

Part I
Childlessness in Europe: An Overview

Chapter 1

Analyzing Childlessness

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1.1 Introduction

Increasing childlessness is only one of the many shifts in demographic behavior that have been occurring in Europe in recent decades, but in the public debate, it is probably the most ideologically charged of these developments. Some commenters have characterized increasing childlessness as an outgrowth of an individualistic and ego-centric society (Siegel 2013; The Guardian 2015), or have blamed childless women for the rapid aging of the population and for the looming decay of social security systems (Focus 2013; Last 2013). Meanwhile, commenters on the other side of this debate have called for a “childfree lifestyle” and have recommended “bypassing” parenthood (Mantel 2013; Walters 2012). From a feminist perspective, the decision to remain childless has been described as an expression of a self-determined life, as in previous generations a woman’s life had been constructed around the roles of wife and mother (Correll 2010; Gillespie 2003).

While this heated public debate has been simmering for years, scholarly research has provided a more neutral and fact-based assessment of the evolution and consequences of childlessness in contemporary societies. The key topics in this area of research are, among others, the social stratification of childlessness (Beaujouan et al. 2015; Koropecj-Cox and Call 2007; Wood 2016), the consequences of childless-

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ness for labor market outcomes (Budig et al. 2012; Correll et al. 2007; Gash 2009), health (Kendig et al. 2007), and old-age well-being (Dykstra and Wagner 2007; Huijts et al. 2013; Klaus and Schnettler 2016; Zhang and Hayward 2001). Because of data limitations, most past research focused on female childlessness. However, the analysis of “male childlessness” has recently advanced to become a key area of research, too (Gray et al. 2013; Keizer 2010; Keizer et al. 2010; Nisen et al. 2014; Schmitt and Winkelmann 2005). Many of the prior longitudinal studies on childlessness and the evolution of fertility desires had been conducted using data from the US (Thomson 1997). Meanwhile, Europe is catching up with the US, as large-scale panel data are now available for many European countries. These data enable researchers to study how fertility desires change across the life course, how they are influenced by the partnership situation, and how they are related to the other domains of the life course (Berrington and Pattaro 2014; Keizer et al. 2007; Kuhnt and Trappe 2015). Moreover, methodological and technical innovations have given rise to advances in the field. The longstanding interest in explaining the trajectories that lead to childlessness (Hagestad and Call 2007) can now be satisfied through the use of software packages, many of which now include sequence analysis techniques (Mynarska et al. 2013; Jalovaara and Fasang 2015). The biological limits of fertility and the scope of assisted reproduction in alleviating involuntary childlessness are also emerging as research topics (Sobotka et al. 2008; Velde et al. 2012).

This volume adds to the abovementioned research by presenting detailed country reports on long-term trends and socio-demographic differences in female and male childlessness. It also includes reports of results from recent European panel studies that map the evolution of fertility desires across the life course. Moreover, several of the chapters provide new evidence on the prevalence of assisted reproduction, and examine the consequences of childlessness for economic and psychological well-being. In this introductory chapter, we sketch the major conceptual issues that tend to arise in the analysis of childlessness (Sect. 1.2), and present a more detailed outline of the contents of this volume (Sect. 1.3).

1.2 Analyzing Childlessness – Issues and Conceptual Problems

1.2.1 Is Childlessness a (Post)Modern Phenomenon?

Since the mid-twentieth century, many western European countries have seen radical changes in demographic behavior, including increasing shares of permanently childless women and men. It seems tempting to regard this development as a distinctly new and “post-modern” phenomenon. While previous generations were pressed into parenthood by the influence of social norms and religious doctrines—and by the lack of efficient birth control methods—the ability of current generations to “choose” whether to have children seems to be an achievement of post-modern life course conditions (Burkart 2007; Gillespie 2001; Mayer 2004). But is

“voluntary” childlessness really a new development? Can we actually draw a line between “voluntary” and “involuntary” childlessness? And how do current trends line up with long-term historical developments?

Historical demography tells us that in many European regions in the 19th and early 20th centuries, 20 % or more of women remained childless. Childlessness used to be an integral part of what Hajnal (1965) described as the “Western European marriage pattern.” A relatively high age at marriage was typical for the western European family system, in which young adults left the parental household to work as servants and maids in the households of their employers (Wall 1998: 45). During that time they were obliged to remain single and childless (Ehmer 2011: 29; Mitterauer 1990). A high prevalence of childlessness has also been observed for the North American family system, where “the single adult was a significant part of the American population in the nineteenth and early twentieth century” (Rindfuss et al. 1988: 61).

However, it is not only in pre-industrial times that we observe high levels of childlessness. There is also considerable evidence that a large share of the women who were born around 1900 remained childless. According to Morgan (1991: 782), 25 % of US women of these cohorts were permanently childless. Rowland (1998: 20) estimates for Australia that about 30 % of the women of the 1891–1906 cohorts had no children. Similar estimates are reported for European countries for female cohorts born at the beginning of the twentieth century (see also Berrington, Chap. 3; Burkimsher and Zeman, Chap. 6; Kreyenfeld and Konietzka, Chap. 5; or Sobotka, Chap. 2, in this volume). It is commonly argued that childlessness among these cohorts is related to the social and economic upheavals that followed the Great Depression of the 1920s (Rowland 1998). Although economic deprivation probably contributed to this development, other factors also played a role. For example, the heavily distorted sex ratios caused by World War II help to explain high levels of female childlessness among the cohorts born around 1920 (see Burkimsher and Zeman, Chap. 6, in this volume, who report childlessness by gender for these cohorts).

The following cohorts, born in the 1930s and 1940s, entered their reproductive ages in the 1950s and early 1960s, a period that has been retrospectively labeled the “Golden Age of Marriage” (Festy 1980). These cohorts married much earlier than the previous generations, and childlessness dropped to historically low levels: “Marriage had not been so close to universal nor taken at such an early age in Western Europe for at least two centuries” (Festy 1980: 311). The increase in marriage and fertility rates during the 1950s and the early 1960s is commonly explained by a revival of traditional family values after wartime. The scholars of that time were nevertheless puzzled by that development (Parsons 1955). Veevers (1973: 203) even spoke of a “paradoxical decline of rates of childlessness.”

Starting with the birth cohorts born around 1950, the prevalence of childlessness increased (again) in many parts of Europe, and particularly in West Germany, Austria, Switzerland, the Netherlands, and England/Wales (see Sobotka, Chap. 2, in this volume, for an overview see also Miettinen et al. 2015; OECD 2016). In other parts of Europe, and especially in southern and eastern European countries,

widespread permanent childlessness is a relatively recent phenomenon. In these countries the shares of women who remain childless have been increasing rapidly. In Italy, for example, childlessness skyrocketed to 20 % among the cohorts born around 1965 (Tanturri and Mencarini 2008). Meanwhile, in Belgium, France, and the Scandinavian countries, childlessness has remained comparatively low. An exceptional case is Finland: in the Nordic context, Finland has always had relatively high levels of childlessness. Recent data for Finland show that childlessness in that country is still rising; thus, it appears that the gap between Finland and the rest of the Nordic states is expanding (see Rotkirch and Miettinen, Chap. 7, in this volume).

In his broad overview of fertility trends in 28 European countries, Sobotka (Chap. 2, in this volume) concludes that because of the recent increase in childlessness in southern Europe and in the former state-socialist central and eastern European countries, childlessness is converging at high levels in Europe. From a global perspective, significant developments can be observed in Asian countries, and particularly in Japan, too, where childlessness has been increasing among recent birth cohorts (Frejka et al. 2010; Raymo et al. 2015). However, we also see some signs of a reversal of this trend, as childlessness appears to be gradually declining among the younger cohorts in a number of countries, including the UK (see Berrington, Chap. 3, in this volume). The US also had high levels of childlessness for decades, but recent evidence indicates that the trend is reversing in this country as well (see Frejka, Chap. 8, in this volume).

1.2.2 Childlessness Across the Life Course

Research on childlessness has always faced challenges in formulating a clear definition of “permanent childlessness.” In qualitative studies, respondents who stated that they firmly reject parenthood were often categorized as childless, even if they were still of childbearing age at the time of the interview (Gillespie 2000: 228; Black und Scull 2005). But earlier quantitative studies also did not use any age limitations in the analysis of childlessness (De Jong and Sell 1977; Baum 1983). The conclusion from these investigations that “childlessness is temporary and that childbearing may occur later in life” (1977: 132) seemed self-evident. The studies that followed failed to use universal definitions of permanent childlessness. In principle, researchers have to wait until female cohorts have passed a certain age before drawing firm conclusions about the childlessness levels in these cohorts. However, the temptation to predict the childlessness levels of cohorts who are close to the end of their reproductive period is strong. The inability to imagine further increases in childbearing at later ages has led many researchers to use cut-off ages that are too low. As a consequence, these scholars overstated childlessness levels for the younger cohorts. The measurement of permanent childlessness among men is even more complicated, because a man’s reproductive period is less clearly defined than a

woman's. In addition, concerns have been raised about the collection of male fertility histories in social science surveys (Rendall et al. 1999).

In the literature, researchers commonly distinguish between “voluntary” and “involuntary” childlessness (Höpflinger 1991; Kelly 2009; Noordhuizen et al. 2010; Somers 1993; Veevers 1979; Wilcox and Mosher 1994). This distinction is often used to differentiate between biological and other reasons for childlessness, although many early studies also assigned unmarried women to the category of “involuntarily childless” (Veevers 1979: 3). Due to the strong relationship between age and fecundity, and because whether an individual has a child depends not only on his or her own reproductive capacity, but also on the ability of his or her partner to conceive or father a child, it is cumbersome to generate clear-cut estimates on “involuntary childlessness” at the individual level. Survey data can also be problematic because people do not necessarily know whether they are able to have children. The growing availability of assisted reproduction has softened the boundaries between “voluntary” and “involuntary” childlessness even further. Despite these caveats, it has been estimated that about five to 10 % of each cohort remain childless for biological reasons (Leridon 1992, see also Berrington, Chap. 3 and Trappe, Chap. 13, in this volume).

An issue that has been debated in the literature is the relationship between fertility postponement and childlessness. While some scholars have claimed that childlessness can be best understood as an unintended series of fertility postponements (Rindfuss et al. 1988; Morgan 1991), others have argued that childlessness is a clear and conscious lifestyle choice. In the feminist debate, efforts have been made to eliminate the term childlessness and to replace it with the term “childfree.” According to these scholars, the term “childless” has negative connotations because the suffix “less” implies that “something is lacking, deprived, unfortunate” (Underhill 1977: 307); whereas the term “childfree” implies that childlessness is a deliberate choice to not have children (Gillespie 2000; Hoffman and Levant 1985). The recent availability of large-scale panel data has made it easier to generate more solid evidence on the evolution of fertility desires across the life course (see Berrington, Chap. 3, in this volume).

1.3 Patterns, Causes, and Consequences of Childlessness

This book provides an overview of recent trends in childlessness in European countries and the US. In Chap. 2, Tomáš Sobotka assembles data from 28 European countries and describes long-term trends in childlessness. He critically evaluates the potential of the different types of data (censuses, social science surveys, vital statistics) that are commonly used to generate shares of childlessness. The paper shows elevated levels of childlessness for the cohorts born around 1900, and lower levels thereafter. In most countries, the 1940s cohorts had the lowest levels of childlessness ever recorded. In several of the western European countries, childlessness levels increased among the younger cohorts. The former socialist and southern

European countries are laggards in this development, but Sobotka observes some convergence, as childlessness also appears to be increasing in the CEE countries. Moreover, signs of a trend reversal have been reported. Switzerland and England/Wales were among the first countries where childlessness increased. For these countries, we see that childlessness is leveling off at values of around 20 %. These findings suggest that the increase in childlessness in contemporary societies may have limits. However, Sobotka cautions against projecting childlessness for the cohorts who are still of childbearing age.

