Union-Fertility Nexus and Fertility Variation in Sub-Saharan Africa

The Role of Marital Dissolution and Repartnering

Ben Malinga John
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Abstract
The role of marital dissolution and repartnering in shaping fertility patterns in sub-Saharan Africa (SSA) has been largely overlooked, even though marital dissolution and repartnering are fundamental features of marriage dynamics in this region. This dissertation addresses this gap by using existing statistical and demographic techniques and developing new demographic methods to (i) examine the relationship between union dissolution and fertility at the micro level (Study I); (ii) assess the dynamics of union dissolution, including the levels of all-cause first union dissolution, the timing of first union dissolution, and the reproductive years spent outside of marriage due to union dissolution (Studies II & III); and (iii) analyze the influence of marital dissolution and repartnering on macro fertility patterns in SSA (Study IV). The analyses are mainly based on Demographic Health Survey data collected in 34 SSA countries since 1986. The findings show that marital dissolution is associated with reduced fertility at both the individual and the population level, and remarriage does not fully compensate for lost fertility at the individual level. The assessment of the dynamics of union dissolution indicates that union dissolution is common, it typically occurs at relatively early reproductive ages, and the number of reproductive years lost due to union dissolution is minimal. Furthermore, this dissertation documents that cross-country differences in union dissolution and repartnering rates account for 9.4% of cross-country fertility differences in SSA. In addition, the results show that changes in marital dissolution and repartnering rates and the fertility behaviour of women who experience these events mostly contributed to the slow pace of fertility decline in this region. For the SSA region (as a whole), fertility would have declined 1.24 times faster in the absence of such changes. These findings demonstrate that marital dissolution and repartnering are important drivers of fertility variation in SSA, and thus highlight the value of integrating these dynamics into the discourse on the union-fertility nexus and fertility variation in SSA and beyond.

Keywords: fertility, fertility transition, marriage, marriage formation, marital dissolution, repartnering, Sub-Saharan Africa, demographic methods.

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Ben Malinga John
To my lovely mum, Manesi, my beloved wife, Thoko and my dear brother Shadrach. The foundation and pillars of my growth, the source of my inner strength and inspiration.
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Ben Malinga John
Stockholm, February 2024
Abstract

The evolution of the fertility transition in sub-Saharan Africa (SSA) triggered complex and diverse perspectives about its patterns and attributes. Broadly speaking, these debates have centered on the drivers of the exceptionally high fertility rates and the late onset and the slow pace of fertility decline in this region. Scholars have offered several explanations for these trends connected to structural and behavior conditions, such as poor family planning programs, cultural factors that sustain large family size ideals, disruptions in the expansion of female education, and the stable or slowly increasing timing of reproductive events. What is largely lacking from such discussions is an analysis of the role of marital dissolution and repartnering, even though union dissolution and repartnering are fundamental features of nuptiality regimes in this region.

In this thesis, I analyze the dynamics of union dissolution and the relationship between marital dissolution and fertility in SSA to position the role of marital dissolution and repartnering within the discourse of the union-fertility nexus and fertility variation in this region. Specifically, I use existing statistical and demographic techniques and develop new demographic methods to (i) examine the relationship between union dissolution and fertility at the micro level; (ii) assess the dynamics of union dissolution, including the levels of all-cause first union dissolution, the timing of first union dissolution, and the reproductive years spent outside of marriage due to union dissolution; and (iii) analyze the influence of marital dissolution and repartnering on macro fertility patterns in SSA. The analyses are mainly based on Demographic Health Survey data collected in 34 SSA countries since 1986.

The assessment of the relationship between union dissolution and fertility at the micro level shows that marital dissolution is associated with reduced fertility, and remarriage does not fully compensate for lost fertility. In 29 out of the 34 analyzed SSA countries, women who remarry end up having significantly fewer children than women in intact first unions, despite attaining higher or similar fertility levels at younger reproductive ages. However, remarriage is found to have a significant positive effect on fertility in Sierra Leone. The effect of remarriage on fertility diminishes as fertility declines, with smaller effects generally observed in countries at relatively advanced stages of the fertility transition and larger effects found elsewhere.

The analysis of the dynamics of union dissolution indicates that union dissolution is common, it typically occurs at relatively early reproductive ages,
and the number of reproductive years lost due to union dissolution is minimal. Out of the 34 countries studied, over 20% of first unions end within 15 years in 28 countries, and over 40% of first marriages end within 25 years in 14 countries. The average marriage duration at first union dissolution varies between 4.8 and 9.4 years, and the average duration between the first union dissolution and the first remarriage ranges between 0.2 and 2.9 years. The average number of reproductive years lost due to union dissolution varies between 1.3 and 5.3 years, accounting for 4.0% to 16.3% of the total reproductive life expectancy. Furthermore, the findings show that divorce and widowhood are declining, but not in all countries. Overall, all-cause union dissolution has declined in 28 out of 34 countries and has increased in four countries: Gambia, Kenya, Namibia, and Zimbabwe. The probability of remarriage following a union dissolution is mostly declining – a dynamic that has led to an increase in reproductive years lost due to union dissolution in several countries.

The analysis of the relationship between union dissolution and fertility at the macro level shows that union dissolution rates are significantly negatively associated with lifetime fertility at the population level. However, when repartnering is considered, only the proportion of ever-married women who do not remarry following a union dissolution, and not the proportion of remarried women, affects population-level fertility. Furthermore, the cross-country disparities in union dissolution and repartnering rates explain 9.4% of the cross-country fertility differences. This contribution to fertility variation is the same as that attributable to urbanization, and about half of that explained by female participation in education. Changes in marital dissolution and repartnering rates and the fertility behaviour of women who experience these events mostly contributed to the slow pace of fertility decline. For the SSA region (as a whole), fertility would have declined 1.24 times faster if the union dissolution and repartnering rates and the effects of union dissolution and repartnering on fertility had remained the same as those for women born in 1940-49.

This thesis demonstrates that marital dissolution and repartnering are important drivers of micro and macro fertility variation in SSA. Thus, it highlights the need to integrate these nuptiality dynamics into the discourse on the union-fertility nexus and fertility variation in this region and beyond. Such integration requires a modified conceptualization of the linkage between marital dissolution, repartnering, and fertility that goes beyond exposure loss to regular sexual intercourse as the key mechanism underlying this relationship. I argue in this thesis that adaptation mechanisms, which involve the adjustment of fertility intentions following union dissolution or repartnering, are potentially the key pathways through which union dissolution and repartnering affect fertility outcomes in SSA.
Sammanfattning (Summary in Swedish)

Betydelsen av strukturerna i parupplösningar och omgiften för mönster i barnafödande i Afrika söder om Sahara (SSA) har ofta förbisatts. Ändå är äktenskapssupplösning och ingående av nya parförhållanden grundläggande kännetecken för familjedynamiken i denna del av världen. Den här avhandlingen adresserar dessa förhållanden genom analyser baserade på statistisk och demografisk metod och genom att utveckla nya demografiska metoder för att (i) undersöka sambandet mellan parupplösningar och fruktsamhet på individnivå (Studie I), (ii) undersöka befintliga mönster i familjedynamik – inklusive nivåer av upplösningar av första parförhållanden, tidpunkten för sådana parupplösningar och de antal reproduktiva år som tillbringas utanför ett äktenskap på grund av sådana händelser (studie II & III), och (iii) analysera inverkan av parupplösningar och omgiften på mönster i barnafödandet på aggregerad nivå i länder i SSA (Studie IV). Analyserna baseras huvudsakligen på data från Demographic and Health Surveys som samlats in i 34 SSA-länder sedan 1986. Resultaten visar att upplösningar av parförhållanden är förknippade med lägre fruktsamhet på både individ- och samhällsnivå och att omgiften inte helt ut kompenserar för förlorat barnafödande på individnivå. Analyserna av mönstren i familjedynamik visar därutöver att parupplösningar är vanliga i SSA; att de inträffar relativt tidigt i den reproduktiva karriären men att de reproduktiva år som går förlorade på grund av sådana händelser är relativt få. Vidare dokumenterar avhandlingen att skillnader mellan länder i nivåer av parupplösningar och bildandet av nya parförhållanden förklarar 9,4 % av skillnaderna i fruktsamhetsnivåer mellan länder i SSA. Därutöver har förändrade nivåer på parupplösningar och omgiften bidragit till en dämpning av den observerade fruktsamhetsnedgången i SSA. Resultaten visar att mönster i parupplösningar och ombildade parförhållanden är viktiga för att förklara skillnader i fruktsamhetsnivåer mellan länder i Afrika och att familjedemografisk forskning med fokus på länder i SSA behöver vara betydligt bättre på att integrera dessa förhållanden inom ramen av en diskurs om samband mellan parförhållanden och barnafödande i SSA.
### List of papers

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<td>Copyright 2023 the authors. All rights reserved. <a href="http://www.dukeupress.edu">www.dukeupress.edu</a></td>
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Introduction

The evolution of fertility patterns in sub-Saharan Africa (SSA) is one of the major demographic puzzles of the 20th and 21st centuries. Fertility rates are exceptionally high in this region. As of 2022, the total fertility rate (TFR) was estimated at 4.5 children per woman – more than twofold TFR in Asia and in Latin America and the Caribbean (LAC) and three times higher than TFR in Europe (United Nations 2022). In addition, there are countries in this region, such as Chad, the Democratic Republic of Congo, and Niger, where the TFR still exceeds six children per woman (Ibid). Fertility started declining in most SSA countries in the early 1980s, almost two decades after it started falling in Asia and LAC (Ibid). However, the pace of the decline in SSA has been slow, marked by stalled fertility rates in some countries (Bongaarts 2008, Garenne 2008, Shapiro and Gebreselassie 2008, Schoumaker 2019). These attributes – high fertility rates and the late onset and slow pace of fertility decline – are the main drivers of rapid population growth, a major population challenge facing this region. Indeed, the global population is projected to increase by 1.9 billion between 2020 and 2050, with more than half of this increase occurring in SSA, even though only 14% of the current world population resides in this region (United Nations 2022). This population growth rate poses a significant threat to the already stretched social and economic infrastructure in SSA and to the capacity of national governments to respond. Consequently, at least since the mid-20th century, understanding the key drivers of fertility patterns in SSA has been one of the central preoccupations of demography scholars.

