11***	0.02
> 5 years (slope)	-0.05***	0.00	-0.05***	0.00	-0.05***	0.00
Age						
15-19 years (slope)	0.60***	0.02	0.61***	0.02	0.60***	0.02
20-24 years (slope)	0.06***	0.01	0.07***	0.01	0.07***	0.01
25-29 years (slope)	0.06***	0.01	0.07***	0.01	0.07***	0.01
30-39 years (slope)	0.01**	0.01	0.02**	0.01	0.02**	0.01
40-44 years (slope)	-0.03**	0.02	-0.03*	0.02	-0.03*	0.02
45 or more years (slope)	-0.09***	0.02	-0.09***	0.02	-0.09***	0.02
Calendar time						
1970-89 (slope)	-0.03***	0.00	-0.03***	0.00	-0.03***	0.00
1990-93 (slope)	-0.06***	0.01	-0.06***	0.01	-0.06***	0.01
1994-97 (slope)	0.08***	0.01	0.08***	0.01	0.08***	0.01
1998-03 (slope)	0.01	0.01	0.01	0.01	0.01	0.01
2004-07 (slope)	0.05***	0.01	0.05***	0.01	0.05***	0.01
2008-11 (slope)	-0.24***	0.03	-0.24***	0.04	-0.24***	0.04
Age of the youngest child (duration since conception)						
0-0.5 years (slope)	-1.69***	0.44	-1.68***	0.44	-1.69***	0.44
0.5-1.25 years (slope)	1.01***	0.17	1.01***	0.17	1.01***	0.17
child aged 0.5-3 years (slope)	0.22***	0.03	0.22***	0.03	0.22***	0.03
child aged 3-5 years (slope)	0.01	0.03	0.01	0.03	0.01	0.03
child aged over 5 years (slope)	0.02***	0.01	0.01**	0.01	0.01**	0.01
Number of children						
one (ref. = no children)	-0.84***	0.16	-0.83***	0.16	-0.84***	0.16
two (ref. = one child)	-0.22***	0.04	-0.22***	0.04	-0.21***	0.04
three or more (ref. = one child)	-0.43***	0.06	-0.43***	0.07	-0.43***	0.07
Mother's employment (ref. = no)						
yes	0.36***	0.03	0.37***	0.03	0.37***	0.03

Parental education (ref. = none parent with higher education)						
at least one parent with tertiary education	-0.41 ***	0.07	-0.42 ***	0.07	-0.42 ***	0.07
Order of non-employment spell (ref. = first)						
second	-0.80 ***	0.07	-0.83 ***	0.07	-0.83 ***	0.07
third	-0.77 ***	0.08	-0.85 ***	0.08	-0.85 ***	0.08
fourth or next	-0.83 ***	0.09	-0.96 ***	0.09	-0.97 ***	0.09
Marital status (ref. = married)						
single	0.41 ***	0.03	0.42 ***	0.04	0.41 ***	0.04
divorced	0.73 ***	0.06	0.68 ***	0.07		
divorce (intercept)					0.62 ***	0.08
duration since divorce (slope)					0.01	0.01
widowed	0.15	0.12	0.15	0.12	0.16	0.12
Education level (ref. = tertiary)						
secondary	-0.24 ***	0.04	-0.24 ***	0.04	-0.24 ***	0.04
vocational	-0.18 ***	0.05	-0.17 ***	0.06	-0.17 ***	0.06
primary	-1.02 ***	0.04	-1.02 ***	0.05	-1.02 ***	0.05
in education	-1.69 ***	0.04	-1.69 ***	0.04	-1.69 ***	0.04
Work experience (ref. = none)						
0-3 years	0.84 ***	0.07	0.77 ***	0.07	0.77 ***	0.07
3-6 years	0.51 ***	0.07	0.46 ***	0.07	0.46 ***	0.07
6-10 years	0.36 ***	0.08	0.31 ***	0.08	0.31 ***	0.08
10 years or more	0.12	0.09	0.08	0.09	0.08	0.09