Chapters 3, 4, 5, 6, and 7 in this volume contain country studies for major European countries. The first paper in this larger section is by Ann Berrington, who explores trends in childlessness in the UK. The UK has long had high levels of childlessness, but also relatively high cohort fertility rates. This pattern suggests that fertility behavior in this country is relatively polarized, with significant shares of people either remaining childless or having a large family. Berrington provides fresh evidence showing that the increase in childlessness rates has stopped, or may have even “gone into reverse” starting with the cohorts born in 1970. Using additional evidence from survey data, Berrington explores people’s stated reasons for remaining childless: while career planning is seldom given as a reason for remaining childless, “not having found the right partner” is often cited. Berrington also presents evidence on the evolution of fertility intentions across the life course. She shows that the share of people who categorically reject parenthood is low. However, there is a significant share of people who are still childless at age 42, despite having said they intend to have children at age 30. It seems likely that a large fraction of these people are “lulled” into childlessness through ongoing postponement.

In the following chapter, Katja Köppen, Magali Mazuy, and Laurent Toulemon investigate long-term trends in female and male childlessness in France. They examine how childlessness varies by level of education and occupation. Compared to the UK, levels of permanent childlessness are rather low in France. It is also shown that highly educated women are more likely to be childless than their less educated counterparts. By contrast, childlessness does not differ greatly by level of education or occupation among men. Less educated men are, however, slightly less likely to have children; a finding the authors attribute to the difficulties these men face in finding a partner. As in the study by Berrington for the UK, Köppen and her coauthors emphasize the role of partnership dynamics in permanent childlessness. While rates of childlessness are low among people who have ever entered a union, many of the men and women who have never entered a union remain childless at later ages.

In the next chapter, Kreyenfeld and Konietzka explore trends in childlessness in East and West Germany. West Germany was among the “vanguards” of childlessness in post-war Europe. Starting with the 1950s birth cohorts, childlessness increased continuously, reaching levels of more than 20 % for the female cohorts born around 1965. In state-socialist East Germany, childlessness remained low. For the recent East German birth cohorts who entered their reproductive ages after German unification, permanent childlessness has been increasing gradually; a trend that is comparable to the patterns found in other former state-socialist countries.

The most significant development is most likely the narrowing of the differences in childlessness levels by women's educational attainment among recent West German cohorts. An investigation based on survey data explores the typical pathways into childlessness for recent cohorts (1971–1973) of women and men. The findings of this analysis support the evidence from France and the UK that particularly for men, the lack of a partner often leads to childlessness at later ages.

Marion Burkimsher and Kryštof Zeman provide an overview of the development in childlessness in Austria and Switzerland. Together with (West) Germany, they are among the western European countries that report having high levels of childlessness and low cohort fertility rates. In Austria and Switzerland, childlessness increases strongly with level of female education. As the authors have access to data on long-term trends, they are also able to provide estimates on childlessness by level of education for the cohorts born around 1900. Very few of these women progressed to tertiary education, and if they did, they mostly remained childless. According to the authors, for these cohorts of women tertiary education was a “life calling similar to the calling to commit to a celibate life in the church.” For the subsequent cohorts in Austria and Switzerland, educational differences in childlessness levels have narrowed considerably. However, some differences in female childlessness by educational attainment remain: for example, for the cohorts born around 1960, about 35 % of the tertiary educated women have remained childless. Estimates of childlessness among men show only small differences by education. Again, less educated men are more likely to be childless than highly educated men.

Anna Rotkirch and Anneli Miettinen explore trends in childlessness in Finland. In the European context, Finland's childlessness patterns have long been seen as paradoxical. While the other Scandinavian countries—Norway, Sweden, Iceland, and Denmark—have regularly reported low levels of childlessness, Finland has historically had elevated levels of childlessness. The recent findings presented in this chapter provide further evidence of this trend, as the authors show that about 20 % of the women who are now reaching the end of their reproductive period have remained childless. Childlessness levels are highest among the least educated women and men, and have increased the most for this group in recent years. Thus, in Finland the educational patterns in childlessness are much more similar for men and women than in other European countries. However, the authors also show that in Finland the lack of a (marital) partner is strongly correlated with remaining childless. However, childlessness within unions has been increasing over time, too.

The following chapter by Tomáš Frejka is the only paper in this volume that goes beyond European borders to present evidence for the United States. The author shows that as in many European countries, in the US childlessness was elevated for the cohorts born around 1900. Black women of these cohorts were particularly likely to have remained childless. Frejka attributes the elevated childlessness levels among these women to their economic, social, and health-related disadvantages. Among the subsequent cohorts, childlessness dropped for all groups, and especially for the black population. Starting with the cohorts born in the 1940s, black women have been more likely to have children than white women. Among the cohorts born in the 1960s, childlessness has gradually declined, particularly for white women.

Within the context of this volume, this chapter provides important insights into long-term developments in childlessness in industrialized countries. It is important that we understand whether the trend reversal is unique to the US, or whether the patterns in the US indicate that childlessness is about to start declining in other “high childlessness countries” as well.

While the previous chapters provided long-term overviews, Chaps. 9, 10, 11, 12, 13 and 14 examine the determinants of childlessness in contemporary Europe. The contribution by Gerda Neyer, Jan Hoem, and Gunnar Andersson explores the association of education and childlessness in Austria and Sweden. While prior analyses often used broad categories to group different levels of education, these authors take a more nuanced view, and investigate how field of education relates to childlessness. While in Sweden childlessness does not greatly vary by level of education, it is possible to single out professions with very high levels of childlessness. For example, librarians and hotel and restaurant workers are particularly likely to be childless. Conversely, women who are educated in the field of health seldom remain childless. In Austria, we find a very strong educational gradient in childlessness. Among tertiary-educated women of the 1955–1959 cohorts, about 30 % have remained childless. In Austria, some heterogeneity has been found within the different educational groups. Among the highly educated social scientists, for example, childlessness is almost 40 %.

In their study, Hildegard Schaeper, Michael Grotheer, and Gesche Brandt take a dynamic perspective on the relationship between education and fertility. The data for this analysis come from the panel studies of higher education graduates conducted by the German Centre for Research on Higher Education and Science Studies (DZHW). The data contain detailed monthly employment histories of East and West German women who graduated from a university in Germany. The findings indicate that East Germans are more likely to have children during education, and that East German university graduates are significantly younger at first birth than their West German counterparts. However, Schaeper and her coauthors also report a convergence of behavior among the cohort who graduated from university in 2009. The multivariate analysis, which draws on event history modeling, shows that stable employment is generally seen as a prerequisite for family formation by highly educated women in Germany. However, there is also a group of women who have a first child despite being subject to “long periods of precarious employment and insecure occupational prospects.”

In the following study, Kuhnt, Kreyenfeld, and Trappe also applied a longitudinal perspective to the analysis of fertility in Germany. Using data from the first six waves of the German Family Panel, they explore how “fertility ideals” vary across the life course. Fertility ideals were operationalized by asking respondents to report their desired number of children “under ideal circumstances.” On average, people said they want to have about two children. However, the authors show that the desired number of children declines more rapidly with age for women than for men. The further multivariate analysis explored the factors that lead to a change in fertility ideals. The most important factor that is found to influence fertility ideals is the birth of a child; thus, people seem to adjust their fertility ideals as their family

grows. Interestingly, economic factors do not seem to have much influence on fertility ideals.

Laura Bernardi and Sylvia Keim present evidence from a qualitative study in East and West Germany. The sample was made up of women who were highly qualified and in full-time employment. At the time of the interview the women were still childless, but wanted to have children. They were asked to report on their attitudes toward having children and combining work and family life. The results show that East and West Germans have very different ideas about how they wish to organize their future family life. The typical “male breadwinner model” was more prevalent in the narratives of the West German respondents, whereas the East German women took it for granted that they would continue to work after becoming a parent. The chapter provides evidence that different perceptions of what constitutes parenthood and family life have persisted after German unification.

The contribution by Heike Trappe explores the prevalence of assisted reproductive technologies (ART) in Germany. The author notes that in 2012 about 14,000 children in Germany were born following the application of assisted reproduction technologies. While acknowledging that the use of assisted reproduction has increased over time in Germany, Trappe argues that the German legal context has inhibited the wider use of ART. She observes, for example, that some groups—including cohabiting couples, same-sex couples, and singles—do not have the same access to ART as married couples.

Patrick Präg and Melinda C. Mills complement the chapter by Trappe by providing a rich overview of the prevalence of ART and the related rules and regulations in Europe. They show that access to and the prevalence of assisted reproduction vary greatly across countries. The most liberal of the European countries are Denmark and Belgium, where the costs of couples and individuals undergoing ART are largely covered. The restrictions imposed in other European countries can be evaded by crossing borders and seeking out ART in more liberal countries. However, the authors raise concerns about social justice, as people with lower incomes may be unable to travel to access ART. Furthermore, they point out that the high levels of ART that are available in some countries of Europe demonstrate that ART can influence levels of total fertility.

The last three chapters of this volume address the psychological and economic consequences of childlessness for later life outcomes. Renske Keizer and Katya Ivanova investigate the consequences of having children for men and women in the Netherlands. Children seem to impact men’s life satisfaction indirectly. A deterioration in partnership quality seems to affect the well-being of childless men more strongly than that of men with children. It appears that having children buffers some of the adverse effects that being in a low-quality partnership can have on physical and mental ill health.

Tatjana Mika and Christin Czaplicki investigate the role of motherhood for old-age income in East and West Germany. Using linked survey and register data, they show that having children can greatly affect a woman’s lifetime employment profile. The differences in employment directly transfer into differences in old-age income. The authors of this study observe a significant motherhood penalty for

old-age income in West Germany, but not in East Germany. In Germany, women's pension are highly subsidized, as a woman automatically collects pension points for each birth. Although these transfers are rather generous, they are not sufficient to close the gap in old-age income between mothers and childless women.

Marco Albertini and Martin Kohli investigate how the elderly receive and give support within their social networks, and the extent to which they are engaged in charity work. The authors make distinctions between the elderly based on parental status. Their findings indicate that childless elderly people greatly contribute to the functioning of their social networks, and that—contrary to widely held stereotypes—they do not receive a disproportionate share of transfers. Instead, they are actively involved in charity work and in maintaining their social networks. By contrast, the people who have children, but have lost contact with them, are shown to be the most likely to be in need of support.

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Chapter 2

Childlessness in Europe: Reconstructing Long-Term Trends Among Women Born in 1900–1972

Tomáš Sobotka

2.1 Introduction

In most parts of Europe, childlessness and non-marriage were common phenomena during the course of the demographic transition (Rowland 2007), and contributed to the fertility decline in the late nineteenth century and in the first four decades of the twentieth century. More recently, the decline in fertility among the cohorts of women born in the 1950s and 1960s has been accompanied by rising childlessness levels (e.g., Frejka and Sardon 2004). Most of the social, economic, and cultural trends of the last 45 years appear to steer women away from having children. Easy access to modern contraception—including to emergency post-coital contraception, which first became available in the late 1990s—has vastly expanded the ability of couples to decide whether and when to become parents, and has arguably made it more likely that they will choose to remain childless (van de Kaa 1997). While the educational attainment of women lagged behind that of men well into the 1980s, women are now more likely than their male counterparts to earn a tertiary degree in all countries of Europe except Switzerland (VID 2014). Moreover, women currently have relatively high rates of labour participation, even in the countries of southern Europe, where in the past the majority of women remained outside of the labour market (OECD 2011; Thévenon 2009). While young women now almost universally expect to be employed throughout their life (Goldin 2006), family policies and employers have only partly adjusted to women’s new aspirations. Also their male partners have yet to fully adjust: although men are now more involved in parenting, cooking, and housework than in the past (Hook 2006), there is still a large gap in the

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amount of unpaid work done by men and women, and especially by fathers and mothers. This “incomplete gender revolution” (Esping-Andersen 2009) forces some women to make difficult choices between having a career and being a parent (Thévenon 2009). The nature of the labour market has also changed in recent decades: as the market has become more competitive, more demanding, and less secure, younger women and men are often working in temporary and poorly paid stop-gap jobs (McDonald 2002; Mills and Blossfeld 2005). This lack of secure employment had led many young adults to postpone marriage and parenthood.