Early perspectives on the drivers of the fertility patterns in this region centered on cultural factors that sustain high fertility rates (Caldwell and Caldwell 1987, Sonko 1994). Recent research has offered several explanations connected to structural conditions, including family planning programs and female education expansion (Bongaarts 2003, Ezeh, Mberu et al. 2009, Kebede, Goujon et al. 2019, Liu and Raftery 2020); and individual preferences and behavior, including family size ideals, contraceptive use, and marriage dynamics (Harwood-Lejeune 2001, Casterline and Agyei-Mensah 2017, Hertrich 2017, Onagoruwa and Wodon 2018). Scholars generally agree that smaller family size preferences, the widespread use of modern contraceptives, and shifts in marriage patterns (mainly driven by the dynamics of female education expansion and family planning programs) are necessary conditions for the onset and the progress of fertility decline in this region (Caldwell 1980,
Bongaarts 2003, Ezeh, Mberu et al. 2009, Casterline and Agyei-Mensah 2017, Hertrich 2017, Onagoruwa and Wodon 2018, Kebede, Goujon et al. 2019, Liu and Raftery 2020). However, large family size ideals have persisted for decades in most countries (ICF 2015a, Casterline and Agyei-Mensah 2017), and the widespread use of modern birth control technologies started late and has diffused more slowly in SSA than in other regions (Ezeh, Mberu et al. 2009, Dasgupta, Wheldon et al. 2022). Furthermore, most SSA countries have experienced stalls or reversals in female education, particularly girls' participation in secondary education (Kebede, Goujon et al. 2019, John and Nitsche 2021), which have contributed to the slow pace of the fertility decline (Kebede, Goujon et al. 2019).

The discussion about marriage dynamics and fertility change in SSA emanates from the inextricable link between the institution of marriage and reproduction and the social positions of men and women. Generally, marriage and the onset of childbearing are regarded as key markers of the transition to adulthood in this region (Sonko 1994, Grant and Furstenberg 2007, Beguy, Kabiru et al. 2011). Moreover, childbearing within marriage is generally portrayed as the ideal in SSA, with several societies still upholding norms that condemn childbearing outside of marriage (Dodoo 1998, Levandowski, Kalilani-Phiri et al. 2012, Palamuleni and Adebowale 2014, Hall, Manu et al. 2018, Cislaghi, Mackie et al. 2019, Miller, Zamudio-Haas et al. 2021, Svanemyr, Moland et al. 2022, Kok, Kakal et al. 2023). Thus, the formation of a co-residential union is usually a key stepping stone for parenthood, and the onset of childbearing before marriage is often rapidly followed by the formation of a co-residential union (Klein Hattori and Larsen 2007, Smith-Greenaway and Clark 2018, Poulin, Beegle et al. 2021, Molitoris, Kantorová et al. 2023). Consequently, the dynamics of nuptiality patterns, such as first marriage timing, union forms, and marital dissolution and repartnering dynamics, are bound to be consequential for fertility variation in this region.

However, the analysis of and the discussion about the union-fertility nexus and fertility variation in SSA has mainly focused on selected aspects of nuptiality, particularly the role of the rising age at first marriage or changes in child marriage rates, or the interplay between polygamy and fertility (Garenne and Van de Walle 1989, Dodoo 1998, Harwood-Lejeune 2001, Ezeh, Mberu et al. 2009, Shapiro and Gebreselassie 2014, Hertrich 2017, Onagoruwa and Wodon 2018). Harwood-Lejeune (2001), for example, examined the contribution of changes in age at first marriage to the fertility transition in Southern and East Africa. His findings indicated that the increase in age at first marriage explained 16% to 33% of the fertility decline observed in this region between 1976 and 1998. Hertrich (2017) considered a similar topic for 39 African countries, and concluded that rising age at first marriage was necessary for the onset of the fertility transition. Recently, Onagoruwa and Wodon (2018) analyzed data from 11 SSA countries and found that fertility in these countries would have been 7% to 16% lower in the absence of marriages before age 18.
Several studies have analyzed the relationship between polygamy and fertility and indicate that polygamy is mostly negatively associated with fertility intentions and outcomes (Garenne and Van de Walle 1989, Dodoo 1998, Lardoux and Van de Walle 2003).

What is largely lacking from this literature is a systematic investigation and discussion of how marital dissolution and repartnering influence fertility patterns at both the individual (micro) level and the population (macro) level, even though union dissolution and remarriage are fundamental features of nuptiality regimes in this region. For example, an analysis of World Fertility Survey (WFS) data collected in six African countries (Cameroon, Ghana, Kenya, Lesotho, Senegal, and Sudan) in the 1970s revealed that one-fourth of first marriages in these countries ended within the first 20 years of marriage (Bongaarts, Frank et al. 1984). Recent estimates also suggest that the institution of marriage is volatile in most SSA countries (Tilson and Larsen 2000, Reniers 2003, Grant and Soler-Hampejsek 2014, Clark and Brauner-Otto 2015). For example, Clark and Brauner-Otto (2015) noted that over half of first marriages end within the first 15-19 years in Liberia, Congo, and Congo DRC. The few studies that have analyzed the patterns of remarriage, primarily based on data from small geographical areas, reported that repartnering following a union dissolution is common and tends to occur rapidly (Bongaarts, Frank et al. 1984, Locoh and Thiriat 1995, Reniers 2003, Guirkinger, Gross et al. 2021, Souza 2023). Reniers (2003), for example, found that among women who divorced in three rural districts in Malawi, 40% remarried within two years, 70% remarried within five years, and 90% remarried within ten years. Locoh and Thiriat (1995) documented a similar pattern in Togo, where 67% of women who divorced/separated remarried within three years. Guirkinger, Gross et al. (2021) showed that among women who divorced in rural northern Burkina Faso, 45% remarried immediately, 75% remarried within the first year, and 84% remarried within two years.

In low fertility settings, particularly in the Global North, scholars have extensively analyzed the relationship between marital dissolution and fertility. For example, Van Bavel, Jansen et al. (2012) assessed this relationship in 24 European countries, and several scholars have considered this relationship in different individual countries (Jefferies, Berrington et al. 2000, Beaujouan and Solaz 2008, Meggiolaro and Ongaro 2010, Thomson, Winkler-Dworak et al. 2012, Andersson, Jalovaara et al. 2022). Broadly speaking, this research has shown that in these settings, marital dissolution is associated with reduced fertility, and remarriage does not fully compensate for lost fertility (Ibid). Similar findings have been reported for two SSA contexts: Cameroon (Lee and Pol 1988) and Ghana (Elleamoh and Dake 2019). While these two studies offer essential insights into the link between union dissolution and fertility in SSA, the patterns observed there might differ from the nature and strength of the prevailing relationship in other SSA countries. Thus, whether the contribution of marital dissolution and remarriage to fertility is or is not positive in
contexts characterized by early childbearing and high fertility remains unclear. Moreover, several aspects concerning the intersection of marital dissolution, repartnering, and fertility in SSA remain undocumented. There are, for example, questions about how the fertility gradient between women who remarry and those who remain in their first marriage evolves over the reproductive years and the fertility transition. Besides, there is a need for an in-depth understanding of the dynamics of union dissolution in this region – addressing questions such as how long women are partnered before they experience a first union dissolution, how much reproductive time is “lost” due to union dissolution, and how these dynamics differ across SSA countries and over time. Exploring these questions is necessary to understand the linkage between marital dissolution, repartnering, and fertility in this region. Furthermore, studies by Lee and Pol (1988) and Elleamoh and Dake (2019) only offer a micro perspective on this relationship. Thus, how marital dissolution and repartnering have influenced macro fertility developments in SSA remains unclear.

This dissertation addresses these gaps in the literature. It examines the dynamics of union dissolution and repartnering in SSA, and assesses how union dissolution and repartnering influence the micro and the macro fertility patterns in this region. The empirical analyses for addressing these gaps are divided into four studies. Study I examines the relationship between union dissolution and fertility at the micro level in 34 SSA countries. It assesses how this relationship changes at different reproductive ages and stages of the fertility transition. Study II is a method development paper. It develops an Indirect Life Table of first Union Dissolution (ILTUD) method for estimating the quantum-adjusted timing of first union dissolution from incomplete marriage histories. Study III applies ILTUD and other demographic techniques to document the dynamics of union dissolution in 34 SSA countries. Specifically, Study III provides nationally representative estimates of all-cause first union dissolution levels, the timing of first union dissolution, and the reproductive years lost due to union dissolution. Study IV examines the influence of marital dissolution and repartnering on macro fertility developments in SSA. It assesses the relationship of fertility with union dissolution and repartnering rates at the population level, the contributions of union dissolution and repartnering rates to cross-country fertility differences, and the influence of marital dissolution and repartnering dynamics on the pace of the fertility decline.