Table A8. Parameter estimates for employment entry, Poland

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-2.81	***	0.12	-2.81	***	0.13	-2.81	***	0.13
Time since entering non-employment									
0-0.5 years (slope)	1.34	***	0.18	1.34	***	0.19	1.34	***	0.19
0.5-1 years (slope)	-1.34	***	0.12	-1.34	***	0.12	-1.34	***	0.12
1-3 years (slope)	-0.16	***	0.03	-0.16	***	0.03	-0.16	***	0.03
3-5 years (slope)	-0.18	***	0.02	-0.18	***	0.02	-0.18	***	0.02
> 5 years (slope)	-0.06	***	0.01	-0.06	***	0.01	-0.06	***	0.01
Age									
15-19 years (slope)	1.01	***	0.02	1.01	***	0.02	1.01	***	0.02
20-24 years (slope)	0.19	***	0.01	0.19	***	0.02	0.19	***	0.02
25-29 years (slope)	-0.05	***	0.01	-0.05	***	0.01	-0.05	***	0.01
30-39 years (slope)	0.07	***	0.01	0.07	***	0.01	0.07	***	0.01
40-44 years (slope)	-0.09	***	0.02	-0.09	***	0.02	-0.09	***	0.02
45 or more years (slope)	-0.10	***	0.02	-0.10	***	0.02	-0.10	***	0.02
Calendar time									
1970-89 (slope)	-0.02	***	0.00	-0.02	***	0.00	-0.02	***	0.00
1990-93 (slope)	-0.12	***	0.02	-0.12	***	0.02	-0.12	***	0.02
1994-97 (slope)	0.01		0.02	0.01		0.02	0.01		0.02
1998-03 (slope)	-0.04	***	0.01	-0.04	***	0.01	-0.04	***	0.01
2004-07 (slope)	0.17	***	0.01	0.17	***	0.01	0.17	***	0.01
2008-11 (slope)	-0.07	***	0.02	-0.07	***	0.02	-0.07	***	0.02
Age of the youngest child (duration since conception)									
0-0.5 years (slope)	-1.54	***	0.36	-1.54	***	0.36	-1.54	***	0.36
0.5-1.25 years (slope)	-0.07		0.15	-0.07		0.15	-0.07		0.15
child aged 0.5-3 years (slope)	0.31	***	0.03	0.31	***	0.03	0.31	***	0.03
child aged 3-5 years (slope)	0.09	***	0.03	0.09	***	0.03	0.09	***	0.03
child aged over 5 years (slope)	0.01	**	0.01	0.01	**	0.01	0.01	**	0.01
Number of children									
one (ref. = no children)	-0.41	***	0.12	-0.41	***	0.12	-0.41	***	0.12
two (ref. = one child)	-0.29	***	0.04	-0.29	***	0.04	-0.29	***	0.04
three or more (ref. = one child)	-0.49	***	0.06	-0.50	***	0.06	-0.50	***	0.06
Mother's employment (ref. = no)									
yes	0.15	***	0.04	0.15	***	0.04	0.15	***	0.04
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	-0.29	***	0.06	-0.29	***	0.06	-0.29	***	0.06

Order of non-employment spell (ref. = first)								
second	-0.57	***	0.13	-0.58	***	0.13	-0.58	***	0.13
third	-0.69	***	0.14	-0.70	***	0.14	-0.70	***	0.14
fourth or next	-0.96	***	0.15	-0.96	***	0.15	-0.95	***	0.15
Marital status (ref. = married)								
single	0.15	***	0.05	0.14	***	0.05	0.15	***	0.05
divorced	0.26	***	0.08	0.21	**	0.09			
divorce (intercept)							0.26	**	0.11
duration since divorce (slope)							-0.01		0.01
widowed	0.02		0.14	0.01		0.14	0.01		0.14
cohabiting	0.00		0.05	0.00		0.05	0.00		0.05
Education level (ref. = tertiary)								
secondary	-0.57	***	0.05	-0.57	***	0.05	-0.57	***	0.05
vocational	-0.89	***	0.05	-0.89	***	0.06	-0.89	***	0.06
primary	-1.59	***	0.07	-1.59	***	0.07	-1.59	***	0.07
in education	-2.17	***	0.05	-2.17	***	0.05	-2.17	***	0.05
Work experience (ref. = none)								
0-3 years	-0.49	***	0.13	-0.49	***	0.13	-0.49	***	0.13
3-6 years	-1.04	***	0.14	-1.05	***	0.14	-1.05	***	0.14
6-10 years	-1.32	***	0.15	-1.34	***	0.15	-1.34	***	0.15
10 years or more	-1.79	***	0.16	-1.81	***	0.17	-1.81	***	0.17