In addition, the broad-based shift in values related to reproduction and marriage, and the related changes in partnership behaviour known as the “second demographic transition” (Lesthaeghe 2010), can also be expected to lead to higher rates of childlessness. In their analysis of European survey data, Merz and Liebroer (2012) found that approval of voluntary childlessness was closely related to the progression of the second demographic transition, with respondents in Norway, Denmark, and the Netherlands expressing the most positive views on voluntary childlessness.

Some observers have suggested that childlessness has become the status most compatible with contemporary society. A single individual unhindered by family commitments is the winner in the race for the greatest career and material success in life (McDonald 2002). According to Beck (1992: 116), “the ultimate market society is a childless society.” Such an alarmist perspective can, however, be countered by pointing to the low shares of survey respondents who declare that childlessness is their reproductive ideal (Miettinen and Szalma 2014; Sobotka and Beaujouan 2014; see also Kuhnt et al., Chap. 11, in this volume). In most countries, the share of younger men and women surveyed who express a firm intention to remain childless stays low. In their analysis of Eurobarometer data, Miettinen and Szalma (2014) reported that between 2008 and 2011 the share of female respondents aged 18–40 across the European Union who said they did not intend to have children was unchanged, at 5 % (see, however, Sobotka and Testa 2008 for some contrasting examples based on a different survey). Rather than being consistently planned from a young age, childlessness is often driven by a mix of adverse circumstances and adjustments to unforeseen events, such as infertility, poor health, not having a right partner, and partnership dissolution (Gray et al. 2013; Heaton et al. 1999). Many women and men of reproductive age therefore adopt a strategy of perpetually postponing childbearing (Berrington 2004), which increases the likelihood that they will gradually become adapted to their “childfree” lifestyle, and will eventually lose interest in having a child (Rindfuss et al. 1988; Veevers 1980). On the whole, it appears to be much more common for childless adults to express uncertainty about their reproductive plans than to claim they have chosen to be childless (Ní Bhrolcháin and Beaujouan 2011).

But are the theoretical expectations about rising childlessness in Europe actually supported by empirical trends? Is childlessness reaching unprecedented levels, as alarmist warnings that Europeans are no longer willing to reproduce appear to suggest? And is the prevalence of permanent childlessness becoming increasingly the same across Europe? Although a vast body of literature has examined period and cohort fertility trends across Europe, empirical research on childlessness among

women and men is typically limited to studies of individual countries. Several cross-country studies published in the past decade generated broad evidence that may be used to address these questions. These studies were based on census and register data (Rowland 2007), cohort data derived from reconstructed series of period fertility rates (Dorbritz and Ruckdeschel 2007; Frejka and Sardon 2004), or a mixture of different data sources (Miettinen et al. 2015). In this study, I take advantage of the rapid growth in recent years in the availability of data on cohort fertility and cohort parity distribution. By combining different datasets, I aim to provide the most detailed evidence to date on childlessness in Europe. I reconstruct the long-term development of childlessness in 30 European countries among women who were born between the beginning of the twentieth century and 1972. I discuss the trends in individual countries and broader European regions, the degree of historical continuity, and the main reversals in trends. I also analyse shifts in the geographic differentiation in childlessness, as until recently there was a clear east-west divide, with central and eastern Europe having unusually low childlessness levels. I focus on permanent childlessness among women, as the available data on men are much more limited, and are of uncertain quality (see below). In conclusion, I suggest that the childlessness levels among women born around 1970 are not unusually high when compared with those of their counterparts born in the early twentieth century.

2.2 Data and Methods

2.2.1 *Reliability of Childlessness Estimates*

Data on childlessness can be derived from different sources, including census and survey data that ask respondents about their number of children ever born, register data that include the childbearing or parenthood histories of the resident population, and vital statistics data on births by birth order that make it possible to reconstruct cohort fertility trends over long periods of time. Because each of these sources has potential advantages and drawbacks, there has been considerable uncertainty about childlessness estimates. Even very similar data sources (such as two consecutive censuses) can yield large differences in estimates of final childlessness in the same cohort of women. These discrepancies have been attributed to slight differences in the questions asked about the number of children, migration between censuses, differential mortality, and selective non-response.

Because the degree of uncertainty about the prevalence of final childlessness is particularly high among men, who can reproduce for a much longer period of their life than women, and for whom the relevant data are frequently missing, this study concentrates on childlessness among women. Even among women, a key issue is deciding at what point in their life course childlessness can be seen as permanent or almost final (Kreyenfeld and Konietzka 2007). Because of advances in assisted

reproduction, European women are now more often having their first child after age 40, and a few women have even given birth in their 50s or 60s. The Eurostat database (2015) recorded 334 cases of women having a child at age 50 or older in 2013; such cases were much rarer until the early 2000s. But the important question is at what age the number of first births becomes so small that it no longer makes a real difference in childlessness estimates. The same dataset shows that of the first births in the European Union in 2013, 15.4 % were to a mother over age 35, and 2.8 % were to a mother over age 40; this share falls to 1.1 % after age 42 and 0.1 % after age 46. Thus, it can be argued that childlessness among women is virtually permanent by age 46, and that, with a small degree of uncertainty, the final number can be established among women by age 42, when 99 % of first births have been realised.

As census data are available for some countries up to 2011, and vital statistics data are available up to 2013 or 2014, childlessness can be reliably estimated for women who were born around 1970 or earlier. Thus, the current analysis does not look at the experiences of the more recent cohorts, who have been in their peak reproductive years since around 2000. A number of previous studies attempted to make projections of final childlessness for the cohorts of women who, at the time, were in their late 30s or even younger, typically using the most recent period first birth rates to estimate the share of women who would have their first child in the future (e.g., Dorbritz and Ruckdeschel 2007; Frejka and Sardon 2004; Morgan and Chen 1992; Sobotka 2005). The accuracy of these predictions was mixed, with many studies overestimating the levels of final childlessness in recent cohorts. The biggest challenge researchers faced was in capturing the process of the recovery of postponed first birth rates at late childbearing ages, as the number of first births among women who were over age 35 was rising. The simplest projection method used—i.e., freezing the most recently observed period first birth rates—typically resulted in an underestimation of the first birth rates at these ages, and thus an overestimation of the levels and rates of increase of childlessness among the youngest cohorts. It can therefore be argued that predicting cohort childlessness is problematic, as the results are often misleading (Rindfuss et al. 1988). However, these studies often employed projection methods that were too simple, and relatively little effort has been put into determining which projection methods yield the most reliable estimates (the paper by Morgan and Chen 1992 is the main exception).

2.2.2 Data Sources on Permanent Childlessness: Drawbacks and Advantages

Before discussing the data used in this study, I outline the general advantages and disadvantages of different data sources on childlessness. These observations pertain to most of the historical data analysed here. In recent years, these distinctions between different data sources have been becoming more artificial, as register-based data are increasingly used to generate population census results (register-based censuses) as well as vital statistics records.

Population Census Data which include responses to the question on the number of children ever born, usually cover the entire female population of reproductive and post-reproductive ages (typically, ages 15+). These data also constitute the most accessible source of information on permanent childlessness. They typically cover the whole population (although some censuses, e.g., the Polish census of 2002, asked only a selected sample of women about family and reproduction), and thus allow detailed cohort-by-cohort comparisons of childlessness. As the censuses often collect information on a large number of socio-economic and demographic characteristics of the population, these data can also be used to conduct a detailed analysis of the main factors associated with childlessness (e.g., Burkimsher and Zeman, Chap. 6, in this volume), including educational attainment (Brzozowska et al. 2016).

Census data can, however, be affected by higher or lower mortality among childless women, giving a distorted picture of permanent childlessness among older women, especially if they experienced higher mortality during their reproductive ages or lived through wars and major upheavals. Because census data (like survey and register data) provide only a snapshot of the “current population”, they offer no information on women who left the country, while providing data on family size of women who recently moved into the country, including children they gave birth to before migrating. The influence of migration can be addressed with more detailed analyses that take into account women’s migration status, but the data needed to conduct such analyses are often not published or available. Moreover, in a census a woman may misreport the total number of children she has (especially if one or more of her children died in infancy or childhood), or may fail respond to the question on the number of children she has ever had. The rate of non-response is often not proportionally distributed with respect to parity: especially in countries where childlessness is perceived as being undesirable, childless women often do not respond to the question on the number of children they have.¹ Whether there is a bias in reporting can be determined by checking the correlation between the share of women who are childless and the non-response rate in the data. When this correlation is strong, it is safe to assume most of the non-responses are due to childless women who failed to report their status. If it is assumed that all of the missing responses came from childless women, a simple adjustment can be made (El-Badry 1961). As this adjustment is likely to produce estimates of childlessness that are unrealistically high, more sophisticated imputation methods, including those based on regression techniques, are preferable. Such methods have, for example, been used to estimate childlessness in German micro-census surveys (e.g., Statistisches Bundesamt 2015). Finally, population censuses only rarely ask men about the number of children they have.

¹This bias can be further strengthened by the questionnaire design. For instance, in the Czech Republic, childless women frequently leave the response on children ever born blank instead of writing “0” in the respective box (Zeman 2013).

Survey Data Generally, survey data have the same strengths as census data, but have additional weaknesses. As these data are often based on a small sample of the population (typically, several thousand respondents), cohort childlessness estimates made on the basis of these data are unstable and unsuitable for more detailed analyses. In addition, because many survey samples are not representative of the total female population with respect to family size, they may provide biased estimates of childlessness. In particular, survey non-response can produce distorted estimates of childlessness. The challenges of collecting survey data on childlessness are best illustrated by a discussion by Murphy (2009) and Ní Bhrolcháin et al. (2011). They attempted to explain a sudden rise in childlessness reported in some rounds of the UK General Household Surveys, and discussed a range of possible explanations, including differential response rates, changing non-response rates, changing sample designs, deliberate misreporting, and changes in survey procedures. Overall, it is preferable to use large-scale surveys with low non-response rates, as these surveys can eliminate the biases typical of surveys with smaller sample sizes.

Collecting data on childlessness among men is even more challenging, partly because men tend to underreport their children from previous marriages and partnerships (Rendall et al. 1999), and partly because they have a longer reproductive period. Thus, the only sources of data on childlessness among men are often smaller scale surveys, such as the Fertility and Family Surveys (FFS) conducted in the 1990s and the Generation and Gender Surveys (GGS) conducted since the early 2000s (e.g., Miettinen et al. 2015).

Population Register Data In Europe, a number of countries, including Nordic countries, Baltic countries, the Netherlands and Slovenia, have established population registers that contain records on demographic events for all of the residents in the country. These are in theory the most accurate and efficient sources of information on childlessness. Because they can be merged with other registers, they provide a broad scope for detailed analyses of the determinants of childlessness (for an excellent analysis of the educational gradient in childlessness and cohort fertility in the Nordic countries, see Andersson et al. 2009). However, using demographic register data for analysing childlessness has two main limitations. The first is that it is difficult to cover the reproductive histories of the entire population, especially those of migrant women, for whom the number of children they gave birth to before arriving in the country may not be known or reported. A partial solution to this problem is to measure fertility and childlessness only among women who were born in the country. The second limitation pertains to data access: to ensure the protection of data and confidentiality, many countries make accessing their register data difficult, and often also costly. Thus, obtaining register-based data on childlessness is not easy in countries that do not routinely publish these estimates.