The remainder of this chapter is structured into five sections. In the next section, I discuss a conceptual framework linking union dissolution, repartnering, and fertility, which motivates the analyses in this dissertation. An outline of the specific objectives and research questions follows. In the third section, I discuss the study context, the data, the measures, and the methods applied across all four studies. This section is followed by summaries of each of the four studies. Finally, I discuss the contributions of this study, the implications of the study’s findings for policy and research, and priority areas for future research.
Marital dissolution and fertility in SSA: A conceptual framework

The lack of discussion about the role of marital dissolution and repartnering within the discourse of the union-fertility nexus and fertility variation in SSA can be partly attributed to the early conceptualization of the link between union dissolution, remarriage, and fertility. We can trace this conceptualization to the framework of proximate determinants of fertility, which was first proposed by Davis and Blake (1956) and later modified by Bongaarts (1978). This framework classifies factors that affect fertility into two groups: direct and indirect determinants. The direct determinants are intermediate fertility variables for which a change, all other factors remaining constant, directly translates into a change in fertility outcomes. Davis and Blake (1956) listed 11 such variables, of which three factors were related to the formation and dissolution of sexual unions: i.e., the age at entry into marriage, permanent celibacy, and the duration of the reproductive period spent between or after unions. Bongaarts (1978) developed the ideas of Davis and Blake (1956) into a framework for analyzing the proximate determinants of fertility at the aggregate level that captures the 11 micro-level variables specified by Davis and Blake (1956) using four macro-level indices: proportion married, contraception, postpartum infecundability, and abortion. The indirect determinants of fertility, on the other hand, consist of socioeconomic, cultural and environmental variables, which operate through the intermediate fertility variables to influence fertility – for example, education, religion, and migration (Bongaarts 1978, Bongaarts 1982).

In the context of SSA, the conceptualization of the link between union dissolution, remarriage, and fertility has primarily been perceived from the perspective of the direct determinants of fertility, as implied in the frameworks of Davis and Blake (1956) and Bongaarts (1978) (see, for example, the discussion in (Bongaarts, Frank et al. 1984, Caldwell and Caldwell 1987, Lee and Pol 1988, Sonko 1994, Hertrich 2017)). The principle of the Davis and Blake (1956) and Bongaarts (1978) frameworks concerning this relationship is the same – marital dissolution and remarriage are perceived to influence fertility by regulating exposure to regular sexual intercourse during reproductive years. Union dissolution is regarded as an anti-natalist factor that reduces a woman’s exposure to regular sexual intercourse, while remarriage operates to reduce that exposure loss. The difference between these frameworks is that
Davis and Blake (1956) framework demands an explicit measurement of the reproductive years lost due to union dissolution to assess the effect of marital dissolution on fertility. By contrast, Bongaarts (1978) framework implicitly captures the influence of union dissolution on fertility via measuring the proportion of married individuals in a population. Because the number of reproductive years lost due to union dissolution in SSA is expected to be minimal (due to frequent and rapid remarriage following a marital dissolution), theories based on sexual exposure imply that in SSA, marital dissolution and repartnering have little (if any) influence on fertility. It is likely for this reason that research on the relationship between union dissolution, repartnering, and fertility in SSA has attracted little attention, even though union dissolution and repartnering rates are high in this region.

However, the link between marital dissolution, repartnering, and fertility in SSA cannot be understood from a sexual exposure perspective alone. This dissertation – in Studies I and IV – theorizes that the effect of marital dissolution on fertility in SSA also operates via adaptation mechanisms, which involve the adjustment of fertility intentions following union dissolution or repartnering. The argument is that union dissolution and remarriage expose the individuals who experience these events to new conditions and uncertainties that may influence their fertility by modulating their motivations to accelerate, postpone, or curtail childbearing. The desire to realize such intentions may be manifested via the initiation or the avoidance of new partnerships following a union dissolution, contraception use, and birth timing behavior, which would, in turn, influence overall fertility outcomes.

Theories about adaptation mechanisms are largely based on research conducted in low fertility settings, and are discussed at length in Studies I and IV. Some scholars have argued that marital dissolution could be an “engine” of fertility, as couples in higher-order unions may be strongly motivated to have a shared biological child – commonly referred to as a commitment effect (Griffith, Koo et al. 1985, Thomson 2004, Ivanova, Kalmijn et al. 2014). Thus, if the desired fertility was achieved in the previous union(s), childbearing in the higher-order union(s) may lead to surplus fertility. In settings with large family size ideals like SSA, the commitment to have children in higher-order unions may also arise from the desire to realize one’s own fertility goals within a socially acceptable institution, if the previous union(s) ended before the desired family size was achieved. Broadly speaking, the commitment effect implies a positive or no relationship between marital dissolution and fertility depending on whether childbearing in the higher-order union(s) yields surplus fertility, or whether it mainly helps to recover fertility that could have been lost in the absence of remarriage following a union dissolution. An alternative idea is that marital dissolution/repartnering could inhibit childbearing due to (i) strong motives to postpone childbearing to older ages related to trust and uncertainty issues in the prevailing union (Agadjanian 2005, Towriss 2014); (ii) a strong desire to curtail childbearing due to the presence of stepchildren.
in a prevailing union, which may compensate for one's own desired family size, known as the *compensation effect* (Stewart 2002, Ivanova, Kalmijn et al. 2014); or (iii) strong motives to curtail childbearing before realizing one's desired family size due to a strong preference to avoid forming a new partnership following a union dissolution and strict conformity to social norms that prohibit childbearing outside of marriage. Moreover, studies have suggested that the transition to parenthood is associated with a deterioration of marital quality for some couples (Doss, Rhoades et al. 2009, Kluwer 2010, Keizer and Schenk 2012, Bogdan, Turliuc et al. 2022). Thus, individuals whose previous union(s) ended due to a deterioration of marital quality following childbirth may have a strong desire to postpone or avoid childbearing in the higher-order union(s) to ensure a stable marriage, which can be termed the *protective effect*.

*Adaptation mechanisms*, at least within the SSA context, are likely closely linked with the timing of union dissolution. Indeed, given the history of large family size ideals in this region (ICF 2015a, Casterline and Agyei-Mensah 2017), individuals who experience union dissolution at early reproductive ages are likely to do so before attaining their fertility goals. Thus, remarriage may be more associated with fertility postponement than with fertility curtailment. In addition, for individuals with a large family size ideal, childbearing in higher-order union(s) is likely to result in a recuperation of fertility, rather than surplus fertility. Furthermore, union dissolution without repartnering is likely to be associated with larger fertility losses in such cases. In contrast, if union dissolution occurs relatively late during the reproductive years, individuals may have already achieved considerable fertility in their previous union(s). Thus, having children from the previous union(s) may induce motives for fertility curtailment, while childbearing in higher-order union(s) is likely to yield surplus fertility. These possibilities also imply that remarriage following a divorce may have a different effect on fertility than remarriage following widowhood simply because of the differences in the distribution of divorce and widowhood over the reproductive years (since divorce tends to occur in the early marital stages corresponding to the early reproductive years, while widowhood tends to occur in the advanced marital stages corresponding to the late reproductive years). Thus, knowing not only whether but also when a union ends and how long the individuals remain unpartnered thereafter is central to understanding the relationship between marital dissolution and fertility in this region.

Unfortunately, nationally representative estimates of how long the first unions persist among women who experience a union dissolution, how many reproductive years are spent outside of marriage due to union dissolution, and how these dynamics have evolved over the years are lacking in SSA countries. A noteworthy exception is a study by Bongaarts, Frank et al. (1984), which produced an estimate of the reproductive years spent outside of marriage due to union dissolution for six African countries combined (Cameroon, Ghana, Kenya, Lesotho, Senegal, and Sudan). The findings indicated that women
from these countries spend, on average, over 90% of their reproductive lifespan within a co-residential union once a first union is initiated.
Study objectives and research questions

The conceptual framework discussed above suggests that marital dissolution and repartnering could still be central to fertility patterns, even though individuals spend only a small share of their reproductive years outside of marriage due to union dissolution. Hence, the role of marital dissolution and repartnering in the discourse on union-fertility nexus and fertility variation in SSA deserves attention. Therefore, in this thesis, I aim to discuss this subject comprehensively by addressing three objectives. The first objective is to assess the relationship between marital dissolution and fertility at the micro level. This objective is addressed in Study I by responding to two specific research questions:

1. How does the cumulative fertility of remarried women and women in intact first marriages compare as they advance in age and at the end of the reproductive lifespan?
2. Does the relationship between remarriage and fertility depend on the stage of the fertility transition?

The second objective is to evaluate the dynamics of union dissolution in SSA—focusing on the levels and the timing of first union dissolution, the reproductive years spent outside of marriage due to union dissolution, and how these dynamics have changed over time. Studies II and III address this objective by responding to three research questions:

1. What are the levels of first union dissolution in SSA, and how have they changed over the years? How much of such change is attributable to changes in marital dissolution during the early, middle or later years of the first union?
2. How long, on average, does the first union last among women who experience a union dissolution?
3. How many years, on average, do women spend outside of marriage due to union dissolutions throughout their reproductive lifespan; how long do they spend in second or higher-order unions, and how have these patterns changed over time?

The third objective is to evaluate the influence of marital dissolution and repartnering on macro fertility developments in SSA. This objective is addressed in Study IV, and involves addressing three specific research questions:
1. How do union dissolution rates influence the completed family size at the population level, and to what extent does repartnering status modulate this relationship?

2. To what extent does the cross-country heterogeneity in union dissolution and repartnering rates explain the cross-country fertility differences in SSA, and how do the contributions to fertility variation of these nuptiality dynamics compare with those attributable to known drivers of fertility variation, particularly education, urbanization, and the timing of reproductive events (first marriage and first birth)?

3. Do union dissolution and repartnering patterns explain the slow pace of the fertility decline in SSA?
Study design

Study context

I employed a cross-national comparative research design to address the three objectives specified above. Therefore, this study considers the dynamics of union dissolution and the relationship between marital dissolution, repartnering, and fertility in 34 SSA countries (Figure 1). This approach permits the identification of major regularities and distinctions of the union dissolution dynamics and how marital dissolution and repartnering influenced micro and macro fertility developments in this region.