Table A9. Parameter estimates for employment exit, Germany

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-5.07	***	0.67	-4.93	***	0.74	-4.91	***	0.74
Time since entering employment									
0-0.5 years (slope)	3.47	***	1.04	3.42	***	1.14	3.41	***	1.14
0.5-1 years (slope)	0.34		0.34	0.36		0.37	0.36		0.37
1-3 years (slope)	0.13	*	0.07	0.13	*	0.08	0.13	*	0.08
3-5 years (slope)	-0.29	***	0.07	-0.28	***	0.08	-0.28	***	0.08
> 5 years (slope)	-0.05	***	0.02	-0.05	***	0.02	-0.05	***	0.02
Age									
15-19 years (slope)	-0.07		0.10	-0.07		0.10	-0.07		0.10
20-24 years (slope)	-0.09	**	0.04	-0.12	***	0.04	-0.12	***	0.04
25-29 years (slope)	-0.04		0.03	-0.08	**	0.04	-0.07	**	0.04
30-39 years (slope)	-0.07	***	0.02	-0.10	***	0.02	-0.10	***	0.02
40-44 years (slope)	-0.06		0.05	-0.08		0.05	-0.08		0.06
45 or more years (slope)	-0.09		0.06	-0.12	*	0.07	-0.12	*	0.07
Calendar time									
1970-89 (slope)	0.05	***	0.02	0.05	***	0.02	0.05	***	0.02
1990-93 (slope)	0.02		0.04	0.02		0.04	0.02		0.04
1994-97 (slope)	0.05		0.04	0.06		0.04	0.06		0.04
1998-03 (slope)	0.03		0.03	0.03		0.03	0.03		0.03
2004-07 (slope)	0.01		0.05	0.01		0.06	0.01		0.06
2008-11 (slope)	0.23		0.27	0.23		0.27	0.23		0.27
Age of the youngest child (duration since conception)									
0-0.5 years (slope)	5.81	***	0.47	5.81	***	0.50	5.81	***	0.50
0.5-1.25 years (slope)	-2.83	***	0.25	-2.85	***	0.26	-2.85	***	0.27
child aged 0.5-3 years (slope)	-0.27	***	0.10	-0.26	**	0.10	-0.26	**	0.10
child aged 3-5 years (slope)	0.09		0.11	0.09		0.11	0.10		0.11
child aged over 5 years (slope)	-0.01		0.02	-0.01		0.02	-0.01		0.02
Number of children									
one (ref. = no children)	-0.16		0.22	-0.16		0.23	-0.16		0.23
two (ref. = one child)	-0.42	***	0.11	-0.41	***	0.12	-0.41	***	0.12
three or more (ref. = one child)	-0.27	*	0.15	-0.24		0.17	-0.24		0.17
Mother's employment (ref. = no)									
yes	-0.45		0.37	-0.41		0.41	-0.41		0.41
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	0.09		0.12	0.12		0.12	0.12		0.12
Order of employment spell (ref. = first)									
second	-0.33		0.20	-0.09		0.22	-0.08		0.22

third	-0.64	**	0.31	-0.27		0.33	-0.25		0.33
fourth or next	-0.90	**	0.40	-0.41		0.44	-0.39		0.45
Marital status (ref. = married)									
single	-0.11		0.10	-0.13		0.10	-0.13		0.10
divorced	0.24		0.16	0.15		0.21			
divorce (intercept)							0.06		0.27
duration since divorce (slope)							0.02		0.04
widowed	/		/	/		/	/		/
Education level (ref. = tertiary)									
secondary	0.24	*	0.13	0.24	*	0.14	0.24	*	0.14
vocational/primary	0.58	***	0.18	0.64	***	0.19	0.63	***	0.19
in education	0.91	***	0.16	1.01	***	0.17	1.01	***	0.17
Work experience (ref. = none)									
0-3 years (slope)	0.02		0.08	0.02		0.09	0.02		0.09
3-6 years (slope)	0.18	***	0.06	0.20	***	0.07	0.20	***	0.07
6-10 years (slope)	0.08	*	0.04	0.09	**	0.04	0.09	**	0.04
10 years or more (slope)	0.07	***	0.03	0.09	***	0.03	0.09	***	0.03