Vital Statistics Data Statistical offices of almost all European countries now collect data on live births by age of the mother, year of birth of the mother, and birth order of the child. In combination with the official estimates of the female population by age and year of birth, these data can be used for estimating fertility rates by

the child's birth order and age of the mother. These data can then be cumulated over long periods of time and used to estimate cohort childlessness and parity distribution. This approach has often been used in the past, including by Frejka and colleagues (e.g., Frejka and Sardon 2004, 2006, 2007; Frejka et al. 2010), Heuser (1976), Sobotka (2005), and Dorbritz and Ruckdeschel (2007). The estimates of childlessness and parity distribution based on period vital statistics data are also featured in the Human Fertility Database.

However, approaches based on cumulating time series of period vital statistics to obtain childlessness data also have several drawbacks. The first one is obvious: to reconstruct the entire childbearing history of a single birth cohort, it is necessary to accumulate over 30 years of fertility data, starting from around age 15. Such long time series often are not available, either because birth order is not continually reported in birth records, or because in the past many countries collected birth order information only for women who gave birth within marriage. Several countries, including Germany and the United Kingdom, have only recently started collecting data on biological birth order. Childlessness estimates derived from the period data are also very sensitive to the quality of birth order statistics. Data quality problems, such as a high share of births with an unknown birth order, the publication of the birth order for 5-year age groups only (this practice was common in the past in some of the countries of the former Yugoslavia and the Soviet Union), and the incorrect or inconsistent reporting of biological birth order (this practice is common in France) make the resulting cohort childlessness estimates volatile and often useless. Furthermore, period data only contain the records on births that took place in the country: fertility for emigrants is included, but only before the date when they left the country, and the reproductive histories of immigrants are ignored up to the date when they arrived in the country. Thus, the cohort fertility histories created in this way are somewhat artificial, and may not reflect the actual childlessness of the residents in countries with high immigration or emigration, especially if the fertility behaviour of migrants differs from the behaviour of the "stayers". Finally, the estimates of the female population distribution by age might be strongly affected by incomplete reporting of migration. For instance, incomplete reporting of emigration can affect statistics on the entire female population of reproductive age (as is the case for some countries of central and eastern Europe (CEE) with high levels of emigration, including Poland) or of specific population groups, such as immigrant women (as is the case for Germany; Pötzsch 2016). This in turn inflates the registered number of women of reproductive age, which leads to an underestimation of period and cohort fertility rates, and, consequently, to an overestimation of childlessness. For these reasons, childlessness estimates based on period vital statistics should be used with caution. While such estimates may accurately reflect the average level of childlessness in the long run, they may be unstable or have implausibly low values for some cohorts. This is, for instance, the case in the estimated time series of lifetime childlessness in the Human Fertility Database for some CEE countries, including Bulgaria and Estonia (HFD 2015a).

Census or large sample survey data are often used in combination with the subsequent vital statistics. This approach, which is frequently used in this chapter, makes use of the comprehensive picture of childlessness among many different cohorts provided in the censuses, and then extends it using more recent data covering the period for which the census records are not available.

To illustrate the extent to which different data sources often yield different estimates of final childlessness, let us consider the data for Romania and Spain presented in Fig. 2.1, or the different estimates of childlessness for the United States discussed by Frejka (Chap. 8, in this volume). The data for Romania are mostly drawn from censuses taken between 1977 and 2011, although the data from the 2002 census are combined for the younger cohorts with the vital statistics data for 2002–2013. While the censuses of 1992 and 2002 closely overlap and give very similar estimates of final childlessness, the census of 1977 gives lower childlessness estimates for the women born in the 1920s, whereas the most recent census of 2011 gives much higher estimates of childlessness for the women born in the 1920s–1950s. For instance, women born in 1927 had a childlessness rate of 15 % in the 1977 census, of 18 % in the censuses of 1992 and 2002, and of 23 % in the most recent census of 2011. It is unlikely that selective emigration plays a role in this discrepancy (as it is implausible that women with children would have been leaving the country at a higher rate than childless women). Likewise, it is unlikely that women with children would have had a mortality rate that was so much higher than that of childless women that their share in the population of older woman would have declined so rapidly. Similar discrepancies can be found in the data for Spain: the more recent census data for 2011 show higher rates of childlessness than the 1991 census data, and the childlessness rates reconstructed from vital statistics records are much lower (and are also less stable) than they are in both census datasets. In this case, immigration might have played some role, as Spain experienced an unprecedented wave of immigration between the late 1990s and 2010 (Verdugo and Swanson 2011): the higher childlessness estimates in the more recent census likely reflect the fact that many female immigrants to Spain were childless when they arrived in the country.

2.2.3 Country Coverage, Data, and Assumptions Employed

This study presents childlessness estimates for European countries with populations over one million; in total I have assembled datasets for 30 countries. I could not find reliable data or longer time series for Albania, Bosnia and Herzegovina, Kosovo, Latvia, Macedonia, and Serbia; these countries are therefore not included in the analysis. For the United Kingdom, data are available for England and Wales only. Because eastern and western Germany were separate countries in 1949–1990, and continue to have distinct fertility patterns, I analyse the data for these two regions separately, alongside the dataset for Germany as a whole. To capture the main differences between major parts of Europe, I also study trends for six larger European

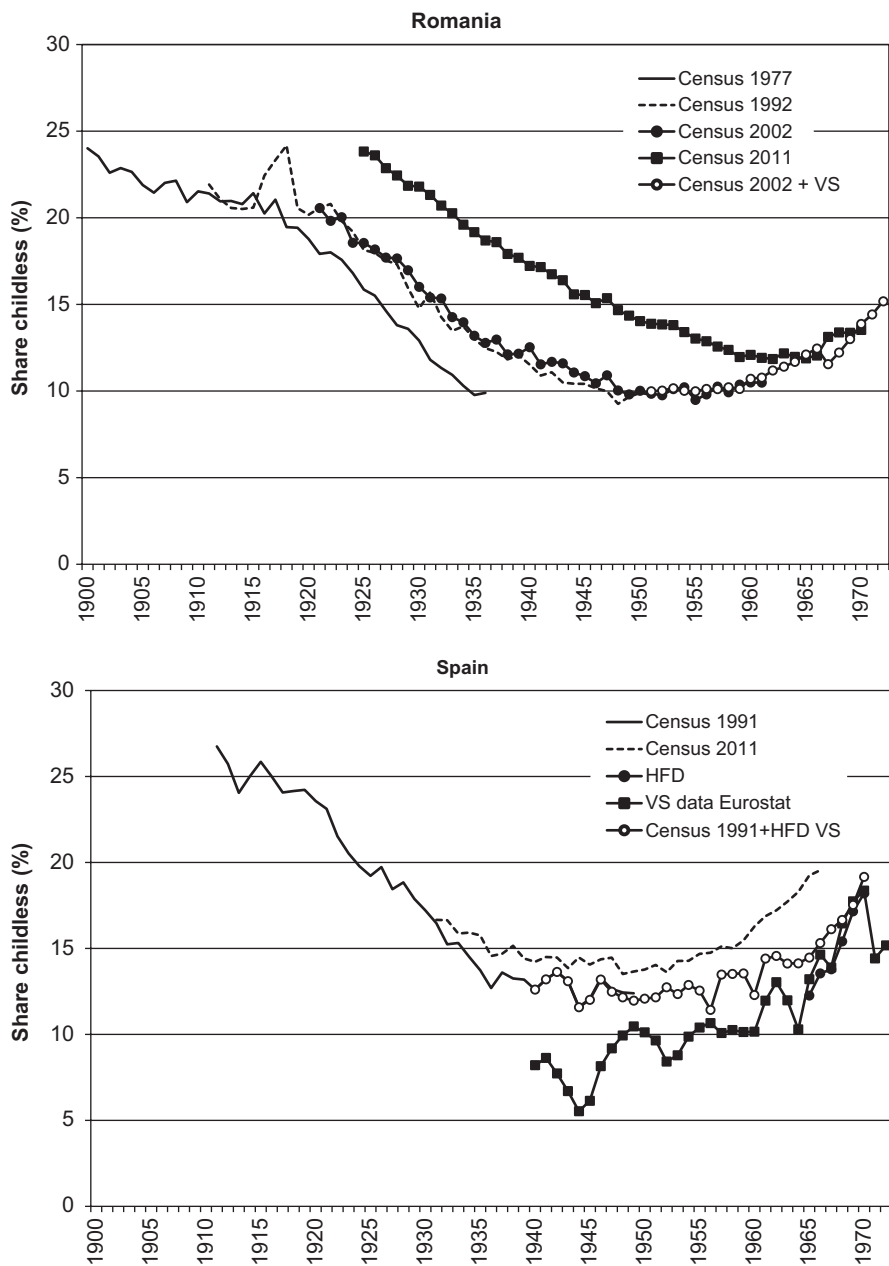


Fig. 2.1 Estimates of permanent childlessness in Romania and Spain among women born in 1900–1972; a comparison of different data sources. Notes: *HFD* Human Fertility Database (2015b), *VS* vital statistics (Sources: see Appendix 1)

regions that have had distinct fertility patterns in the past (Sobotka 2013): western Europe, the Nordic countries, southern Europe, the predominantly German-speaking countries of Europe (Austria, Germany, and Switzerland), central Europe, and a broad region of eastern and south-eastern Europe. The latter two regions are composed of the former state-socialist countries of central and eastern Europe (CEE).

For most of the countries, I have found multiple datasets on permanent childlessness (see the examples for Romania and Spain in Fig. 2.1). Combining them allowed me to reconstruct long-term series of cohort childlessness. However, having multiple datasets for identical cohorts also meant that I had to select some datasets over others, as I present only one figure for each of the analysed cohorts in each country.² In the selection procedure I followed a set of simple rules, which were based in part on the data issues and preferences outlined above. The selected datasets are listed in Appendix 1. The selection rules are as follows:

- Longer data series that show permanent childlessness for many cohorts are preferred.
- The time series that overlap closely with other available data (e.g., Romanian census data for 1992 and 2002 in Fig. 2.1) are preferred.
- The more stable datasets that show “plausible” ranges of childlessness are preferred (specifically, datasets that exclude data suggesting that childlessness levels are below 4 %, as these levels are implausible given that the permanent sterility is 2–3 %). This means giving preference to census data over vital statistics-based estimates. The drawback of this approach is that the availability of census data for the most recent round of censuses in 2011 is limited, as many countries either switched to conducting the census based entirely on population registers and other administrative registers, which often do not allow for the reconstruction of the parity structure of women (e.g., in Austria); or the organisers decided not to include the question on the number of children ever born in the census.
- Survey data are used only when the datasets are large, and only for countries where population-based datasets were unavailable (France and Germany).
- A hybrid approach of combining census data (mostly for the censuses around 1991 and 2001) and the time series based on vital statistics for the subsequent period is used to derive an estimate of childlessness for the most recent period (usually for 1 January 2014).

Age Ranges I present childlessness estimates as “final” when they pertain to women aged 42 or older; for some CEE countries, I have also included data for women aged 41, as these countries still have very low first birth rates among women at higher ages. In six countries (Austria, the Czech Republic, England and Wales, Italy, Spain, and Switzerland) I have used a simple trend projection based on the first birth probabilities by age to estimate permanent childlessness among women

²I considered the option of presenting multiple datasets for the same cohort, but this would make cross-country and regional comparisons more difficult, and would also require much more space for data presentation, exceeding the scope of this study.

who were born prior to 1972, and for whom the data were available up to ages 40 or 41. At these ages the potential margin of error for such a projection is very small—well below the degree of uncertainty in estimates of childlessness levels based on different data sources. The census and survey data considered in the analysis were for women who were under age 80 at the time of the census, as above that age the selectivity due to differential mortality was assumed to be too large.