*Figure 1: Map of Africa showing the geographic locations of the 34 SSA countries included in the analysis*
The 34 countries included in this analysis can be classified into four broad SSA regions (West, Central, East, and Southern Africa) according to the United Nations classification (United Nations 2022). Broadly speaking, these four regions differ in some notable ways, and the countries within each region have some social and demographic similarities that are essential for understanding the patterns of union dissolution and the relationship between marital dissolution, repartnering, and fertility. For example, the timing of the first marriage is relatively early in West Africa and relatively late in Southern Africa, with countries in Central and East Africa falling in between (John and Nitsche 2021). Early timing of marriage is associated with higher fertility and a high risk of union dissolution (Clark and Brauner-Otto 2015, Rotz 2016). Furthermore, fertility outside of a co-residential union is less prevalent in West Africa and is more common in Southern Africa (Clark, Koski et al. 2017, Bongaarts and Casterline 2022). This pattern probably reflects the dominance of strong norms that condemn childbearing outside of marriage in West Africa. Such norms are likely to shape the dynamics of union dissolution, including the frequency and the pace of remarriage following a union dissolution.

SSA countries also differ in terms of the prevalence of polygamy and HIV/AIDS and the patterns of female participation in education. Polygamy creates a vibrant marriage market for divorcees and widowed women. Thus, marital dissolution and repartnering may be common in regions where polygamy is prevalent. The prevalence of polygamy is high in West Africa and is lower among countries in East and South Africa (Tabutin, Schoumaker et al. 2004, Fenske 2015, Chae and Agadjanian 2022).

SSA experienced an HIV/AIDS pandemic from the early 1980s through the mid-2000s (Frank, Carter et al. 2019, Gona, Gona et al. 2020). East and South African countries were hit harder than West and Central African countries (Dwyer-Lindgren, Cork et al. 2019). During this pandemic, women used divorce as a marital strategy for dealing with undesirable relationships that exposed them to a higher risk of HIV infection (Reniers 2008, Grant and Soler-Hampejsek 2014). Moreover, women with HIV/AIDS were more likely to have lower fertility rates (Terceira, Gregson et al. 2003, Lewis, Ronsmans et al. 2004). Thus, the regional differences in the HIV/AIDS pandemic might have shaped the dynamics of union dissolution and its relation with fertility.

Countries in Southern Africa can be regarded as the forerunners of female education expansion, followed by countries in East Africa. Girls’ school participation is higher in these regions than in West and Central Africa (Frye and Lopus 2018, John and Nitsche 2021). However, once girls have enrolled in primary school, rates of progression to secondary/tertiary education are higher in West and Central Africa than in East Africa (John and Nitsche 2021). Female education significantly predicts patterns of marital dissolution and fertility in SSA (Kravdal 2002, Bongaarts 2010, Clark, Koski et al. 2017, Odimegwu, Somefun et al. 2017).
This study refers to these contextual differences to explain the major regularities and distinctions in union dissolution dynamics documented across the four studies. Moreover, where possible and necessary, the analytical models used for assessing the relationship between marital dissolution, repartnering and fertility account for the observable heterogeneity in these social and demographic factors.

Data
The primary data for this study come from Demographic and Health Surveys (DHS) collected in 34 SSA countries, highlighted in Figure 1. DHS are nationally representative cross-sectional surveys that were first introduced in SSA in 1986. As of September 2023, 149 surveys have been conducted in 34 countries included in this analysis, with at least two surveys conducted in 33 countries.

DHS collect data from women aged 15-49 and men aged 15-59 on a wide range of social and demographic issues, including nuptiality and fertility. The data collection is generally performed through personal interviews, with consent always sought before an interview. The respondents are selected using multistage stratified probability sampling to provide nationally representative samples of women and men of reproductive age. The response rates among female respondents are high, ranging from 85.7% to 99.7% across all the surveys included in this analysis (ICF 2015b). The only exception is the 2016 DHS in South Africa, which had a response rate of 71.9% (ICF 2015b). Thus, DHS are among the largest, most reliable, and most widely used nationally representative sources of information on nuptiality and fertility in SSA. Furthermore, the DHS questionnaire, particularly the sections used for collecting nuptiality and fertility histories, has remained largely consistent across countries and over different DHS phases. Consequently, estimates derived from DHS data are comparable across countries and over time.

The processed data from DHS are anonymized and are publicly available for research. Specifically, the published DHS data do not contain keys to respondents. Thus, respondents are completely anonymized and cannot be located by DHS data users. This study accessed this publicly available anonymized DHS data after completing the data request registration process as required by the DHS program. Furthermore, this study did not use information from these datasets that is ethically sensitive.

The DHS collects three critical pieces of information regarding the nuptiality history of each respondent. The first is the individual’s marital status at the time of the interview. Respondents are asked whether they are married or are living with a man as married. The potential responses are: Yes—currently married, Yes—living with a man, and No—not in a union. Women not in a union are
asked whether they have ever married or lived with a man as if married. Responses to this question and the information on current marital status are used to identify ever-married and never-married women. Second, women who are currently married are asked whether they are in a polygamous union and details of such union, if any. Third, DHS ask ever-married women for information about their age at first marriage. To correctly capture this information, individuals are asked whether they have been married or have lived with a man as if married once or more than once. The potential responses are: *only once* and *more than once*. Respondents who have been married or have lived with a man as if married only once are asked to provide the month and the year they started living with their partner. Those who have been married or have lived with a man as if married more than once are asked to provide the month and the year they started living with their first partner. Thus, the structuring of nuptiality-related questions in DHS clearly indicates that collecting information on individuals' lifetime marital union dissolution and repartnering experiences is not the core purpose of these surveys. This layer of information is collected for quality assurance of age at first marriage reporting. Consequently, essential aspects of union dissolution and remarriage information are not available in the DHS data, including data on how the first marriage ended among individuals who experienced a union dissolution and remarried, the date or age at which the union ended, or the age or date at which each new partnership was formed among those who married more than once.

The omission of detailed nuptiality histories in DHS can be partly attributed to the theoretical discussions about measuring the influence of marriage dynamics on fertility in developing countries that dominated the late 1970s and early 1980s. Indeed, the introduction of DHS coincided with the discussions about the modified framework of proximate determinants of fertility (Bongaarts 1978, Bongaarts 1982, Bongaarts, Frank et al. 1984). As noted above, the framework of Bongaarts (1978) indirectly captures the influence of marital dissolution and remarriage on fertility through the proportion of married individuals. Thus, knowing individuals' marital status at the time of the survey and the timing of their first exposure to regular sexual intercourse (age at first marriage) is considered sufficient, thereby eliminating the need for the collection of detailed marriage histories (number of unions, when a union ended, how it ended, and when subsequent unions were formed), as required by Davis and Blake (1956) framework. Such detailed marriage histories were indeed collected in the World Fertility Surveys (WFS), a precursor of the DHS, sandwiched between the frameworks of Davis and Blake (1956) and Bongaarts (1978). In Africa, WFS were conducted in 12 countries between 1977 and 1983. This study relies on data from these WFS, particularly to validate a new method developed in Study II.

DHS also collect comprehensive fertility histories from women aged 15-49. Each respondent is asked to provide the date of birth for each live birth
(stillbirths excluded) she has ever had. The study uses these histories for all fertility-related analyses.

**Measures and analytical sample**

This dissertation innovatively uses the available pieces of women’s nuptiality information collected by DHS to assess the dynamics of union dissolution, and it leverages the availability of the full birth histories to examine the relationship between marital dissolution, repartnering, and fertility. Specifically, all four studies use information about the current marital status (never married, currently married, separated, divorced, or widowed) and lifetime remarriage status (married once or more than once) to construct lifetime marital dissolution and repartnering measures. The definition of marriage is fluid across all the analyses. Both formal and informal unions are considered marriages – i.e. cohabiting women (women living with a man as if married) are classified as married. This flexibility is desirable because marriage in SSA is more of a process than an event, which may involve bridewealth, a first birth, and a ceremony (Meekers 1992). Likewise, the analyses across all four studies regard formal and informal separations as divorce, mainly because of the flexibility of the definition of marriage, and because divorce in SSA is less likely to follow formal legal proceedings (Chereji and Wratto 2013, Kariuki 2015). Furthermore, because DHS do not collect information about how the first union ended among women who married more than once, in this study, marital dissolution or union dissolution (the two terms are used interchangeably) refers to the ending of a formal or an informal union regardless of whether the cause is divorce or death of a partner – i.e., *all-cause union dissolution*. Using *all-cause union dissolution* here is methodologically desirable (given the limitations of the DHS data) and substantively advantageous. It is indeed relevant for understanding the implications of union dissolution and repartnering for fertility in SSA, given that in this region a considerable portion of marriages end in widowhood (Clark and Brauner-Otto 2015), and remarriage is common (Bongaarts, Frank et al. 1984, Locoh and Thiriat 1995, Reniers 2003, Guirkinger, Gross et al. 2021).

Following the definitions of marriage and marital dissolution specified above, this study classifies women interviewed in DHS into four life course marital states: *never married* for women who have never been married or lived with a man as married, *married once-intact union* for women who have married once and are still in an intact union, *married once-dissolved union* for women whose first union ended and who have never remarried, and *ever-remarried* for women who have married more than once regardless of whether
they were married at the time of the interview. This classification forms the basis of all specific measures of union dissolution and repartnering defined across all four studies. It also constitutes the comparison groups for analyzing the relationship between marital dissolution, repartnering, and fertility. In addition, the analyses use information about the age at first marriage. In Studies II and III, the age at first marriage is used to construct measures of the level and the timing of first union dissolution, while in Studies I and IV, it is used as a control variable in analytical models.