Table A10. Parameter estimates for employment exit, Hungary

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-5.07	***	0.30	-5.04	***	0.32	-5.03	***	0.32
Time since entering employment									
0-0.5 years (slope)	3.30	***	0.48	3.31	***	0.50	3.31	***	0.50
0.5-1 years (slope)	0.10		0.17	0.09		0.18	0.10		0.18
1-3 years (slope)	0.41	***	0.04	0.41	***	0.04	0.41	***	0.04
3-5 years (slope)	-0.30	***	0.03	-0.31	***	0.03	-0.30	***	0.03
> 5 years (slope)	-0.02	**	0.01	-0.02	**	0.01	-0.02	**	0.01
Age									
15-19 years (slope)	-0.07		0.06	-0.07		0.06	-0.07		0.06
20-24 years (slope)	-0.09	***	0.02	-0.09	***	0.02	-0.09	***	0.02
25-29 years (slope)	-0.04	**	0.02	-0.04	**	0.02	-0.04	**	0.02
30-39 years (slope)	-0.01		0.01	-0.01		0.01	-0.01		0.01
40-44 years (slope)	0.02		0.02	0.02		0.02	0.02		0.02
45 or more years (slope)	0.03		0.02	0.03		0.02	0.03		0.02
Calendar time									
1970-89 (slope)	0.05	***	0.01	0.05	***	0.01	0.05	***	0.01
1990-93 (slope)	0.04	**	0.02	0.04	*	0.02	0.04	*	0.02
1994-97 (slope)	0.02		0.02	0.02		0.02	0.02		0.02
1998-03 (slope)	0.04	***	0.01	0.04	***	0.01	0.04	***	0.01
2004-07 (slope)	0.02		0.02	0.02		0.02	0.02		0.02
2008-11 (slope)	1.74	***	0.11	1.74	***	0.11	1.74	***	0.11
Age of the youngest child (duration since conception)									
0-0.5 years (slope)	5.13	***	0.30	5.13	***	0.31	5.13	***	0.31
0.5-1.25 years (slope)	-4.07	***	0.16	-4.07	***	0.16	-4.07	***	0.16
child aged 0.5-3 years (slope)	1.10	***	0.04	1.10	***	0.04	1.10	***	0.04
child aged 3-5 years (slope)	-0.99	***	0.04	-0.99	***	0.04	-0.99	***	0.04
child aged over 5 years (slope)	0.00		0.01	0.00		0.01	0.00		0.01
Number of children									
one (ref. = no children)	-0.31	**	0.13	-0.31	**	0.14	-0.31	**	0.14
two (ref. = one child)	-0.28	***	0.06	-0.28	***	0.06	-0.28	***	0.06
three or more (ref. = one child)	-0.24	***	0.08	-0.24	***	0.08	-0.24	***	0.08
Mother's employment (ref. = no)									
yes	0.00		0.00	0.00		0.00	0.00		0.00
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	-0.02		0.07	-0.02		0.07	-0.02		0.07
Order of employment spell (ref. = first)									
second	0.11		0.08	0.11		0.08	0.11		0.08

	Coef.		SE	Coef.		SE	Coef.		SE
third	0.05		0.12	0.06		0.13	0.06		0.13
fourth or next	0.08		0.17	0.08		0.18	0.09		0.19
Marital status (ref. = married)									
single	-0.03		0.06	-0.04		0.06	-0.04		0.06
divorced	0.05		0.07	0.01		0.08			
divorce (intercept)							-0.08		0.11
duration since divorce (slope)							0.01		0.01
widowed	0.08		0.13	0.08		0.14	0.08		0.14
Education level (ref. = tertiary)									
secondary	0.34	***	0.06	0.32	***	0.06	0.32	***	0.06
vocational/primary	0.58	***	0.08	0.57	***	0.08	0.57	***	0.08
in education	0.42	***	0.07	0.41	***	0.07	0.41	***	0.07
Work experience (ref. = none)									
0-3 years (slope)	-0.33	***	0.04	-0.33	***	0.04	-0.33	***	0.04
3-6 years (slope)	0.11	***	0.03	0.12	***	0.03	0.12	***	0.03
6-10 years (slope)	0.01		0.02	0.01		0.02	0.01		0.02
10 years or more (slope)	0.00		0.01	0.00		0.01	0.00		0.01