Redistributing Women with Unknown Parity When the number of women with unknown parity was available in the published datasets, they were usually assumed to have the same parity distribution as the women whose parity was recorded. Therefore, childlessness was computed only for the women for whom the parity distribution was reported. Usually, this assumption was not critical for estimating childlessness, as in most countries the share of women with unknown parity was typically below 1 %. However, in many of the available datasets the number of women with unknown parity distribution was not reported, and it is often unclear whether any specific assumptions for these women were applied by the national statistical offices that processed and published these data. Finally, some census data show that there is a close correlation between the share of childless women and the share of women with unknown or unreported birth order; in these cases, all of the women with unknown birth order are assumed to be childless (see Appendix 1).

Main Data Sources The data sources selected for each of the countries are detailed in Appendix 1. For some countries, the data came from census tabulations or other estimates published by national statistical offices or were provided by the researchers working with these datasets (see Appendix 1 and the acknowledgements). Here I outline the main sources, which were used for multiple countries. For the census data, there are two key sources: the census-based tabulations of the parity distribution of women provided in the input datasets in the Human Fertility Database (HFD 2015b), and the tabulations of the parity distribution of women aged 40–80 by cohort and education provided in the Cohort Fertility and Education database (CFE 2015; Zeman et al. 2014). The HFD census-based tabulations were available for 11 countries and territories: Belarus, Bulgaria, the Czech Republic, Estonia, eastern Germany, Lithuania, Portugal, Russia, Slovakia, Slovenia, and Ukraine.³ The CFE data were available for Croatia, the Czech Republic, Hungary, Ireland, Poland, Romania, Russia, Slovakia, and Spain.

In addition to the census data, the HFD also contains annual register-based or official estimates of the parity composition of women by age for Finland, Hungary, the Netherlands, Norway, and Sweden. These estimates were used for selected years in this study (Appendix 1). The key sources of the childlessness estimates based on vital statistics are the Human Fertility Database (2015a) and the author's own

³These data are not part of the main HFD “output” datasets, as their purpose is to provide estimates of the parity distribution of women of reproductive age, serving as an input for constructing fertility tables in the database.

computations based on the Eurostat online database (2015). In theory, the time series of period data on fertility by birth order from the Human Fertility Collection (HFC 2015) can also be used to generate estimates of lifetime childlessness, but for most European countries these estimates either cover relatively few cohorts or are too unstable to be used for that purpose.

2.3 Long-Term Developments in Childlessness in Europe: Evidence for 30 Countries

The presentation of long-term developments in childlessness in 30 European countries is nested within six broader regions that reflect the major geographic and cultural divisions of Europe, but also the geopolitical division of east and west that prevailed in Europe until 1989. These divisions are apparent in European fertility patterns, including childlessness (e.g., Sobotka 2011). In the next section, I summarise the major regional differences and discuss the between-country heterogeneity in childlessness in Europe.

In western Europe, childlessness trends have followed an asymmetric U-shaped pattern, starting from very high levels among women born in the first quarter of the twentieth century, reaching low levels among women born in the mid-1940s, and then rising again, especially among women born in the 1950s (Fig. 2.2). The level of childlessness reached around 25 % among French women born around 1900, Belgian woman born in 1910, and Irish women born in 1925 (earlier data are not available). Childlessness levels then declined substantially, to 10–14 % among the early- to mid-1940s cohorts, most of whom had their first child in the 1960s, i.e., during the later stages of western European baby boom. The subsequent increases in childlessness were steepest in the Netherlands and England and Wales, whereas in France the level of childlessness rose gradually; today France has the lowest childlessness rate in the region, of 14 % among women born in the second half of the 1960s. Among the 1960s cohorts there was a clear stabilisation in childlessness levels, with England and Wales even reporting a decline; among the late 1960s cohorts, 16–19 % of women in Belgium, Ireland, the Netherlands, and England and Wales remained childless (see also Berrington, Chap. 3, in this volume).

The childlessness patterns were similar in the Nordic countries, starting from high levels around 25 % among women born around 1910 (data available for Finland and Sweden only) and reaching much lower levels among those born in the 1940s. As in France, childlessness levels then increased gradually (see Köppen et al., Chap. 4, in this volume). Among women in Denmark, Norway, and Sweden who were born in 1970, the childlessness levels are 12–14 %. In Finland childlessness rates rose more sharply, with one out of five women born in 1968 remaining childless (see Rotkirch and Miettinen, Chap. 7, in this volume).

The three predominantly German-speaking countries, together with southern Europe, make up the group of countries with the highest levels of childlessness in

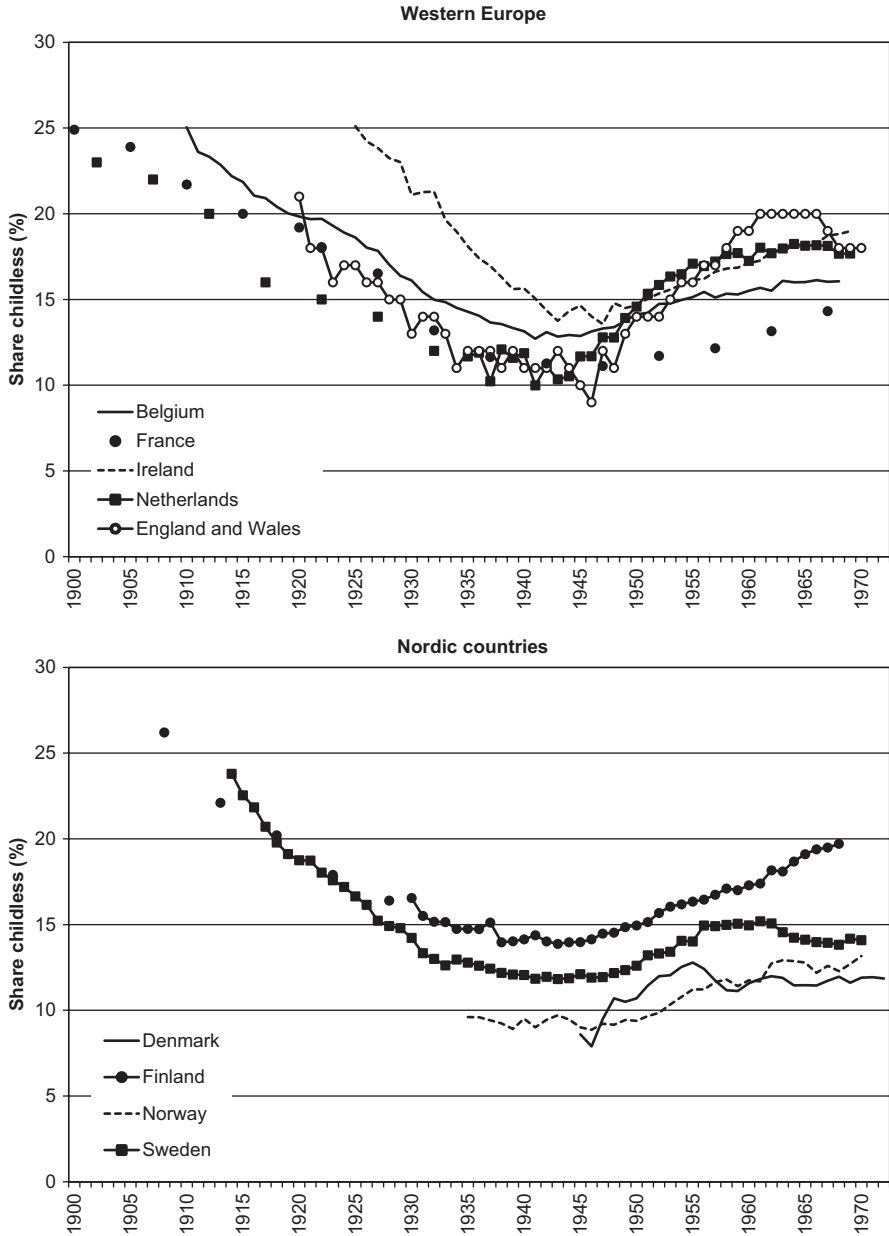


Fig. 2.2 Childlessness among women born in 1900–1972; western European and Nordic countries (in %). Notes: For each country and cohort only one data source was selected; the alternative datasets are not shown (see Sect. 2.2.3). For women who were born in the late 1960s and the early 1970s a small portion of their first birth rates (after age 42) is either estimated or disregarded (Sources: detailed sources by country are listed in Appendix 1)

Europe. In the German-speaking countries, childlessness increased sharply among women who were born in the 1950s and 1960s, and has been especially prevalent among women who have a tertiary education (Sobotka 2012). In Switzerland and Germany, the rates of childlessness exceeded 20 % in the late 1960s cohorts. In Germany, the fertility patterns in the eastern and in the western parts of the country have long been distinct, partly mirroring the broader differences between the former state-socialist countries and other regions of Europe (Goldstein and Kreyenfeld 2011; Kreyenfeld 2004; see also Bernardi and Keim-Klärner, Chap. 12, in this volume). Until recently, levels of childlessness were far lower in eastern than in western Germany: just 8–12 % of eastern German women born between the 1930s and the early 1960s were childless. While the results of the micro-census surveys of 2008 and 2012 indicate that this east-west gap had become much smaller among the 1960s cohorts (Fig. 2.3), western German women of the late 1960s cohorts had the highest childlessness levels in Europe; of around 25 % among those born in 1969. Over the past century, childlessness trends in western Germany have followed a U-shaped pattern: the level was around 26 % among the cohorts born in the early twentieth century, declined to less than 13 % among the mid-1940s cohorts, and then almost doubled among the women born over the next 25 years. But while recent estimates showing that 23–24 % of German women born in the late 1960s have remained childless seem high, these figures are actually lower than many estimates based on the smaller sample survey data analysed prior to the recent rounds of the micro-census surveys (e.g., Dorbritz and Ruckdeschel 2007). In Switzerland, it appears that childlessness levels peaked at around 22 %, and were lower among women born around 1970. However, these estimates are partly based on vital statistics, and are not fully in line with evidence from other data sources (for a more detailed analysis, see Burkimsher and Zeman, Chap. 6, in this volume).

In southern Europe, the long-term childlessness trends in the two largest countries, Italy and Spain, were similar: the childlessness levels were around 25 % among the cohorts born in the early twentieth century, declined gradually to around 11–12 % among the cohorts born in the early 1950s, and then increased sharply among the cohorts born in the 1960s and early 1970s, surpassing 20 %. This pattern reflects that the decline in fertility in southern Europe occurred later than the decreases observed in western and northern Europe, but also that the decline has been more severe in the south: among women born in 1972, the completed fertility rates in Italy and Spain are estimated to be the lowest in Europe, at 1.45 and 1.43 children per woman, respectively. Greece appears to be on a similar trajectory. By contrast, the level of childlessness in Portugal is considerably lower, estimated at around 12 % among women born in 1968. While the country currently has the lowest period total fertility rate in Europe, of 1.21 in 2013, this development is not yet reflected in the childlessness trends examined here. In addition, it appears that the cohort fertility decline in Portugal has mainly been characterised by a rapid spread of one-child families, with an estimated 36 % of women born in 1968 having only one child (computations based on Human Fertility Database).