Information about the lifetime marital history and the age at first marriage collected in DHS is susceptible to misreporting, especially among older women (Gage 1995, Mensch, Grant et al. 2006, Chae 2016). Studies II and III discuss the nature and the implications of such misreporting, which include (i) the underreporting of marriages due to omission/recall bias and (ii) the misreporting of the timing of the first union due to the omission of early marriages or recall errors. The underreporting of marriages implies misspecification of women into the wrong lifetime marital states and the misspecification of the age at first marriage. For example, women who marry more than once may be wrongly classified as having been married only once, and women who are classified as never married might have been married once or more than once. The sample size of women classified as having never married at advanced reproductive ages is small in the DHS dataset (about 2.7% of women aged 40-49 (pooled dataset)), which should be expected given the history of early and universal marriage in SSA. Thus, it is likely that any misclassification of this group does not affect the results of this study in any meaningful way. However, significant misclassification of women who report being married once when they have been married more than once might bias the estimates in some crucial ways. For Studies I and IV, such misclassification may imply that the effects of union dissolution on fertility observed in these studies are underestimated (assuming that the misclassified women have the same fertility patterns as the accurately classified women). Thus, these effects should be regarded as the minimum possible effects. Similarly, such misclassification underestimates the levels and the timing of marital dissolution. On the other hand, the misreporting of the age at first marriage not arising from the underreporting of marriages can lead to the underestimation or the overestimation of the levels and the timing of union dissolution, depending on how this misreporting differs between women who have experienced a union dissolution and women in intact first unions. The evaluation of the quality of the nuptiality histories in DHS datasets performed in this study (see supporting

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1 Ever-remarried women were first classified into two categories: remarried-dissolved union for women who married more than once but were not in a union at the time of the interview, and remarried for women who were currently in a second- or higher-order union at the time of the interview. However, the sample size of the remarried-dissolved union group is small (5.2% of the ever-married women in the pooled sample). Thus, I decided to combine these two groups.
information for Study III) suggests that the reporting of marriage in DHS is sufficiently accurate for the analyses and conclusions. Nevertheless, it is essential to keep in mind these marriage reporting issues and the biases they may cause when interpreting the results of all four studies.

The fertility measure used in this thesis is completed family size (CFS), the number of children born to a woman by the end of her reproductive lifespan. It is a cohort fertility measure, also called a lifetime fertility measure. The use of this measure in this study is methodologically and substantively advantageous. Methodologically, it fits well with the available nuptiality histories in the DHS datasets for addressing the questions of this dissertation. Indeed, the four marital states specified above capture women's lifetime union formation, marital dissolution, and repartnering experiences. Thus, since it is unknown when the first union ended for those who experienced marital dissolution, a lifetime fertility measure instead of a period measure is suitable for analyzing the differentials in fertility experience among women in different marital states. This approach basically follows a life course framework for fertility analysis (Buhr and Huinink 2014, Huinink and Kohli 2014). The idea (as illustrated in the conceptual framework above) is that experiencing a union dissolution or repartnering during reproductive years likely influences individuals’ reproductive intentions and behavior, which, in turn, cumulatively influence their lifetime fertility. Thus, if experiencing marital dissolution or repartnering during the reproductive years indeed influences individuals’ short and long-term reproductive goals and behavior, then the impact of experiencing such events should be evident in their CFS. Substantively, using CFS offers a new perspective on the union-fertility nexus and fertility variation in SSA. It allows for a discussion of fertility variation from a lifetime fertility perspective, and thus extends the large body of literature that has discussed this subject based on period fertility measures (see, for example, (Bongaarts 2008, Garenne 2008, Shapiro and Gebreselassie 2008, Schoumaker 2019, Adjiwanou and John 2022)).

Ideally, CFS is measured among women who have reached the end of their reproductive lifespan: i.e., women aged 49+. However, in practice, CFS is usually calculated for women aged 45-49. The fertility analyses in Studies I and IV extend this age bracket to include women aged 40-44 to yield sufficient sample sizes for individual countries and surveys. Consequently, since the fertility histories of women aged 40-49 are truncated at different ages, the CFS measure used in this dissertation is defined at age 40. An assessment of lifetime fertility attained at age 40 and subsequent ages among women aged 45-49 has suggested that over 90% of fertility achieved at the end of the reproductive lifespan is attained by age 40. Thus, a CFS measure at age 40 offers an ideal compromise of returning a sufficient sample size while ensuring a robust CFS measure is used.
Table 1 Data source, number of countries and surveys, and primary analytical sample for each study

<table>
<thead>
<tr>
<th>Study</th>
<th>Data Source</th>
<th>Number of Countries</th>
<th>Number of Surveys</th>
<th>Primary analytical sample</th>
</tr>
</thead>
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<tr>
<td>Study I</td>
<td>DHS</td>
<td>34</td>
<td>137</td>
<td>Ever-married women aged 40-49</td>
</tr>
<tr>
<td>Study II</td>
<td>WFS &amp; DHS</td>
<td>13</td>
<td>12 WFS &amp; 2 DHS</td>
<td>All women aged 15-49</td>
</tr>
<tr>
<td>Study III</td>
<td>DHS</td>
<td>34</td>
<td>139</td>
<td>All women aged 15-49</td>
</tr>
<tr>
<td>Study IV</td>
<td>DHS</td>
<td>34</td>
<td>143</td>
<td>Ever-married women aged 40-49</td>
</tr>
</tbody>
</table>

Methods

The methods applied in this dissertation can be grouped into two classes. The first class consists of indirect demographic techniques used to estimate the dynamics of union dissolution: levels of first union dissolution, the timing of first union dissolution, and the reproductive years spent outside of marriage due to union dissolution. Estimating these union dissolution dynamics measures is straightforward when detailed marriage histories (number of unions, date or age at which each specific union started, date or age at which a union ended (if any)) are available. In such cases, standard statistical and demographic techniques, such as the Kaplan–Meier estimator (Kaplan and Meier 1958), life table techniques, and standard procedures for calculating population averages and medians can be used to produce such estimates. The lack of detailed marriage histories in the DHS data means that such standard statistical and demographic techniques cannot be applied to these data. Therefore, this dissertation has adapted existing indirect demographic approaches and developed new indirect demographic methods to produce reliable estimates of union dissolution dynamics from incomplete marriage histories.

Specifically, Study II develops and validates an Indirect Life Table of First Union Dissolution (ILTUD) method. This method produces (i) the survival rates of first union and (ii) the quantum-adjusted median (or other percentiles) duration at first union dissolution from incomplete marriage histories. ILTUD is applied in Study III to analyze the levels and the timing of first union dissolution in 34 SSA countries, and the changes in these patterns over time. Besides ILTUD, Study III has adapted the Singulate Mean Age at First Marriage (SMAM) method (Hajnal 1953), which is used to estimate the mean age at first marriage when the timing of the first union is unknown, to estimate the Singulate Mean Duration at first Union Dissolution (SMDUD). This adaptation is also extended to estimate the mean duration between first union disso-
olution and remarriage. Furthermore, Study III uses the Sullivan method (Sullivan 1971) to estimate the average number of reproductive years a woman spends outside of marriage due to union dissolution.

The second class of methods combines direct demographic techniques for fertility estimation and standard statistical regression models. These methods are used to assess the relationship between marital dissolution, repartnering, and fertility at the micro level in Study I and at the macro level in Study IV. Specifically, Study I adapts a method for estimating cohort-period fertility rates (Moultrie, Dorrington et al. 2013) to produce cohort-age lifetime fertility rates. This adaptation involves leveraging the availability of full birth histories in the DHS to calculate the differences in fertility at each successive reproductive age between women in an intact first union and ever-remarried women who are at the end of their reproductive lifespan. Thus, this approach allows examining preexisting fertility differences during women’s early reproductive years (corresponding to periods when most remarried women were still in an intact first union) and how these differences develop with increasing age (as more unions dissolved and new partnerships were formed). Standard Poisson regression models are used to adjust the observed fertility differences between these two marital states (intact first union vs. ever remarried) for observable social and demographic factors, including age, age at first marriage, age at first birth, premarital fertility, education, and area of residence. Study I also uses a fixed effects linear regression model to assess how the relationship between remarriage and fertility changes with the level of fertility.

Study IV employs the cohort-age lifetime fertility rates estimation approach used in Study I to calculate the population-level CFS at age 40. Fixed effects linear regression modelling is then used to assess the relationship between CFS and union dissolution and repartnering rates at the population level. A method for hierarchical partitioning of explained variance in linear models proposed by Lindeman, Merenda et al. (1980) and generalized by Chevan and Sutherland (1991) is then used to quantify the contributions of union dissolution and repartnering rates to the observed cross-country differences in CFS. Furthermore, Study IV performs a decomposition analysis of cohort changes in CFS using nonlinear models (Powers, Yoshioka et al. 2011) to implement counterfactual analyses that evaluate the influence of union dissolution and repartnering on the pace of the fertility decline in SSA.

It should be noted that the main statistical models for assessing the relationship between marital dissolution, repartnering, and fertility implemented in this study do not account for all potential confounders of this relationship: notably polygamy, HIV, and infecundity. Thus, the relationship between marital dissolution and fertility documented in this thesis might not necessarily be causal. Nevertheless, Studies I and IV discuss the implications of omitting these variables (polygamy, HIV, and infecundity), and, where possible, robustness checks are performed to investigate the potential bias introduced due to these omitted variables. With these caveats in mind, the following section summarizes the findings of each of the four studies.
Summary of studies

Study I

Fertility decline in sub-Saharan Africa: Does remarriage matter?
This study examines the relationship between remarriage and fertility at the micro level in 34 SSA countries. It assesses how this relationship changes at different reproductive ages and stages of the fertility transition. The findings show that marital dissolution is associated with reduced fertility, and that remarriage does not fully compensate for lost fertility. In 29 out of the 34 countries analyzed, women who remarry end up having significantly fewer children than women in intact first unions, despite having higher or similar fertility levels at younger reproductive ages. A noteworthy exception to this pattern is observed in Sierra Leone in West Africa, where remarried women have significantly higher fertility than women in intact first unions throughout their reproductive ages. However, this difference is mainly driven by differentials in child mortality between women who remarry and women in intact first unions. The positive effect of remarriage on fertility disappears when surviving children are considered instead of children ever born. Concerning the change of this relationship over the course of the fertility transition, the results show that the effect of remarriage on fertility diminishes as fertility declines, and could become positive. Smaller effects are observed in countries that are relatively at advanced stage of the fertility transition, while larger effects are found elsewhere.