Table A11. Parameter estimates for employment exit, Italy

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-2.88	***	0.12	-2.96	***	0.13	-2.97	***	0.09
Time since entering employment									
0-0.5 years (slope)	0.85	***	0.12	0.85	***	0.13	0.85	***	0.10
0.5-1 years (slope)	-1.14	***	0.09	-1.14	***	0.09	-1.14	***	0.09
1-3 years (slope)	-0.06	**	0.03	-0.06	**	0.03	-0.06	***	0.03
3-5 years (slope)	-0.02		0.03	-0.02		0.03	-0.02	***	0.02
> 5 years (slope)	-0.01	**	0.01	-0.01	**	0.01	-0.01	***	0.00
Age									
15-19 years (slope)	0.13	***	0.02	0.13	***	0.02	0.13	***	0.02
20-24 years (slope)	-0.07	***	0.01	-0.05	***	0.01	-0.05	***	0.01
25-29 years (slope)	-0.05	***	0.01	-0.04	***	0.01	-0.04	***	0.01
30-39 years (slope)	-0.09	***	0.01	-0.08	***	0.01	-0.08	**	0.01
40-44 years (slope)	-0.05	***	0.02	-0.04	**	0.02	-0.04	*	0.02
45 or more years (slope)	-0.05	***	0.02	-0.04	**	0.02	-0.04	***	0.02
Calendar time									
1970-89 (slope)	0.02	***	0.00	0.02	***	0.00	0.02	***	0.00
1990-93 (slope)	0.02		0.01	0.02		0.01	0.02	***	0.01
1994-97 (slope)	0.05	***	0.01	0.05	***	0.01	0.05	***	0.01
1998-03 (slope)	0.02	*	0.01	0.02	*	0.01	0.02		0.01
2004-07 (slope)	0.08	***	0.01	0.08	***	0.01	0.08	***	0.01
2008-11 (slope)	-0.07	*	0.04	-0.07	*	0.04	-0.07	***	0.04
Age of the youngest child (duration since conception)									
0-0.5 years (slope)	1.95	***	0.28	1.95	***	0.28	1.95	***	0.44
0.5-1.25 years (slope)	-0.85	***	0.11	-0.86	***	0.11	-0.86	***	0.17
child aged 0.5-3 years (slope)	-0.25	***	0.04	-0.25	***	0.04	-0.25	***	0.03
child aged 3-5 years (slope)	0.12	***	0.04	0.12	***	0.04	0.12		0.03
child aged over 5 years (slope)	0.01	**	0.01	0.01	**	0.01	0.01	**	0.01
Number of children									
one (ref. = no children)	0.10		0.12	0.10		0.12	0.10	***	0.16
two (ref. = one child)	0.01		0.04	-0.01		0.04	-0.01	***	0.04
three or more (ref. = one child)	0.14	**	0.07	0.11		0.07	0.10	***	0.06
Mother's employment (ref. = no)									
yes	-0.02		0.03	0.01		0.03	0.01	***	0.08
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	0.07		0.06	0.04		0.06	0.04	***	0.04

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Order of employment spell (ref. = first)									
second	0.21	***	0.05	0.15	***	0.05	0.15	***	0.07
third	0.19	**	0.08	0.09		0.08	0.09	***	0.04
fourth or next	0.23	**	0.11	0.10		0.12	0.09		0.12
Marital status (ref. = married)									
single	0.10	***	0.04	0.11	***	0.04	0.11	***	0.05
divorced	0.17	***	0.05	0.17	***	0.06			
divorce (intercept)							0.23	***	0.08
duration since divorce (slope)							0.00		0.01
widowed	0.41	**	0.18	0.41	**	0.19	0.40	***	0.04
Education level (ref. = tertiary)									
secondary	-0.11	**	0.04	-0.11	**	0.05	-0.11	***	0.07
vocational	0.08		0.06	0.10		0.06	0.10	***	0.07
primary	0.24	***	0.05	0.23	***	0.05	0.23	***	0.08
in education	0.58	***	0.05	0.56	***	0.05	0.56		0.09
Work experience (ref. = none)									
0-3 years (slope)	-0.13	***	0.03	-0.13	***	0.03	-0.13	***	0.03
3-6 years (slope)	-0.06	***	0.02	-0.07	***	0.02	-0.07	***	0.14
6-10 years (slope)	0.03	**	0.01	0.02		0.01	0.02	***	0.07
10 years or more (slope)	0.01		0.01	0.00		0.01	0.00	***	0.07