In central, eastern, and south-eastern Europe, childlessness trends differed sharply from those in other parts of Europe among women born in the 1940s to

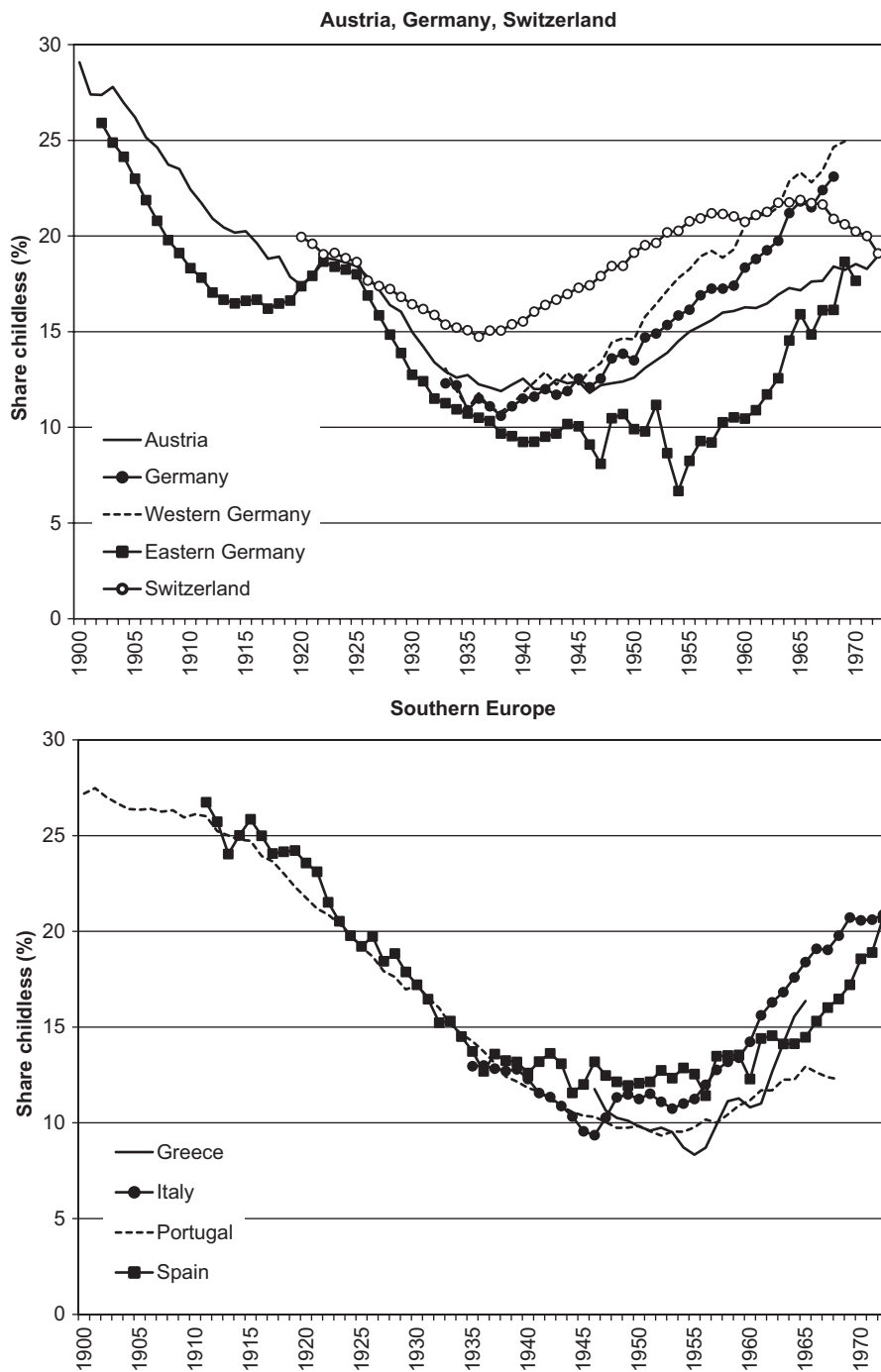


Fig. 2.3 Childlessness among women born in 1900–1972; Austria, Germany, Switzerland, and southern Europe (in %) (Notes and sources: see Fig. 2.2)

mid-1960s. Among these cohorts, childlessness levels were not only very low (estimated in most countries at 5–10 %); they were also much more stable than in the rest of Europe, where childlessness was rising. This pattern can be seen as one of the key features of reproduction under state socialism in the CEE region in the 1950–1980s. A wide range of social and economic factors contributed to this pattern of universal family formation: low average age at marriage and childbearing, negative attitudes towards childlessness, insufficient availability of modern contraception (which resulted in large numbers of unplanned pregnancies and “shotgun marriages”), the relative predictability of the life course, the lack of labour market competition, and the relatively consistent availability of institutional childcare (Sobotka 2011, 2015). With some exceptions (especially in Romania), childlessness was rare among women of all educational groups, suggesting that labour market participation did not pose a major barrier to family life in the region (Brzozowska et al. 2016).

Some CEE countries stand out for their particularly low levels of childlessness: among women in Belarus, Bulgaria, Czech Republic, and Russia who were born in the 1950s (and thus had their first child mainly in the 1970s or the 1980s) the levels of childlessness were 5–6 %; or just a few percentage points above the estimated level of lifetime sterility (Leridon 2008). The highest childlessness levels in the CEE countries among these cohorts, of around 9–10 %, were recorded in Estonia, Romania, and Slovakia. These levels were, however, still well below those in most other parts of Europe. However, childlessness levels are higher among the youngest CEE women analysed, especially among those born at the turn of the 1960s and 1970s, who realised most of their reproduction in the post-communist transition era of the 1990s. While childlessness has been rising in all of the CEE countries, particularly sharp increases have been observed in Romania: according to a recent estimate, around 15 % of Romanian women born in the early 1970s are childless. This estimate is, however, tentative, as it is based on cohort fertility rates reconstructed from period vital statistics. These computations involve estimating the female population of reproductive age who are resident in the country in each year, which can be particularly challenging in countries with high rates of emigration, such as Poland and Romania (Sect. 2.2.2) (Fig. 2.4).

2.4 Diversity and Contrasts in Childlessness Trends: Countries and Broader European Regions

The analysis of childlessness trends for all countries presented above may not clearly illustrate the main differences between broader European regions. Figure 2.5 shows changes in childlessness in Europe, averaging data for all available countries, and also depicts regional averages of childlessness for the six broader regions analysed above. These regional averages are based on data for selected countries for which long-term series were available. This analysis is also accompanied by selected

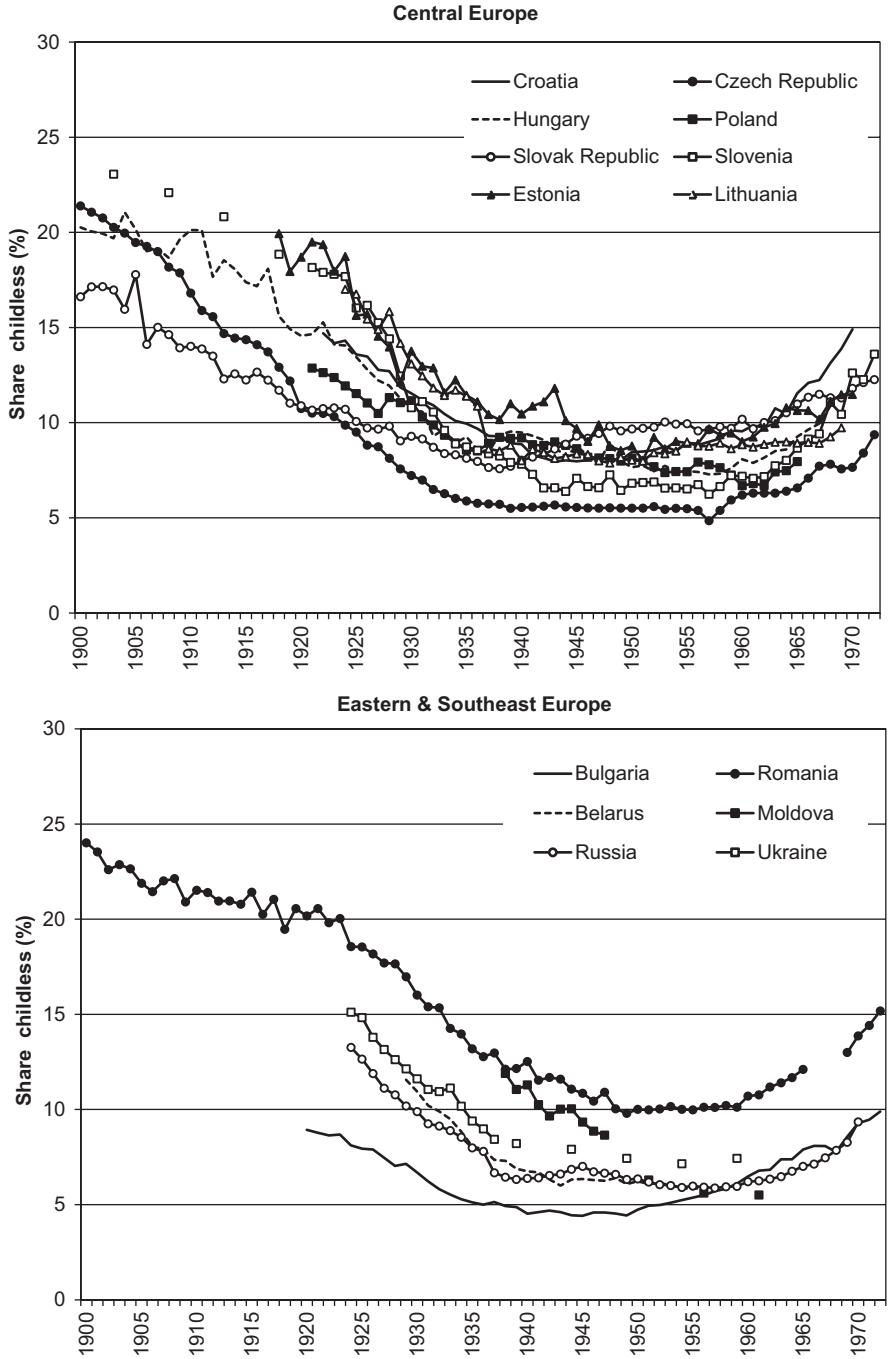


Fig. 2.4 Childlessness among women born in 1900–1972; central, eastern, and south-eastern Europe (in %) (Notes and sources: see Fig. 2.2)

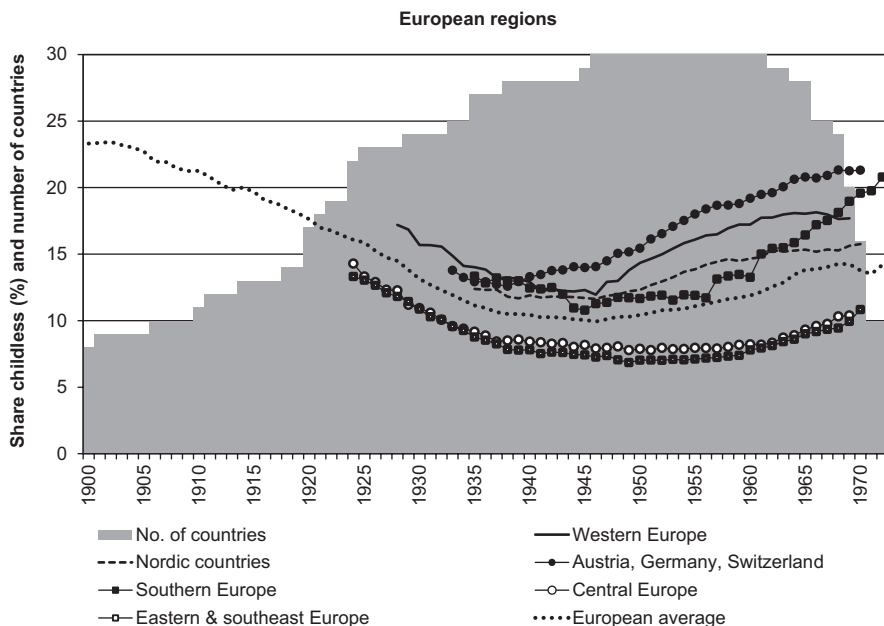


Fig. 2.5 Childlessness in Europe among women born in 1900–1972 (average for all countries with available data, in percent) and in six broader European regions (average for selected countries). Notes: European average is an average level of childlessness in all countries for which data were available in a given year. The regional data are unweighted averages based on selected countries for which longer time series of data were available. The selected countries are as follows: western Europe: Belgium, England and Wales, Ireland, and the Netherlands; Nordic countries: Finland, Norway, and Sweden; southern Europe: Italy and Spain; central Europe: Croatia, Czech Republic, Estonia, Hungary, Lithuania, Poland, Slovakia, and Slovenia; eastern and south-eastern Europe: Bulgaria, Romania, and Russia (Sources: detailed sources by country are listed in Appendix 1)

summary indicators of cross-country heterogeneity in childlessness in Europe in selected cohorts born between 1900 and 1968 (Fig. 2.6).