Study II

Indirect estimation of the timing of first union dissolution with incomplete marriage histories
The lack of nationally representative data with detailed marriage histories in several developing countries impedes our understanding of essential aspects of marital dissolution in these countries. This paper proposes a simple and

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2This paper won the 2022 Jan M. Hoem Paper Award. This award was established to reward a junior researcher at the Max Planck Institute for Demographic Research (MPIDR) for a paper that exhibits the quality, innovation, originality, and scientific merit exemplified by the work of Jan M. Hoem.
user-friendly approach for estimating the timing of first union dissolution using incomplete marriage histories, denoted as the Indirect Life Table of first Union Dissolution (ILTUD). ILTUD uses a simple tabulation of ever-married women by duration since the first union, classified by union dissolution status (intact vs. dissolved first union), to produce survival rates of first unions. It then uses the relationships between life table functions to generate the distribution of marriages ending each year \( (\theta_t) \) for a given marriage cohort. Using the distribution of \( \theta_t \), ILTUD generates quantum-adjusted first union survival rates from which the percentiles of first union dissolution are calculated. This paper also proposes and demonstrates an extension of ILTUD (ILTUDext) to be used when multiple surveys are available, and there is evidence of substantial changes in union dissolution rates over time. ILTUD estimates are consistent with estimates produced using traditional statistical methods such as the Kaplan-Meier estimator. In addition, ILTUD is simple to implement and has simple data requirements. The simplicity of ILTUD (in terms of application and data requirements) means that it can be applied to data from the most reliable and nationally representative surveys in low- and middle-income countries (LMICs), such as the Demographic Health Surveys and Multiple Indicator Cluster Surveys. Thus, ILTUD provides us with an opportunity to broaden our understanding of country and period differences in patterns of first union dissolution in these countries.

Study III

Dynamics of union dissolution in sub-Saharan Africa

Not only whether but also when a union ends and how long individuals remain unpartnered subsequently is consequential for social and demographic outcomes. Unfortunately, in SSA, nationally representative information about the timing of union dissolution and the reproductive time “lost” due to union dissolution is scarce, primarily because data depicting detailed marital life courses are unavailable in most reliable nationally representative surveys. This situation impedes our broader understanding of union dissolution and its consequences for social and demographic outcomes in this region. This paper addresses this gap by applying novel and standard demographic techniques to Demographic Health Survey data collected in 34 SSA countries to document the dynamics of union dissolution in this region. In particular, this paper provides country and period estimates of (i) the levels of all-cause union dissolution, (ii) the quantum-adjusted timing of first union dissolution, and (iii) the reproductive years spent outside of marriage due to union dissolution. The results reveal that union dissolution is common, it typically occurs at relatively early reproductive ages, and the number of reproductive years lost due to union dissolution is minimal. Out of the 34 countries studied, over 20% of
first unions end within 15 years in 28 countries, and over 40% of first marriages end within 25 years in 14 countries. The average marriage duration at first union dissolution varies between 4.8 and 9.4 years. Remarriage tends to occur quickly across all countries, with the average duration between the first union dissolution and the first remarriage ranging from 0.2 to 2.9 years. The average number of reproductive years lost due to union dissolution varies between 1.3 and 5.3 years, accounting for 4.0% to 16.3% of the total reproductive life expectancy.

Furthermore, the findings show that divorce and widowhood are declining, but not in all countries. Overall, all-cause union dissolution has declined in 28 out of the 34 countries and has increased in four countries: Gambia, Kenya, Namibia, and Zimbabwe. Moreover, not just union dissolution, but also the probability of remarriage following a union dissolution is declining. This dynamic has led to an increase in the amount of reproductive time lost due to union dissolution in several countries. Regarding regional disparities, the results suggest that West Africa is different from other SSA regions. All-cause union dissolution is low and occurs at relatively older ages in West Africa. However, the propensity to remarry is high, and remarriage occurs more quickly in this region than in East and Central Africa. On average, the mean duration spent outside of a union before the first remarriage is 1.3 years in West Africa, 1.8 years in Central Africa, and 1.9 years in East and South Africa.

Study IV

The contribution of union dissolution and repartnering to fertility variation in sub-Saharan Africa: A macro-level perspective

This paper extends the analyses of Study I that examined the intersection between union dissolution and fertility at the micro level. It provides a macro perspective on this relationship, thus positioning the role of union dissolution and repartnering dynamics within the discourse of macro fertility developments in SSA. Specifically, the study uses data from 143 DHS collected in 34 SSA countries to make three key contributions toward understanding the relationship between marital dissolution and fertility at the macro level. First, it examines how the size of the population of women who experience union dissolution is associated with completed family size (CFS) at the population level, and how this relationship varies by remarriage status. The findings show that union dissolution rates are significantly negatively associated with lifetime fertility at the population level. However, when repartnering is considered, only the proportion of ever-married women who do not remarry following a union dissolution, and not the proportion of women who remarry, matters.
Second, the paper documents the extent to which union dissolution and repartnering rates explain the cross-country fertility differences in SSA. The findings reveal that cross-country heterogeneity in union dissolution and repartnering rates is important for explaining the fertility differences between countries. It accounts for 9.4% of the cross-country fertility differences in this region. This contribution to fertility variation is the same as that attributable to urbanization, and about half that explained by female participation in education.

Third, the study analyzes how union dissolution and repartnering dynamics influence the pace of fertility decline in SSA. The results show that marital dissolution and repartnering dynamics mostly slowed the pace of fertility decline in this region. For the SSA region (as a whole), fertility would have declined 1.24 times faster if the union dissolution and repartnering rates and the effects of union dissolution and repartnering on fertility for the younger cohorts had remained the same as those for women born in 1940-49. Indeed, as noted above, the union dissolution rates have mostly declined in this region. Thus, given that women who experience union dissolution end up with lower fertility, this shift implies that the fertility in recent birth cohorts has been higher than it would have been in the absence of changes in union dissolution rates over birth cohorts. Moreover, the fertility of ever-remarried women, who constitute the largest fraction of women who experience union dissolution, has declined more slowly than that of their counterparts in intact first unions, thus contributing to the slow pace of fertility decline. In a few countries (Ghana, Kenya, Liberia, South Africa, and Zimbabwe), however, shifts in union dissolution and repartnering dynamics have facilitated a rapid fertility decline. The patterns observed in Kenya, South Africa, and Zimbabwe are interesting. These countries are regarded as forerunners of fertility decline in SSA, and their union dissolution and remarriage patterns diverge from those observed in most SSA countries, and are more similar to those observed in Latin America and the Caribbean region, where fertility decline has been rapid.
Conclusion and discussion

Study contribution

This dissertation extends the discussion of the union-fertility nexus and fertility variation in SSA. It positions the role of marital dissolution and repartnering within the discourse of micro and macro fertility patterns in this region. The empirical analyses used existing statistical and demographic techniques and developed new demographic methods to address three specific objectives. The first objective was to examine the relationship between union dissolution and fertility at the micro level. The second objective was to document the dynamics of union dissolution in SSA, including the levels of all-cause first union dissolution, the timing of first union dissolution, and the reproductive years spent outside of marriage due to union dissolution. The third objective centered on assessing the influence of marital dissolution and repartnering on macro fertility developments in this region. These objectives were addressed in four empirical studies, which utilized data from World Fertility Surveys (WFS) and Demographic Health Surveys (DHS) to make three critical contributions to the scholarship of family demography in the SSA region.

The first contribution is conceptual development. As was noted earlier in this dissertation, the omission of the role of marital dissolution and repartnering within the discourse of union-fertility nexus and fertility variation in SSA can be partly attributed to the emphasis on the loss of exposure to regular sexual intercourse between or after unions as the mechanism that drives this relationship. In this dissertation, I have argued for the need to also understand this relationship from the perspective of the indirect determinants of fertility. I have suggested that adaptation mechanisms, which involve the adjustment of fertility intentions following union dissolution or repartnering, may be a critical pathway through which union dissolution and repartnering affect fertility outcomes in this region. Thus, although women who experience union dissolution do not spend a larger share of their reproductive years outside of marriage, as evidenced in prior studies (Bongaarts, Frank et al. 1984) and in Study III of this dissertation, experiencing marital dissolution/repartnering during reproductive years can still influence individuals’ fertility outcomes via adaptation mechanisms. Indeed, I hypothesize that the lower CFS among women who experience marital dissolution compared to women in intact first unions observed in several SSA countries (as evidenced in Studies I and IV) is likely
driven mostly by such adaptation mechanisms. Nevertheless, although the dynamics of the timing of union dissolution and the reproductive years lost due to union dissolution documented in Study III provide more weight to this hypothesis, a formal assessment of this hypothesis and different adaptation mechanisms is needed. Thus, the conceptual framework presented in this study lays out propositions and the foundations of the data requirements required for such analyses.