Table A12. Parameter estimates for employment exit, Poland

Explanatory variables	Single-process multi-level model (Model 1)			Multi-process model with indicator of being employed (Model 2)			Multi-process model with duration dependence since entry into employment (Model 3)		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Intercept	-7.09	***	0.28	-7.07	***	0.28	-7.07	***	0.28
Time since entering employment									
0-0.5 years (slope)	1.93	***	0.21	1.94	***	0.21	1.94	***	0.21
0.5-1 years (slope)	-0.68	***	0.12	-0.68	***	0.13	-0.68	***	0.13
1-3 years (slope)	-0.11	***	0.04	-0.11	***	0.04	-0.11	***	0.04
3-5 years (slope)	-0.13	***	0.03	-0.13	***	0.04	-0.13	***	0.04
> 5 years (slope)	-0.02	***	0.01	-0.02	***	0.01	-0.02	***	0.01
Age									
15-19 years (slope)	0.29	***	0.06	0.29	***	0.06	0.29	***	0.06
20-24 years (slope)	-0.12	***	0.02	-0.12	***	0.02	-0.12	***	0.02
25-29 years (slope)	-0.07	***	0.01	-0.07	***	0.02	-0.07	***	0.02
30-39 years (slope)	-0.07	***	0.01	-0.07	***	0.01	-0.07	***	0.01
40-44 years (slope)	-0.04	**	0.02	-0.04	**	0.02	-0.04	**	0.02
45 or more years (slope)	0.03	*	0.02	0.03		0.02	0.03		0.02
Calendar time									
1970-89 (slope)	0.10	***	0.01	0.10	***	0.01	0.10	***	0.01
1990-93 (slope)	0.15	***	0.02	0.15	***	0.02	0.15	***	0.02
1994-97 (slope)	0.04	**	0.02	0.04	**	0.02	0.04	**	0.02
1998-03 (slope)	0.04	***	0.01	0.04	***	0.01	0.04	***	0.01
2004-07 (slope)	0.06	***	0.02	0.06	***	0.02	0.06	***	0.02
2008-11 (slope)	0.21	***	0.03	0.21	***	0.03	0.21	***	0.03
Age of the youngest child (duration since conception)									
0-0.5 years (slope)	1.06	***	0.35	1.06	***	0.35	1.06	***	0.35
0.5-1.25 years (slope)	-0.47	***	0.14	-0.47	***	0.14	-0.47	***	0.14
child aged 0.5-3 years (slope)	0.16	***	0.03	0.16	***	0.03	0.16	***	0.03
child aged 3-5 years (slope)	-0.19	***	0.03	-0.19	***	0.04	-0.19	***	0.04
child aged over 5 years (slope)	-0.01		0.01	-0.01		0.01	-0.01		0.01
Number of children									
one (ref. = no children)	-0.14		0.13	-0.14		0.13	-0.14		0.13
two (ref. = one child)	0.08	*	0.05	0.08	*	0.05	0.08	*	0.05
three or more (ref. = one child)	0.06		0.07	0.07		0.07	0.07		0.07
Mother's employment (ref. = no)									
yes	-0.09		0.05	-0.09		0.05	-0.09		0.05
Parental education (ref. = none parent with higher education)									
at least one parent with tertiary education	-0.01		0.08	0.00		0.08	0.00		0.08

Order of employment spell (ref. = first)									
second	-0.30	***	0.08	-0.28	***	0.09	-0.28	***	0.09
third	-0.44	***	0.13	-0.42	***	0.14	-0.42	***	0.14
fourth or next	-0.76	***	0.16	-0.74	***	0.18	-0.74	***	0.18
Marital status (ref. = married)									
single	0.22	***	0.07	0.21	***	0.07	0.22	***	0.07
divorced	0.29	***	0.09	0.10		0.10			
divorce (intercept)							0.12		0.11
duration since divorce (slope)							0.00		0.01
widowed	0.29	**	0.13	0.29	**	0.13	0.29	**	0.13
cohabiting	0.12	*	0.06	0.12	*	0.06	0.12	*	0.06
Education level (ref. = tertiary)									
secondary	0.58	***	0.06	0.57	***	0.06	0.57	***	0.06
vocational	0.91	***	0.07	0.91	***	0.07	0.91	***	0.07
primary	1.37	***	0.10	1.37	***	0.10	1.37	***	0.10
in education	0.76	***	0.06	0.76	***	0.07	0.76	***	0.07
Work experience (ref. = none)									
0-3 years (slope)	0.03		0.04	0.03		0.04	0.03		0.04
3-6 years (slope)	0.05	*	0.03	0.05	*	0.03	0.05	*	0.03
6-10 years (slope)	0.04	**	0.02	0.05	**	0.02	0.05	**	0.02
10 years or more (slope)	0.03	***	0.01	0.03	***	0.01	0.03	***	0.01