These data provide clear evidence that childlessness levels were high across Europe in the course of the demographic transition, in line with the findings of Rowland (2007). Women who were born in the early twentieth century had very high childlessness levels, as the family formation plans of many women were disrupted by the economic depression of the 1930s and by a lack of male partners after the First World War. Childlessness levels of women born between 1900 and 1911 approached or exceeded 20 % in all of the 13 countries with available data except Slovakia.

In various European countries and regions, the pattern of childlessness over the past century was U-shaped. In most countries, the lowest levels are observed among women born around 1940. These women were starting a family in the prosperous era of the early- to mid-1960s; a time when most women still fully embraced the “traditional” family model based on marriage and the strong division of gender roles. On average, only around 10 % of European women of these cohorts remained

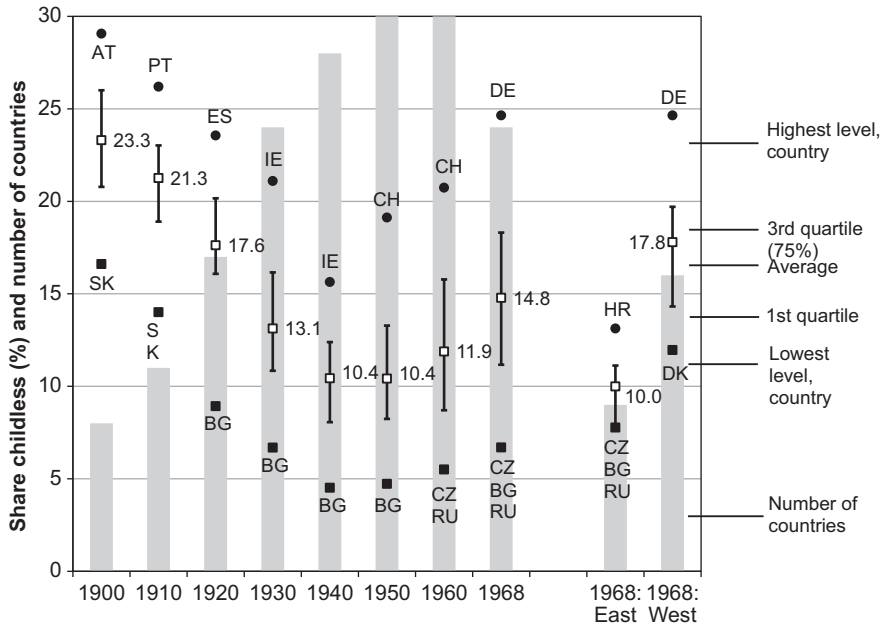


Fig. 2.6 Selected indicators of cross-country differences in childlessness in Europe (average, lowest and highest levels, 25 and 75 % of the childlessness distribution). Women born in 1900–1968, selected cohorts, in percent (Notes and sources: Indicators are computed for all European countries with populations over one million for which data were available for a given year; for the countries and the cohorts included, see also Figs. 2.2, 2.3, and 2.4 and Appendix 1). Country codes: *AT* Austria, *BG* Bulgaria, *CH* Switzerland, *CZ* Czech Republic, *DE* Germany, *DK* Denmark, *ES* Spain, *IE* Ireland, *PL* Poland, *PT* Portugal, *RU* Russia, *SK* Slovakia

childless (Fig. 2.6). A higher childlessness rate, of around 14 %, can be observed in only three countries: Ireland, Finland, and Switzerland. Paradoxically, the lowest levels of childlessness were reached at the same time among the cohorts who were experiencing the baby boom in western countries, and among the cohorts in eastern Europe whose fertility rates were declining to low levels (van Bavel et al. 2015).

The regional trajectories in Fig. 2.5 also suggest that some of the differences in childlessness between the eastern and the western parts of Europe preceded the geopolitical division of the continent that emerged after World War II. The CEE countries consistently had childlessness levels that were below European average, including among women who were born in the mid-1920s, many of whom had their first child before the new reproduction patterns of the state-socialist era were established during the 1950s.

While childlessness eventually increased in all of the regions, the timing of this rise differed considerably. In western Europe, including in Austria, western Germany, and Switzerland, the increase in childlessness began among women born in the 1940s. In the Nordic countries, the increase started among women born in the early 1950s, and then progressed much more slowly. In the south, the rise in childlessness started among women born in the 1960s. In the CEE countries, childlessness first

started to rise among the cohorts born in the late 1960s (Fig. 2.5). Because of these differences in the onset of the increase in childlessness, the east-west gap in childlessness levels was most pronounced among women born between 1950 and 1965, although the differences between countries were large (Fig. 2.6). For an illustration, consider regional differences observed among women born in 1968: the average level of childlessness in the CEE countries (10 %) is below the lowest childlessness level in other parts of Europe (12 % in Denmark), and is well below the average level across non-CEE countries (18 %). These differences are also observed in the ranking of European countries with the lowest and the highest childlessness levels among women born in 1940 and 1968 (see Fig. 2.7): all of the countries with the lowest childlessness levels are located in the CEE, with Bulgaria, the Czech Republic and Russia having the lowest levels.

Finally, a distinction can be made between regions where childlessness seems to be levelling off or even declining slightly among the cohorts born in the late 1960s and early 1970s (western European countries, Nordic countries, Austria, Germany, and Switzerland), and regions where childlessness has been rising rapidly, and is likely to continue to increase (southern European and CEE countries).

How closely is childlessness correlated with completed fertility? Do countries with high childlessness rates also have low cohort fertility rates? Previous research has suggested that among women who were born in the early and mid-1960s, there is a weak correlation between low fertility rates and high levels of childlessness (Dorbritz and Ruckdeschel 2007: Figure 9, Miettinen et al. 2015: Figure 10c). In Fig. 2.8 we can see that among women who were born in 1968, the strength of this correlation varies by region: no correlation can be observed in the CEE countries (or if there is a correlation, it runs in the opposite direction), while in the rest of Europe the expected correlation is found, but it is not very strong. The main outlier is Ireland, which has both a high completed fertility rate (2.17) and a relatively high childlessness rate (19 %).

2.5 Discussion and Conclusions

This study has provided the most detailed reconstruction to date of long-term childlessness trends among women in Europe. But because the analysis is based on diverse datasets, the cross-country comparisons cannot be precise, and a degree of uncertainty about the exact levels of childlessness remains, especially in countries where different datasets provide contrasting estimates of childlessness, and in countries that have been experiencing intensive migration. It is beyond the scope of this article to give a detailed account of all of the alternative datasets available, but these uncertainties should be taken into account when analysing the presented data.

This limitation notwithstanding, the main findings of the analysis are robust and clear. Europe has experienced a U-shaped pattern in permanent childlessness among women born between 1900 and 1972. Among the cohorts born in the early twentieth century, the childlessness rates were high (typically more than 20 %) in all of the countries for which data are available except Slovakia. Childlessness levels then

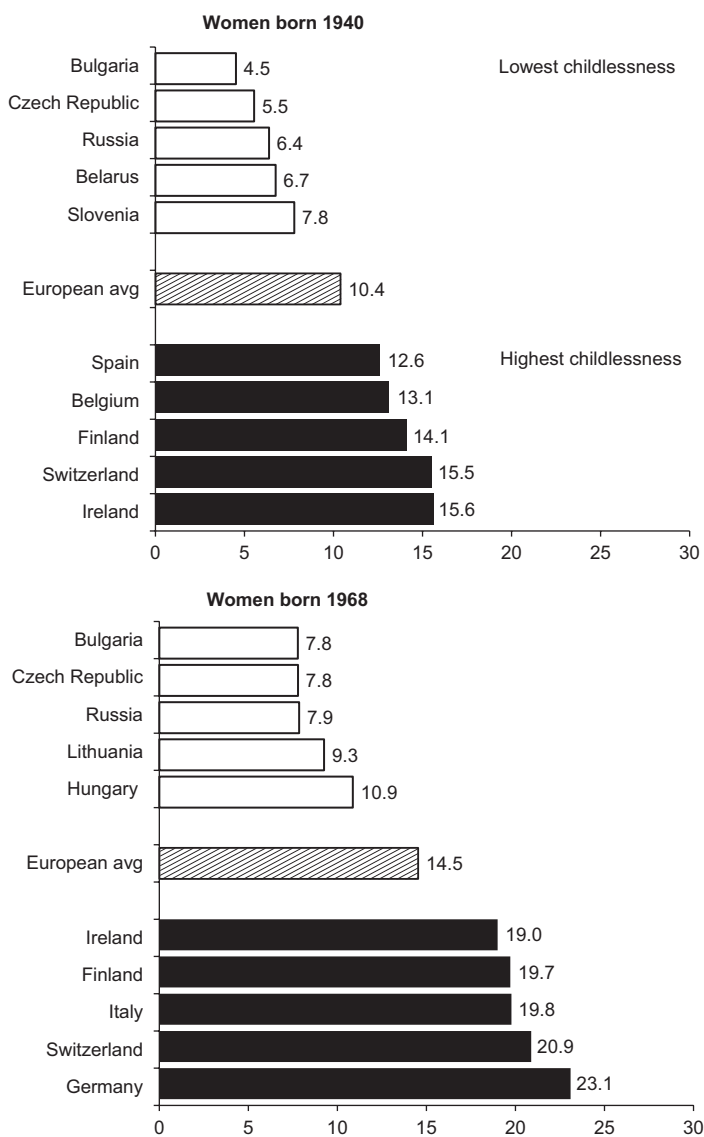


Fig. 2.7 European countries with the highest and the lowest childlessness levels among women born in 1940 and 1968 (Notes and sources: Ranking based on European countries with populations over one million for which data were available for a given year; for the data sources, the countries, and the cohorts included, see also Figs. 2.2, 2.3, and 2.4 and Appendix 1)

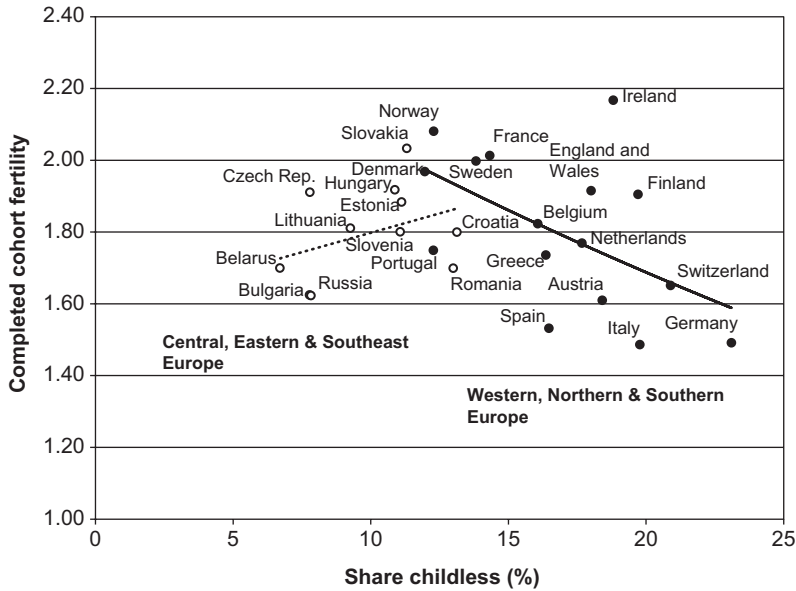


Fig. 2.8 Permanent childlessness and completed cohort fertility rates in Europe, women born in 1968. Notes: The data are for 28 European countries with populations over one million and available data on childlessness. The childlessness data for France are for the 1965–1969 cohorts, the data for Belarus and Greece are for the 1965 cohort, and the data for Romania are for the 1969 cohort (Sources: Childlessness: see Appendix 1; completed fertility: European Demographic Data Sheet 2010 (VID 2010) and own computations)

steadily declined, and were lowest among the 1940s cohorts. Relative to the childlessness levels among both the older and the younger cohorts, the levels among these cohorts were low (Rowland 2007). The timing and the intensity of the subsequent increase in childlessness varied substantially by region. One clear and persistent regional difference was between the former state-socialist countries, where childlessness was rare, and the other regions of Europe, where childlessness was much more common. Although the CEE countries did not have high cohort fertility rates, motherhood was almost universal there, and voluntary childlessness was not normatively approved. However, the data for women born in the late 1960s and the early 1970s, who reached adulthood in the period when the state-socialist political systems in the CEE were collapsing, suggest this long-standing difference is now eroding. Some of the CEE countries, including Croatia, Hungary, and Romania, have experienced rapid increases in childlessness, matched only by the sharp upturns in childlessness in southern Europe. In contrast, the trend towards increasing levels of childlessness appears to be levelling off—and in some cases (e.g., in Switzerland and England and Wales) even reversing—in much of western Europe, the Nordic countries, and the three predominantly German-speaking countries of Europe.