A second conceptual development is related to the all-cause union dissolution concept, a measure that combines divorce and widowhood. I have argued in this dissertation for the value of looking at all-cause union dissolution rather than only divorce for a practical assessment of the realities of marital dissolution experiences and their relationships with social, demographic, and health outcomes in SSA. I note that considering all-cause union dissolution is ideal because a woman losing her husband through death during her reproductive age is a much more common occurrence in SSA than in other world regions (see regional differences in male mortality in United Nations 2022). In addition, using all-cause union dissolution measures helps to avoid biases in union dissolution dynamics arising from the methodological assumptions necessary for disentangling divorce/separation from widowhood when information about the cause of union dissolution is unavailable (see the discussion of such assumptions in Clark and Brauner-Otto (2015)).

The second contribution of this thesis is that it provides methodological advancements. The study introduced new analytical approaches to overcome the data challenges associated with DHS in order to provide reliable estimates of union dissolution dynamics and a comprehensive assessment of the relationship between marital dissolution and fertility. Notably, this thesis proposed a cohort-age lifetime fertility approach in Study I, which offers a practical means for assessing the effect of union dissolution on fertility when only information about lifetime marital dissolution or repartnering status is available. Likewise, the ILTUD method and its extension developed in Study II offer a solution for assessing the timing of first union dissolution based on incomplete marriage histories. The compatibility of these approaches with the nuptiality information collected in the most reliable and nationally representative surveys in low- and middle-income countries (LMIC) provides us with an opportunity to broaden our understanding of the dynamics of union dissolution and their relationship with fertility across the Global South region. Moreover, the methods developed in this dissertation open up numerous possibilities for demographic analysis in LMIC where complete histories for several life course events are lacking, but summary histories could be available. In other words, these methods are applicable for the analysis of the dynamics of other life events (and their association with fertility) in contexts where direct individual-level data on the event's timing are missing, and can thus enhance demographic estimations in a variety of demographic sub-fields within and
beyond family demography. For example, the cohort-age lifetime fertility approach used in Study I is suitable for assessing the relationship between migration and fertility when the volume and the timing of migration are unknown, but information about lifetime migration status is available. Similarly, ILTUD could be adapted to study the timing of first-time migration using such data.

Third, this paper makes several substantive contributions to our understanding of union dissolution dynamics and their relationship with fertility in SSA. It bridges the gaps in the literature regarding the dynamics of union dissolution by documenting the first country-level estimates of the timing of all-cause union dissolution and the amount of time women spend outside of marriage due to union dissolution in several SSA countries. The emerging findings are generally in line with early estimates based on WFS data (Bongaarts, Frank et al. 1984) and the patterns observed in selected sub-national population groups in recent years (Locoh and Thiriat 1995, Reniers 2003, Grant and Soler-Hampejsek 2014, Guirkinger, Gross et al. 2021, Souza 2023). Women who experience union dissolution typically do so during their early reproductive years, and the number of reproductive years they spend outside of marriage due to union dissolution is minimal. These findings demonstrate that frequent and rapid remarriage is not a feature of selected countries or sub-population groups, but is instead a dominant feature that cuts across the SSA region, and that has persisted for decades.

Furthermore, the insights into the dynamics of the levels of all-cause union dissolution provided in this thesis make an essential contribution to the debates regarding variation in family patterns across the globe. For example, Goode (1963) predicted that divorce rates would decline in societies characterized by high marital instability as they modernize. This hypothesis has generally been refuted in the Global North (see, for example, the discussion in Cherlin (2012)), and succeeding theories generally suggest that marital dissolution increases with modernization (Lesthaeghe 2010, Goldscheider, Bernhardt et al. 2015). The findings in this thesis provide evidence for both perspectives. All-cause union dissolution has mostly declined in SSA, with more significant declines being observed in West African countries. Male mortality has decreased more slowly in West Africa than in East and Southern Africa (see male mortality rates in United Nations (2022)), which suggests that the declines in divorce rates have been the primary drivers of the declines in all-cause union dissolution observed in West Africa. Hence, the findings provide more support for Goode’s predictions. On the other hand, all-cause union dissolution has increased in Gambia in Central Africa and in Kenya, Namibia, and Zimbabwe in East and Southern Africa, despite declines in male mortality. This pattern suggests that divorce rates are increasing across these countries, and thus provides evidence for theories that predict that divorce rates will rise as levels of development increase. Moreover, all-cause union dissolution has declined marginally in a few countries in East and Southern
Africa (Malawi, South Africa, Tanzania, and Zambia). Thus, given that male mortality has generally declined, this trend mainly implies that divorce rates have been rising or remained stable.

The different trends in all-cause union dissolution rates across countries in SSA imply that the mechanisms shaping these patterns are context-dependent. Specifically, they suggest that factors associated with modernization, such as female education expansion, urbanization, and the gender revolution, are shaping marital instability differently across this region. It is unsurprising that these factors would produce different marital dissolution trajectories, since their effects on marital stability can be bi-directional. For example, improved female education may lead to weakening parental control over one’s partner selection and improved communication within families, which could reduce the risk of marital dissolution. On the other hand, female education increases women’s chances of achieving economic self-reliance, which could give them the power to terminate unsatisfactory relationships. Similarly, the gender revolution in public spheres, particularly women’s participation in the labor force, could stabilize marriages via reduced conflicts arising from economic stress within families (as women’s contributions to the household finances increase). On the other hand, the gender revolution may lead to new power relations-related conflicts within households (e.g., conflicts about the division of household labor), which could result in higher divorce rates.

The stabilizing effects of modernization factors on marriages likely dominate the early stages of modernization, while the destabilizing effects likely dominate the later stages. In practical terms, this shift should produce reversals in marital dissolution over time. The within-country trends documented in this paper do not provide evidence of such reversals. I suspect this is because the observation periods are not long enough, or modernization has not progressed to advanced stages. Nevertheless, the pattern of the cross-country differences in all-cause union dissolution trends signals the possibility of such reversals. Marital dissolution has declined substantially in West Africa, where indicators of modernization generally lag behind those in Central, East, and Southern Africa (see the discussion in the study context section). On the other hand, marital dissolution has declined moderately in most East and Southern African countries. In addition, divorce is rising in Kenya, Namibia, South Africa, and Zimbabwe, the forerunners of modernization in SSA. Consequently, I anticipate that the current differences in the marital dissolution patterns across the SSA countries will disappear as more countries enter advanced stages of development, and the marriage-destabilizing forces of modernization factors dominate. Specifically, I anticipate that countries with declining marital dissolution rates will experience reversals in this trend as modernization levels increase. In countries where the marital dissolution rates are stable, they will rise.
The patterns of repartnering following marital dissolution are overwhelmingly consistent across the SSA region – the propensity to remarry is weakening everywhere. This pattern is consistent with theories of modernization in several ways. First, economically self-reliant and educated women who experience marital dissolution are likely to have less motivation to remarry. Second, with modernization, polygamy rates are likely to diminish, thus leading to declining remarriage rates via the weakening of the marriage market for divorcees and widowed women. Third, modernization is closely related to reduced fertility. Hence, women are likely to realize their fertility goals in early sexual unions, which may reduce their desire to initiate higher-order unions following marital dissolution. Moreover, with modernization, post-marital fertility is likely to increase due to the weakening of cultural norms that condemn childbearing outside of marriage. Thus, women who want to continue having children after marital dissolution may face less cultural pressure to realize such goals within the institution of marriage. Therefore, the changes in repartnering dynamics documented in Study III can be primarily attributed to the improvements in female participation in education and in paid employment, the declines in polygamy rates and fertility rates, and the rise in post-marital fertility that characterize most SSA countries (Frye and Lopus 2018, John and Nitsche 2021, Bongaarts and Casterline 2022, Chae and Agadjanian 2022, United Nations 2022).

This thesis also extends the literature on family demography in SSA by providing the first-ever comprehensive assessment of the relationship between union dissolution and fertility in this region. The findings are generally consistent with the results of Lee and Pol (1988) for Cameroon and those of Elleamoh and Dake (2019) for Ghana, and with the patterns of this relationship observed in low fertility settings in the Global North (Jefferies, Berrington et al. 2000, Beaujouan and Solaz 2008, Meggiolaro and Ongaro 2010, Thomson, Winkler-Dworak et al. 2012, Van Bavel, Jansen et al. 2012, Andersson, Jalovaara et al. 2022). Marital dissolution is associated with reduced fertility, and remarriage does not fully compensate for lost fertility.

The sensitivity analyses I performed and the differences I found in the social and demographic profiles between women who experience union dissolution and those who remain in intact first unions indicate that the relationship between marital dissolution and fertility documented in this study cannot necessarily be attributed to the selectivity of women into marital dissolution and low fertility. For example, the analytical models that accounted for HIV status returned similar conclusions, although the magnitude of the effect slightly reduced: i.e., part but not all of the fertility differences between ever-remarried women and women in intact first unions were due to ever-remarried women being HIV-positive. Similarly, models that excluded women who were declared infecund yielded similar conclusions. Moreover, women who had married more than once had fertility levels that were higher than or similar to those
of women who were in intact first unions at early reproductive ages. In addition, the social and demographic profile differentials revealed that remarried women were more likely to have social and demographic attributes that positioned them for higher fertility rather than low fertility. In most countries, remarried women married at younger ages, started childbearing sooner, had higher premarital fertility, were more likely to be less educated, and were more likely to reside in rural areas than women in intact first unions.