I have not analysed the specific factors that have contributed to the between-country differences in childlessness levels, and to the increase in childlessness among women born in the 1950s and 1960s. Very generally, it appears that the factors that have contributed to declines in cohort fertility have also been driving trends in childlessness. Two broad sets of institutional influences can be highlighted. First, whenever women face difficulties in combining paid employment with parenthood because of limited childcare, inflexible work conditions, long work hours, and unhelpful partners, childlessness is likely to increase. Highly educated women, who have the strongest career prospects, and who thus face the steepest opportunity costs if they have children, are especially likely to remain childless under these conditions. Countries such as Germany and Spain—and to some extent the United Kingdom, where the cost of childcare is very high—fit this pattern. Second, childlessness is also on the rise in countries where labour market conditions are poor: i.e., unemployment is high, a large percentage of the working-age population are in temporary employment, a large share of young adults are neither in education nor working, and the rate of self-employment is high. Under these circumstances, many couples postpone and even forgo parenthood and they often cannot afford the type of housing they would need to start a family. Until recently, these conditions were mainly found in the countries of southern Europe (Adserà 2004). Now, however, these conditions are also prevalent in many ex-socialist countries of central and eastern Europe.

At the same time, however, childlessness trends appear to have a stronger normative underpinning than changes in cohort fertility: in countries where voluntary childlessness is not generally accepted, childlessness is still relatively infrequent, especially among women, who often face strong social pressure to have at least one child. This normative pressure was widespread in CEE countries until recently (see, e.g., Merz and Liefbroer 2012; Sobotka 2016), but it also helps to explain the low childlessness levels observed among some religious and ethnic minorities in countries where childlessness is otherwise relatively common and accepted. The broad acceptance and prevalence of voluntary childlessness is closely linked with low religiosity (e.g., Abma and Martinez 2006; Tanturri and Mencarini 2008; Burkimsher and Zeman, Chap. 6, in this volume). In addition, there is a high degree of historical and cultural continuity in childlessness levels over time (Morgan 1991), which suggests that countries where childlessness was widespread in the past are also likely to have high childlessness rates in the future, as younger women and men are socialised in conditions in which childlessness is common and generally accepted.

Will childlessness rates continue to increase; and, if so, by how much? It is important to note that recent childlessness levels are still well below the historical highs in most of the analysed countries, and that current childlessness levels are not as high as might be anticipated, considering the range of interconnected factors outlined in the introduction that may be expected to encourage women and men to remain childless. Among the women born in the 1970s and the early 1980s, childlessness is likely to increase especially in southern and central-eastern Europe, whereas it may stabilise in other regions. Childlessness levels are likely to be highest in the southern European countries, especially in Italy and in Spain; and possibly

in Greece, for which reliable recent data are unavailable. In these countries childlessness levels are over 20 % among the early 1970s cohorts, and may eventually reach 25 % if the increase in childbearing intensity at higher reproductive ages slows down or stops. Outside of Europe these high childlessness levels may be exceeded in some East Asian societies, especially in Japan, for which Frejka et al. (2010) have estimated that childlessness levels are close to 30 % in the late 1960s cohorts.

Future research should examine more rigorously the reliability of different data sources on childlessness, and the main sources of errors and distortions in these datasets. An important source of uncertainty about future childlessness lies in the interplay between fertility postponement and the ability of couples and individuals to realise their childbearing plans later in life. The mean age at first birth among women has exceeded 30 in Italy, Spain, and Switzerland; and is approaching this boundary in many other European countries. The share of women who are still childless at ages 35–40, when infertility becomes an important limiting factor (Menken et al. 1986), has risen rapidly in much of Europe. For instance, in Spain 35 % of women aged 35 were childless in 2011, up from 16 % in 1991 (computations are based on census data). Many of them are likely to experience infertility by the time they decide to start a family, and thus may need to use assisted reproduction, which is costly and rather ineffective at higher reproductive ages (e.g., Wang et al. 2008; see also Trappe as well as Präg and Mills, Chap. 14, in this volume). This trend is likely to contribute to an increase in involuntary childlessness. This pattern of “perpetual postponement” may also be associated with stronger fluctuations in childlessness levels in the future. Compared to past generations of women, most of whom had their first child at a relatively young age, and thus could postpone parenthood decision in difficult times, the current cohorts of women will have less “extra space” left for postponing motherhood if they encounter adverse circumstances. When times are tough, many women might be running a race against the biological clock that they are likely to lose.

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Appendices

Appendix I

Data sources by country

Country	Cohorts	Data	Reference period	Source	Note
Austria	1900–1940	C 1991	15 May 1991	CFE (2015)	Parity on 1 Jan. 2014 computed by Kryštof Zeman for Geburtenbarometer (2014); First births realised after 2013 projected (trend projection)
	1941–1964	C 2001	15 May 2001	CFE (2015)	
	1965–1972	& VS 2001–2013	up to 31 Dec. 2013	See note	
Belarus	1929–1957	C 1999	16 Feb. 1999	HFD (2015b)	Data available for 5-year cohorts only
	1959–1963, 1964–1968	C 2009	October 2009	HFD (2015b)	
Belgium	1910–1950	C 2001	31 Dec. 2000	See note	Computations by Karel Neels from individual data obtained by Statistics Belgium
	1951–1968	C 2001	31 Dec. 2000	See note	
Bulgaria	1920–1972	C 2001 & VS 2001–1910	up to 31 Dec. 2010	Eurostat (2015)	Own computations; First births realised after 2013 projected (trend projection)
			1 Mar. 2001	HFD (2015b)	No unknown birth order reported
			Up to 31 Dec. 2013	Eurostat (2015)	

(continued)

Country	Cohorts	Data	Reference period	Source	Note
Croatia	1922–1945	C 2001	31 Mar. 2001	CFE (2015)	Unknown birth order proportionally redistributed
	1946–1970	C 2011	22 Mar. 2011	CFE (2015)	Unknown birth order proportionally redistributed
Czech Republic	1900–1919	C 1961	1 Mar. 1961	HFD (2015b)	
	1920–1960	C 2001	3 Mar. 1991	HFD (2015b)	
	1961–1972	VS up to 2013	up to 31 Dec. 2013	HFD (2015b) & Eurostat (2015) for 2012, 2013	Own computations based on HFD + Eurostat data
Denmark	1945–1949	R 2013		Statistics Denmark (2014)	First births realised after 2013 projected (trend projection)
Estonia	1950–1972	VS 1968–2013	Up to 31 Dec. 2012	Eurostat (2015) and older Eurostat data	Own computations
	1918–1936	C 1979	17 Jan. 1979	HFD (2015b)	
	1937–1943	C 1989	12 Jan. 1989	HFD (2015b)	
	1944–1970	C 2011	31 Dec. 2011	HFD (2015b)	Women with unknown birth order assumed to be childless
Finland	1930–1934	R 1986	Up to 31 Dec. 1986	HFD (2015b)	
	1935–1949	R 1999	Up to 31 Dec. 1999	HFD (2015b)	
	1950–1968	R 2009	Up to 31 Dec. 2009	HFD (2015b)	

France	1900,1905,10,15,20 1920–1924 to 1965–1969	INSEE surveys Surveys 1982, 1990, 1999, 2011	Daguet (2000, T. 1) See note	Data computed for 5-year cohorts by Éva Beaujouan from survey data obtained by INED and INSEE; Results based on combining several available surveys
Germany	1933–1968	Microcensus (MC) 2008,12	CFE (2015)	For most cohorts data computed by combining results from both MC surveys to obtain more robust results
Germany/ Eastern Germany	1902–1940 1941–1958	C 1981 Microcensus (MC) 2008	HFD (2015b) Statistisches Bundesamt (2015)	Data computed by Martin Bujard
Germany/ Western Germany	1959–1970 1901–1905 to 1926–1930 1933–1969	Microcensus (MC) 2012 Census 1970 Microcensus (MC) 2008,12	Statistisches Bundesamt (2015) Schwarz (2003: Table 8) CFE (2015)	Data computed by Martin Bujard Data computed for 5-year cohorts For most cohorts data computed by combining results from both MC surveys to obtain more robust results
Greece	1946–1965	VS 1960–2008	HFC (2015)	Computations by Kryštof Zeman
Hungary	1900–1919 1920–1929	C 1970 C 1970 + 90	IPUMS/CFE (2015) IPUMS/CFE (2015)	5 % sample of the census data available 5 % sample of the census data, average of two censuses used
Ireland	1930–1949 1950–1968 1925–1948 1949–1969	C 1990 + 2000 R 2010 C 2006 C 2011	IPUMS/CFE (2015) HFD (2015) CFE (2015) CFE (2015)	5 % sample of the census data, average of two censuses used Unknown birth order proportionally redistributed Unknown birth order proportionally redistributed

(continued)

Country	Cohorts	Data	Reference period	Source	Note
Italy	1935–1972	VS 1950–2013	up to 31 Dec. 2013	data provided by ISTAT for HFD	First births realised after 2013 projected (trend projection)
Lithuania	1924–1936	C 1979	17 Jan. 1979	HFD (2015b)	Unknown birth order proportionally redistributed
	1937–1969	C 2011	1 Mar. 2011	HFD (2015b)	Unknown birth order proportionally redistributed
Moldova	1938–1947	C 1989	12 Jan. 1989	Statistics Moldova	Tabulated data obtained from Statistics Moldova
	1949–1953 to 1959–1963	C 2004	October 2004	Statistics Moldova (2006)	Data available for 5-year cohorts only
Netherlands	1900–2004 to 1930–1934			Rowland (2007, T. 1)	Data computed for 5-year cohorts, assembled by Pearl Dykstra
	1935–1969	R 2013	Up to 31 Dec. 2012	CBS (2015)	Data for cohorts 1965–69 up to age 43, small adjustment (–0.15 %) added
Norway	1935–1939	R 1985	Up to 1 Jan. 1985	HFD (2015b)	
	1940–1944	R 1990	Up to 1 Jan. 1990	HFD (2015b)	
	1945–1949	R 1995	Up to 1 Jan. 1995	HFD (2015b)	
	1950–1954	R 2000	Up to 1 Jan. 2000	HFD (2015b)	
	1955–1959	R 2005	Up to 1 Jan. 2005	HFD (2015b)	
	1960–1970	R 2012	Up to 1 Jan. 2012	HFD (2015b)	