However, it is important to note that I did not account for polygamy in the analytical models. Polygamy is a central feature of marriage regimes in SSA (Chae and Agadjanian 2022) that creates a marriage market for divorcees and widows. Indeed, Chae and Agadjanian (2022) found that the risk of entering into a polygamous union is higher among remarrying women than among women forming their first union. The relationship between polygyny and fertility is mostly negative (Garenne and Van de Walle 1989, Dodoo 1998, Lardoux and Van de Walle 2003). Nevertheless, it is not clear whether this relationship mainly arises because polygamous unions are dominated by women who have experienced marital dissolution and remarried, or because polygyny itself reduces fertility. Johnson and Elmi (1989) suggested that the former could be the case. They observed that while the fertility of women in monogamous unions was not statistically different from that of women in polygamous unions who married only once, it was significantly higher than the fertility of women in polygamous unions who married more than once. Nevertheless, it is also possible that polygyny itself reduces fertility, in which case the magnitude of the net fertility difference documented in this study might be somewhat overestimated. Unfortunately, in DHS, information about polygyny is collected from women currently married at the time of the survey. Thus, it was impossible to determine women's lifetime experiences of polygamous unions (to be consistent with the lifetime measures of union dissolution, repartnering, and fertility used in the analyses), particularly among women whose first union ended and who never remarried, or among women who married more than once. Thus, future studies that systematically investigate how polygamy modulates the relationships documented in this study, or whether it is marital dissolution or repartnering that accounts for the negative relationship between polygamy and fertility, are needed.

The findings of this study further show that the fertility gradient between women who remarry and those who remain in intact first unions is diminishing in most SSA countries, and remarried women may end up with larger CFS as countries shift from high to low fertility levels. On the other hand, the fertility gradient between women in intact first unions and those who do not remarry following marital dissolution is widening. The manifestation of this shift at the population level is that the fertility of ever-remarried women, who constitute the largest fraction of women who experience marital dissolution in most SSA countries (see Studies III & IV), has declined more slowly than that of women in intact first unions. On the other hand, the decline is steeper among
women who do not remarry following marital dissolution. This changing pattern confirms Downing and Yaukey (1979) hypothesis, which suggests a shift in the relationship between remarriage and fertility over the course of the fertility transition. Study I discussed the mechanisms that may be driving this shift, including the declining family size ideals and the lengthening of birth intervals that characterize most SSA countries (Moultrie, Sayi et al. 2012, Casterline and Odden 2016, Casterline and Agyei-Mensah 2017).

The dynamics of marital dissolution rates and the relationship between marital dissolution and fertility documented in this study make an important contribution towards the understanding of the demographic transition of SSA. As noted earlier, the fertility transition in this region diverges from the patterns observed elsewhere. It is marked by high fertility rates, late-onset and slow pace of the decline, and the postponement of fertility, rather than parity-specific fertility limitation (Bongaarts 2008, Garenne 2008, Shapiro and Gebreselassie 2008, Schoumaker 2019, Timæus and Moultrie 2020, United Nations 2022). This study provides new insights into the latter two features: the pace of the decline and the postponement of fertility. It reveals that marital dissolution and repartnering dynamics are connected to these unique features, despite being neglected in the discourse on the fertility transition. Specifically, the findings demonstrate that the shifts in the relationship between marital dissolution and fertility and changes in all-cause union dissolution rates contributed to the slow pace of fertility decline in this region. This observation seems counterintuitive, given that marital dissolution suppresses fertility, and remarriage does not entirely compensate for lost fertility. However, the explanation for this puzzle lies in the decline in marital dissolution rates and the diminishing effect of marital dissolution on fertility over time (reflected at the population level by the slow pace of fertility decline among women who experience marital dissolution, particularly those who eventually remarry). Indeed, since marital dissolution reduces fertility, the decline in marital dissolution rates over time and the diminishing effect of marital dissolution on fertility imply that there has been additional fertility at the population level in recent years that would not have been realized in the absence of such changes, thus contributing to a slow pace of fertility decline.

Concerning the postponement of fertility, scholars have observed that birth intervals tend to be longer in SSA, and have concluded that the postponement of childbearing for reasons other than the age of the youngest child explains this pattern (Moultrie, Sayi et al. 2012, Timæus and Moultrie 2020). However, the factors that shape this postponement of fertility are poorly understood. The dynamics of fertility differences over reproductive ages between women who experience marital dissolution and women who remain in an intact first union documented in Study I suggest that marital dissolution and repartnering patterns partly explain this unique feature of the fertility transition in SSA. The fertility differences between these two groups mainly emerge during the middle reproductive ages. The fertility attained at late reproductive years is mostly
similar, suggesting that these fertility differences arise from the postponement of fertility to older ages rather than from the early curtailment of fertility. The dynamics of the timing of the first union dissolution and the number of reproductive years spent between unions documented in Study III provide more support for this conclusion. On average, women who experience union dissolution in SSA do so during the middle reproductive years. Thus, given that fertility ideals are high in this region, most women likely experience marital dissolution before attaining their ideal family size. Hence, it is unlikely that marital dissolution, especially among women who remarry, leads to the early curtailment of fertility. It is also unlikely that such fertility differences result from loss of exposure to regular sexual intercourse since, as documented in Study III, remarriage tends to occur quickly, and the average number of reproductive years between unions ranges from just 0.2 to 2.9. Nevertheless, further analyses that empirically quantify the contributions of marital dissolution and repartnering to the postponement of fertility in this region could provide more insights into how marital dissolution and repartnering explain this unique attribute of the fertility transition in SSA.

Implications of the findings for policy and research

The findings of this dissertation have important implications for policy and research. It is clear that marital dissolutions, though declining, remain common in most SSA countries. The women who experience union dissolutions and their children are exposed to complex family structures, such as single-mother households, polygamous marriages, and stepfamilies. These living arrangements are associated with adverse effects on women's and children's health and well-being (Bramlett and Blumberg 2007, Dunifon, Ziol-Guest et al. 2014, Zuera, Rutigliano et al. 2020, Adjwanou, Boco et al. 2021). Indeed, the results of Study I, which analyzed the association between remarriage and surviving children rather than children ever-born, indicated that mortality is higher among children born to ever-remarried women than among children born to women who remained in intact first unions. Although these results do not imply causation, they signal that the children of women who have experienced marital dissolution might be experiencing worse health outcomes. The higher levels of union dissolution suggest that more women and children are exposed to complex family structures in this region. Besides, it is also essential to note that although union dissolution rates are declining, the absolute population size of women and children affected by marital dissolutions might not necessarily be decreasing, mainly due to shifts in the population age structures in most SSA countries. It is, therefore, necessary for governments to have a clear understanding of the size of the population of women and children
who are affected by marital dissolutions, and to put in place strategies that promote their well-being.

Furthermore, this thesis calls for integrating marital dissolution and repartnering into the analyses of fertility in SSA and beyond. The fertility behavior of women who experience union dissolution differs in some crucial ways from that of women who remain in intact first unions in this region. Thus, models that consider marital status in fertility analyses need to go beyond the simple classification of women into never married, currently married, and currently divorced/widowhood states by incorporating individuals' lifetime marital dissolution and repartnering histories. We should consider how much of the heterogeneity in reproductive intentions or behavior is not accounted for in models that ignore individuals' lifetime marital dissolution and repartnering histories. Moreover, given that the marital dissolution and repartnering dynamics in SSA differ considerably from those observed in the other Global South regions, it is necessary to incorporate these nuptiality dynamics into discussions of the particularities of fertility patterns across the Global South. We should start questioning how the low and declining rates of union dissolution in South Asia, the high and rising union dissolution rates accompanied by low remarriage rates in Latin America and the Caribbean, and the high and declining union dissolution rates accompanied by high remarriage rates in SSA (Goldman 1981, Dommaraju and Jones 2011, Ruiz-Vallejo 2020, John, Adjiwanou et al. 2023) account for regularities and distinctions in the fertility patterns across the Global South.

Priority areas for future research

This dissertation has discussed the role of marital dissolution and repartnering in shaping micro and macro fertility patterns in SSA. While this discussion significantly extended the scholarship of family demography in SSA, several aspects of union dissolution dynamics and their relationship with fertility in this region still need to be clarified. One such aspect is whether there is a gender gradient, urban/rural differences or an education gradient in the levels of union dissolution and repartnering, and in the changes therein over time. Furthermore, there is a need to formally assess the contextual correlates of the timing of union dissolution and the reproductive years spent outside of marriage due to union dissolution. This study has suggested explanations for these dynamics based on women's demographics and social profiles across broad SSA regions. However, these explanations cannot account for all the processes shaping these dynamics, or exclude the possibility that other mechanisms exist. Thus, studies that formally test these explanations and other possible mechanisms are needed.
Additionally, as was noted earlier, future studies should consider formally assessing different mechanisms linking union dissolution, repartnering, and fertility. We need to empirically quantify the contributions of adaptation mechanisms to the overall effects of union dissolution and repartnering on fertility. In addition, we should examine how union dissolution and repartnering affect the desire to curtail, accelerate, or postpone childbearing, and how socioeconomic and demographic characteristics (e.g., fertility from previous unions) and the dynamics of union dissolution and repartnering (timing, number of partnerships) modulate this relationship. We should also seek to understand the contraception and birth spacing behavior of women who experience union dissolution – questioning how union dissolution interacts with fertility intentions (to curtail, accelerate, or postpone childbearing) to influence the selection and the use of contraceptive methods and birth timing in higher-order unions. Addressing these questions will improve our understanding of the reproductive behavior and needs of women who experience union dissolution in this region, and offer more insight into why the fertility of women who marry more than once declines more slowly than that of women who remain in intact unions.

Addressing the priority areas above requires comprehensive information about individuals' marriage and fertility histories, including information on whether their first union ended, and, if so, how it ended; whether they formed any subsequent unions, and, if so, when they formed new unions and how many of their children, if any, were born in various partnerships. I have highlighted throughout this thesis that such detailed marriage histories are currently missing in the most reliable and widely used nationally representative data sources. Thus, the evidence emerging in this dissertation calls for national governments and international organizations to consider funding the collection of these detailed marriage histories in nationally representative surveys in low- and middle-income countries. It is important to emphasize that such an investment has the potential to revolutionize not only scholarship on the union-fertility nexus in these countries, but also scholarship on family demography and its intersection with social, health, and demographic outcomes.
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